PROGRAM & ABSTRACT BOOK

The 14th Asian Pan - Pacific Society of Pediatric Gastroenterology, Hepatology and Nutrition Congress

APPSPGHAN 2018

Toward Good Health and Well-being of Children

October 23-26, 2018
Centara Grand at CentralWorld
Bangkok, Thailand

Sponsored by

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CONTENTS

SPEAKERS
Main Scientific Program

Juliet Sio AGUILAR	Philippines
Marion M. AW	Singapore
Louise A. BAUR	Australia
Kazuhiko BESSHO	Japan
Mei-Hwei CHANG	Taiwan
Pantipa CHATCHATREE	Thailand
Huey-Ling CHEN	Taiwan
Voranush CHONGSRISAWAT	Thailand
Nalinee CHONGVIRIYAPHAN	Thailand
Anil DHAWAN	U.K.
Mary FEWTRELL	U.K.
Winita HARDIKAR	Australia
Pipop JIRAPINYO	Thailand
Mureo KASAHARA	Japan
Kyung Mo KIM	Korea
Yong Joo KIM	Korea
Berthold KOLETZKO	Germany
Peter LEWINDON	Australia
Nilesh M. MEHTA	U.S.A.
Iqbal MEMON	Pakistan
Mohamad MIQDADY	Arab Emirates
Jin Soo MOON	Korea
Ladda MO-SUWAN	Thailand
Yen-Hsuan NI	Taiwan
Seksit OSATAKUL	Thailand
Yong POOVORAWAN	Thailand
Shama RAJINDRAJITH	Sri Lanka
Damayanti RUSLISJARIF	Indonasia
Neil SHAH	U.K.
Anupam SIBAL	India
Hania SZAJEWSKA	Poland
Babu Ram THAPA	India
Nikhil THAPAR	U.K.
Suthep UDOMSAWAENGSUP	Thailand
Nuthapong UKARAPOL	Thailand
Yvan VANDENPLAS	Belgium
Pattanee WINICHAGOON	Thailand
Yuichiro YAMASHIRO	Japan
Hye Ran YANG	Korea

SPEAKERS

Hands-On Course in Pediatric Therapeutic GI Endoscopy

Pitulak ASWAKUL	Thailand
Voranush CHONGSRISAWAT	Thailand
Patarapong KAMALAPORN	Thailand
Kyung Mo KIM	Korea
M.L.Taya KITTIYAKARA	Thailand
Peter LEWINDON	Australia
Seksit OSATAKUL	Thailand
Varayu PRACHAYAKUL	Thailand
Babu Ram THAPA	India
Suporn TREEPONGKARUNA	Thailand
Nuthapong UKARAPOL	Thailand

Toward Good Health and Well-being of Children

AGENDA

Program at a Glance

Date & Time	Tue 23 Oct	Wed 24 Oct	Thu 25 Oct	Fri 26 Oct
08.00-08.40	(08.00-17.10) **Hands-on course in pediatric therapeutic GI endoscopy**	08.10-08.40 **Opening ceremony** AB	**Keynote address 3** Pediatric hepatology in Asia: Past, present, future AB	**Parallel lecture 1** Practical aspects in breastfeeding A; **Parallel lecture 2** Acute liver failure B
08.40-09.20		**Keynote address 1** New insight in pediatric functional GI disorders AB	**Plenary 1** GERD: How to ensure optimized therapeutic approach AB	**Parallel lecture 3** Home enteral feeding: Experience in Thailand A; **Parallel lecture 4** Advance in pediatric endoscopic intervention B
09.20-10.00		**Keynote address 2** The impact of early life nutrition on good health and well-being AB	**Plenary 2** Nutrition and advancing bone health AB	**Parallel lecture 3** Body composition and energy expenditure measurement in pediatric practice A; **Parallel lecture 4** Autoimmune liver diseases B
10.00-10.30		**Break**	**Break**	**Break**
10.30-12.00		**Joint symposium 1** New insights in prebiotics, gut microbiota and related clinical practice guidelines AB	10.30-11.40 **Oral presentation** (GI) 5-7; 10.30-11.40 **Oral presentation** (Nutrition) B; 10.30-11.40 **Oral presentation** (Liver) A; 11.40-12.00 **Poster viewing**	**Symposium 9** Complementary feeding: Local perspective and global challenges A; **Symposium 10** Viral hepatitis B
12.00-12.10		Lunch box provided in the conference room	Lunch box provided in the conference room	12.00-12.20 **Poster viewing**
12.10-13.00		**Luncheon symposium 1** *(Mead Johnson)* Impact of early diet on behavior and health: A practical application for you and your practice AB	**Luncheon symposium 3** *(BioGaia)* New perspectives on *L. reuteri* in child health - Evolution, mode of action and clinical evidence in functional GI disorders AB	Lunch box provided in the conference room
13.00-13.50		**Luncheon symposium 2** *(Nutricia)* Management of functional gastrointestinal disorders (FGIDs): the DOs and DON'Ts AB	**Luncheon symposium 4** *(Wyeth Nutrition)* The role of nutrition on healthy growth and brain development AB	12.30-13.20 **Luncheon symposium 5** *(Nestle Nutrition)* Role of probiotics: Impact on short- and long-term health AB
13.50-14.10		**Poster viewing**	**Poster viewing**	13.20-14.10 **Luncheon symposium 6** *(Mead Johnson)* AB
14.10-15.40		**Symposium 1** Managing malnutrition in hospitalized patients AB; **Symposium 2** Update in IBD 5-7	**Symposium 3** Recent knowledge on micronutrients B; **Symposium 4** GI infection 5-7; **Symposium 5** Pediatric liver transplantation: East meet West A	**Joint symposium 3** Obesity management: Make it easy AB
15.40-16.00		**Break**	**Break**	15.40-16.00 **Closing remark** AB
16.00-17.30		**Joint symposium 2** Multiple faces in food allergy AB	**Symposium 6** Practical aspects of parenteral nutrition B; **Symposium 7** Highlight in FGIDs and motility disorders 5-7; **Symposium 8** Infantile cholestasis A	
17.30-18.20		**Evening symposium 1** *(DKSH)* Antibiotics as disrupters of gut microbiota: Long-term consequences on children health 5-7	**Evening symposium 2** *(Dairy Goat Co-operative)* Alternatives to cow milk formula products for infants: Results of experimental and clinical studies 5-7	
18.20-20.00		**Welcome reception** Delegate bar	**Faculty night** (invited only) B	

ROOM CODE

AB - World Ballroom A and B, fl. 23
A - World Ballroom A, fl. 23
B - World Ballroom B, fl. 23
5-7 - Lotus Suite 5-7, fl. 22
Delegate bar - Special area at Fl. 22

AGENDA

October 23, 2018

Hands-On Course in Pediatric Therapeutic GI Endoscopy
Olympus T-TEC (Thai-Training & Education Centre)

Course directors: Thawee Ratanachu-ek (Thailand)
Seksit Osatakul (Thailand)
Amornphun Gaensan (Thailand)

Time	Issue	Speaker
08.00-08.15	Register	
08.15-08.30	T-Tec orientation	
08.30-09.00	Welcome remark & Orientation	
09.00-17.10*	Station 1: Bipolar/APC	Seksit Osatakul (Thailand)
	Station 2: Glue injection	Kyung Mo Kim (Korea)
	Station 3: EVL/EVS	Peter Lewindon (Australia)
	Station 4: PEG	Suporn Treepongkaruna (Thailand)
	Station 5: Foreign body removal	Voranush Chongsrisawat (Thailand)
	Station 6: Endoscopic polypectomy	Nuthapong Ukarapol (Thailand)
	Station 7: Endoscopic dilatation	Babu Ram Thapa (India)
	Station 8: Single balloon enteroscope	Patarapong Kamalaporn (Thailand)
	Station 9: Hemoclips, Ovesco clip	Pitulak Aswakul (Thailand)
	Station 10: Endoscopic close perforation (clip with thread)	Varayu Prachayakul (Thailand)
	Extra station stimulator: Upper GI bleeding	M.L.Taya Kittiyakara (Thailand)

*Rotation each station every 40 mins
Note: Lunch break 11.40-12.30, coffee break 14.30-15.10

Hands-on Course in Pediatric Therapeutic GI Endoscopy – Assistants

Issue	Doctor-assistants
Station 1: Bipolar/APC	Punnapatch Piriyanon (Thailand)
Station 2: Glue injection	Pornthep Tanpowpong (Thailand) Nopaorn Phavichitr (Thailand)
Station 3: EVL/EVS	Niyada Vithayasai (Thailand) Palittiya Sintusek (Thailand)
Station 4: PEG	Thitima Ngoenmak (Thailand)
Station 5: Foreign body removal	Nataruks Chaijitraruch (Thailand)
Station 6: Endoscopic polypectomy	Siwarode Khanom (Thailand)
Station 7: Endoscopic dilatation	Teera Kijmassuwan (Thailand)
Station 8: Single balloon enteroscope	Waraporn Panjawong (Thailand)
Station 9: Hemoclips, Ovesco clip	Anundorn Wongteerasut (Thailand)
Station 10: Endoscopic close perforation (clip with thread)	Rewat Boonanuwat (Thailand)
Extra station stimulator: Upper GI bleeding	Chatmanee Lertudomphonwanit (Thailand)

AGENDA

October 24, 2018

08.10-08.40	**Opening Ceremony**	**World Ballroom AB**
08.40-09.20	**Keynote Address 1: New Insight in Pediatric Functional GI Disorders** **Chairs:** Geoffrey J Cleghorn (Australia) and Kraisid Tontisirin (Thailand) **Speaker:** Yvan Vandenplas (Belgium)	**World Ballroom AB**
09.20-10.00	**Keynote Address 2: The Impact of Early Life Nutrition on Good Health and Well-Being** **Chairs:** Geoffrey J Cleghorn (Australia) and Kraisid Tontisirin (Thailand) **Speaker:** Berthold Koletzko (Germany)	**World Ballroom AB**
10.00-10.30	**Break**	
10.30-12.00	**Joint Symposium 1: New Insights in Prebiotics, Gut Microbiota and Related Clinical Practice Guidelines** **Chairs:** Yvan Vandenplas (Belgium) and Nalinee Chongviriyaphan (Thailand) JS-1-1 **Role of Gut Microbiota on Good Health** Yuichiro Yamashiro (Japan) JS-1-2 **Update in Clinical Practice Guidelines on Probiotic Use** Hania Szajewska (Poland) JS-1-3 **Prebiotics for Health and Clinical Uses: Evidence-based Approach** Mohamad Miqdady (Arab Emirates)	**World Ballroom AB**
12.10-13.00	**Luncheon Symposium 1 (Sponsored by Mead Johnson)** **Impact of Early Diet on Behavior and Health: a Practical Application for You and Your Practice** **Speakers:** Colin Rudolph (U.S.A.) Geoffrey J Cleghorn (Australia) **Moderator:** Voranush Chongsrisawat (Thailand)	**World Ballroom AB**
13.00-13.50	**Luncheon Symposium 2 (Sponsored by Nutricia)** **Management of Functional Gastrointestinal Disorders (FGIDs): the DOs and DON'Ts** **Speakers:** Yvan Vandenplas (Belgium) Thomas Ludwig (Singapore) **Moderator:** Pornthep Tanpowpong (Thailand)	**World Ballroom AB**
13.50-14.10	**Poster Viewing**	
14.10-15.40	**Symposium 1: Managing Malnutrition in Hospitalized Patients** **Chairs:** Sungkom Jongpiputvanich (Thailand) and Damayanti Rusli Sjarif (Indonesia) **Speakers:** Berthold Koletzko (Germany) Ladda Mo-suwan (Thailand)	**World Ballroom AB**
	Symposium 2: Update in IBD **Chairs:** Suporn Treepongkaruna (Thailand) and Geoffrey J Cleghorn (Australia) S-2-1 **IBD in Asia: Epidemiology and Natural History** Marion Aw (Singapore)	**Lotus Suite 5-7**

	S-2-2 **Diagnosis and Disease Monitoring** Kyung Mo Kim (Korea) S-2-3 **Update in IBD treatment** Peter Lewindon (Australia)	
15.40-16.00	**Break**	
16.00-17.30	**Joint Symposium 2: Multiple Faces in Food Allergy** **Chairs:** Pipop Jirapinyo (Thailand) and Mohamad Miqdady (Arab Emirates) JS-2-1 **Challenges in GI Food Allergy** Neil Shah (U.K.) JS-2-2 **Innovative Therapeutic Approach in Cow's Milk Protein Allergy** Pipop Jirapinyo (Thailand) JS-2-3 **Food Allergy in Pediatric Allergist Perspective** Pantipa Chatchatee (Thailand)	**World Ballroom AB**
17.30-18.20	**Evening Symposium 1 (Sponsored by DKSH)** **Antibiotics as Disrupters of Gut microbiota: Long-term Consequences on Children Health** **Speaker:** Ener Dinleyici (Turkey) **Moderator:** Prapun Aanpreung (Thailand)	**Lotus Suite 5-7**
18.30-20.00	**Welcome Reception**	**Delegate Bar (22nd Floor)**

*16.00-18.20 APPSPGHAN International Advisory Council Meeting (invitation only at the Board room)

AGENDA

October 25, 2018

08.00-08.40	**Keynote Address 3: Pediatric Hepatology in Asia: Past, Present, Future** **Chairs:** Wandee Varavithya (Thailand) and Yong Poovorawan (Thailand) **Speaker:** Mei-Hwei Chang (Taiwan)	**World Ballroom AB**
08.40-09.20	**Plenary Lecture 1: GERD: How to Ensure Optimized Therapeutic Approach** **Chairs:** Seng Hock Quak (Singapore) and Umaporn Suthutvoravut (Thailand) **Speaker:** Nikhil Thapar (U.K.)	**World Ballroom AB**
09.20-10.00	**Plenary Lecture 2: Nutrition and Advancing Bone Health** **Chairs:** Seng Hock Quak (Singapore) and Umaporn Suthutvoravut (Thailand) **Speaker:** Mary Fewtrell (U.K.)	**World Ballroom AB**
10.00-10.30	**Break**	
10.30-11.40	**Oral Presentation (GI)** **Chairs:** Hania Szajewska (Poland) and Nuthapong Ukarapol (Thailand) **Oral Presentation (Nutrition)** **Chairs:** Berthold Koletzko (Germany) and Charnchai Panthongviriyakul (Thailand)	**Lotus Suite 5-7** **World Ballroom B**

	Oral Presentation (Liver) **Chairs:** Mei-Hwei Chang (Taiwan) and Yong Poovorawan (Thailand)	**World Ballroom A**
11.40-12.00	**Poster Viewing**	
12.10-13.00	**Luncheon Symposium 3 (Sponsored by BioGaia)** **New Perspectives on *L. reuteri* in Child Health - Evolution, Mode of Action and Clinical Evidence in Functional GI Disorders** **Speakers:** Hania Szajewska (Poland) Stefan Roos (Sweden) **Moderator:** Suporn Treepongkaruna (Thailand)	**World Ballroom AB**
13.00-13.50	**Luncheon Symposium 4 (Sponsored by Wyeth Nutrition)** **The Role of Nutrition on Healthy Growth and Brain Development** **Speaker:** Alan Lucas (U.K.) **Moderator:** Sirinuch Chomtho (Thailand)	**World Ballroom AB**
13.50-14.10	**Poster Viewing**	
14.10-15.40	**Symposium 3: Recent Knowledge on Micronutrients** **Chairs:** Supapan Tantracheewathorn (Thailand) and Suntaree Ratanachu-ek (Thailand) S-3-1 **Maternal Micronutrient Nutrition and the First 1000 Days (of Life)** Pattanee Winichagoon (Thailand) S-3-2 **Micronutrients in Pediatric Practice** Hye Ran Yang (Korea)	**World Ballroom B**
	Symposium 4: GI Infection **Chairs**: Elizabeth Martinez (Philippines) and Prapun Aanpreung (Thailand) S-4-1 **Update on Childhood *H. pylori* Infection** Nuthapong Ukarapol (Thailand) S-4-2 **New Trends in Acute Diarrhea** Juliet Sio Aguilar (Philippines) S-4-3 **Role of Infection in Chronic Diarrhea** Iqbal A Memon (Pakistan)	**Lotus Suite 5-7**
	Symposium 5: Pediatric Liver Transplantation: East Meet West **Chairs:** Winita Hardikar (Australia) and Nataruks Chaijitraruch (Thailand) S-5-1 **Long-Term Outcomes and Immunosuppressions** Anil Dhawan (U.K.) S-5-2 **Pediatric LT: Asian Perspectives** Anupam Sibal (India) S-5-3 **Short- and Long-term Surgical Complications** Mureo Kasahara (Japan)	**World Ballroom A**
15.40-16.00	**Break**	

16.00-17.30	**Symposium 6: Practical Aspects of Parenteral Nutrition** **Chairs:** Paiboon Eksaengsri (Thailand) and Narumon Densupsoontorn (Thailand) S-6-1 **Parenteral Nutrition in Critical Care** Nilesh M. Mehta (U.S.A) S-6-2 **Parenteral Nutrition in Gut Failure** Jin Soo Moon (Korea)	**World Ballroom B**
	Symposium 7: Highlights in FGIDs and Motility Disorders **Chairs:** Christopher Boey (Malaysia) and Nopaorn Phavichit (Thailand) S-7-1 **Motility Testing in Clinical Practice** Nikhil Thapar (U.K.) S-7-2 **Management of Intractable Constipation** Seksit Osatakul (Thailand) S-7-3 **Current Management of Functional Abdominal Pain Disorders** Sharma Rajindrajith (Sri Lanka)	**Lotus Suite 5-7**
	Symposium 8: Infantile Cholestasis **Chairs:** Huma Cheema (Pakistan) and Pensri Kowsuwan (Thailand) S-8-1 **Biliary Atresia: an Update** Kazuhiko Bessho (Japan) S-8-2 **Metabolic and Genetic Cholestasis: an Overview** Peter Lewindon (Australia) S-8-3 **PFIC** Huey-Lin Chen (Taiwan)	**World Ballroom A**
17.30-18.20	**Evening Symposium 2 (Sponsored by Dairy Goat Co-operative)** **Alternatives to Cow Milk Formula Products for Infants: Results of Experimental and Clinical Studies** **Speakers:** Colin Prosser (New Zealand) Liz Carpenter (New Zealand) **Moderator:** Sungkom Jongpiputvanich (Thailand)	**Lotus Suite 5-7**
18.30-20.00	**Faculty Night (invitation only)**	**World Ballroom B**

*17.30-18.20 Early life nutrition e-learning Southeast Asia (invitation only)

AGENDA

October 26, 2018

08.00-08.40	**Parallel Lecture 1: Practical Aspects in Breastfeeding** **Chairs:** Yuichiro Yamashiro (Japan) and Ruangvith Tantibhaedhyangkul (Thailand) **Speaker:** Yong Joo Kim (Korea)	**World Ballroom A**
	Parallel Lecture 2: Acute Liver Failure **Chairs:** Yen-Hsuan Ni (Taiwan) and Boosba Vivatvakin (Thailand) **Speaker:** Anil Dhawan (U.K.)	**World Ballroom B**
08.40-09.20	**Parallel Lecture 3: Home Enteral Feeding: Experience in Thailand** **Chairs:** Yuichiro Yamashiro (Japan) and Ruangvith Tantibhaedhyangkul (Thailand) **Speaker:** Nalinee Chongviriyaphan (Thailand)	**World Ballroom A**
	Parallel Lecture 4: Advance in Pediatric Endoscopic Intervention **Chairs:** Yen-Hsuan Ni (Taiwan) and Boosba Vivatvakin (Thailand) **Speaker:** Babu Ram Thapa (India)	**World Ballroom B**
09.20-10.00	**Parallel Lecture 5: Body Composition and Energy Expenditure: Measurement in Pediatric Practice** **Chairs:** Yuichiro Yamashiro (Japan) and Ruangvith Tantibhaedhyangkul (Thailand) **Speaker:** Nilesh M. Mehta (U.S.A.)	**World Ballroom A**
	Parallel Lecture 6: Autoimmune Liver Diseases **Chairs:** Yen-Hsuan Ni (Taiwan) and Boosba Vivatvakin (Thailand) **Speaker:** Winita Hardikar (Australia)	**World Ballroom B**
10.00-10.30	**Break**	
10.30-12.00	**Symposium 9: Complementary Feeding: Local Perspective and Global Challenges** **Chairs:** Ladda Mo-suwan (Thailand) and Sirinuch Chomtho (Thailand) S-9-1 **Asian Perspective of Complementary Feeding** Damayanti Rusli Sjarif (Indonesia) S-9-2 **Global Challenges in Complementary Feeding Practice** Mary Fewtrell (U.K.)	**World Ballroom A**
	Symposium 10: Viral Hepatitis **Chairs:** Mei-Hwei Chang (Taiwan) and Byung-Ho Choe (Korea) S-10-1 **HAV and HEV: What's New?** Yong Poovorawan (Thailand) S-10-2 **HBV: Preventive Strategies and Treatment** Yen-Hsuan Ni (Taiwan) S-10-3 **Changing Paradigm for Treatment of Childhood HCV Infection** Winita Hardikar (Australia)	**World Ballroom B**
12.00-12.20	**Poster Viewing**	

12.30-13.20	**Luncheon Symposium 5 (Sponsored by Nestle Nutrition)** **Role of Probiotics: Impact on Short- and Long-term Health** **Speaker:** Hania Szajewska (Poland) **Moderator:** Nopaorn Phavichitr (Thailand)	**World Ballroom AB**
13.20-14.10	**Luncheon Symposium 6 (Sponsored by Mead Johnson)**	**World Ballroom AB**
14.10-15.40	**Joint Symposium 3: Obesity Management: Make it Easy** **Chairs:** Hye Ran Yang (Korea) and Pornthep Tanpowpong (Thailand) JS-3-1 **NASH: an Often Overlooked Condition** Voranush Chongsrisawat (Thailand) JS-3-2 **Management of Childhood Obesity** Louise A. Baur (Australia) JS-3-3 **Weight Reduction Surgery** Suthep Udomsawaaengsup (Thailand)	**World Ballroom AB**
15.40-16.00	**Closing Remark**	**World Ballroom AB**

ORAL PRESENTATION Gastroenterology

October 25, 2018 / 10.30-11.40

OP-G-01: EFFECT OF GUT MICROBIOTA ON INTESTINAL EPITHELIAL TIGHT JUNCTION PERMEABILITY IN JUVENILE RATS WITH FOOD ALLERGY

Janyerkye Tulyeu, Japan

OP-G-02: GUT MICROBIOTA CHARACTERISTICS IN CHILDREN AFTER THE USE OF PROTON PUMP INHIBITOR

Lila Simakachorn, Thailand

OP-G-03: SCID/NOD MICE MODEL FOR 5-FU INDUCED INTESTINAL MUCOSITIS: SAFETY AND EFFECTS OF PROBIOTICS AS THERAPY

Chun-Yan Yeung, Taiwan

OP-G-04: ASSOCIATION BETWEEN FUNCTIONAL GASTROINTESTINAL DISORDERS AND ASTHMA IN ADOLESCENTS: A SCHOOL BASED STUDY

Manori Vijaya Kumari, Sri Lanka

OP-G-05: FECAL CALPROTECTIN IS A GOOD SURROGATE MARKER FOR DETECTING MUCOSAL HEALING IN PEDIATRIC CROHN'S DISEASE PATIENTS IN SUSTAINED CLINICAL REMISSION WITH BIOLOGICS

Ben Kang, Korea

OP-G-06: INFLIXIMAB TROUGH LEVELS ARE ASSOCIATED WITH TRANSMURAL HEALING DURING MAINTENANCE TREATMENT IN PEDIATRIC CROHN'S DISEASE PATIENTS

Ben Kang, Korea

ORAL PRESENTATION Hepatology

October 25, 2018 / 10.30-11.40

OP-L-01: HEALTH-RELATED QUALITY OF LIFE IN PEDIATRIC LIVER TRANSPLANT RECIPIENTS

Songpon Getsuwan, Thailand

OP-L-02: HIGH ANTIBODY RESPONSE TO STANDARD AND DOUBLE DOSE OF HEPATITIS B VACCINE IN CHILDREN AFTER LIVER TRANSPLANTATION: A RANDOMIZED CONTROLLED TRIAL STUDY

Palittiya Sintusek, Thailand

OP-L-03: URINARY COPPER/CREATININE RATIO A NEWER TOOL FOR DIAGNOSIS OF WILSON'S DISEASE IN CHILDREN

Fahmida Begum, Bangladesh

OP-L-04: A COMPARISON STUDY: FULMINANT WILSON'S DISEASE VS. ACUTE LIVER FAILURE IN CHILDREN

Yu Bin Kim, Korea

OP-L-05: PEDIATRIC LIVING DONOR LIVER TRANSPLANTATION: A SINGLE-CENTER EXPERIENCE

Seak Hee Oh, Korea

OP-L-06: ASSOCIATION BETWEEN VITAMIN D DEFICIENCY AND SUSPECTED NONALCOHOLIC FATTY LIVER DISEASE IN AN ADOLESCENT POPULATION

Young Hoon Cho, Korea

ORAL PRESENTATION Nutrition

October 25, 2018 / 10.30-11.40

OP-N-01: THE EFFECT OF A FOCUSED FACE-TO-FACE BREASTFEEDING COUNSELING INVOLVING THE FATHER ON EXCLUSIVE BREASTFEEDING AT 6 MONTHS: A RANDOMIZED CONTROLLED TRIAL

Joy Kimberly Ngo Militante, Philippines

OP-N-02: PEDIATRIC REFERENCE INTERVALS FOR PLASMA AMINO ACIDS IN A THAI POPULATION MEASURED BY LIQUID CHROMATOGRAPHY TANDEM MASS SPECTROMETRY

Jaraspong Uaariyapanichkul, Thailand

OP-N-03: CLINICAL RESPONSE TO TWO FORMULAS IN INFANTS WITH PARENT-REPORTED FEEDING INTOLERANCE: A MULTI-COUNTRY, DOUBLE-BLIND, RANDOMIZED TRIAL

Boosba Vivatvekin, Thailand

OP-N-04: NO ASSOCIATION BETWEEN BETA-LACTOGLOBULIN IN BREAST MILK AND COW MILK PROTEIN ALLERGY IN EXCLUSIVELY BREAST-FED INFANTS

Sudarat Supanitayanon, Thailand

OP-N-05: SPECIFIC SYNBIOTICS (SCGOS/LCFOS AND BIFIDOBACTERIUM BREVE M-16V) IMPROVES GUT RESILIENCE IN HEALTHY INFANTS

Shugui Wang, Singapore

OP-N-06: RELATIONSHIP BETWEEN GUT MICROBIOTA AND DIETARY FIBER INTAKE IN OBESE THAI CHILDREN

Puthita Saengpanit, Thailand

POSTER PRESENTATION Gastroenterology

PP-G-01: SEVERE CROHN'S DISEASE WITH IL10RA DEFICIENCY: SINGLE-CENTER EXPERIENCE
Seak Hee Oh, Korea
PP-G-02: DIAGNOSTIC ROLE OF NOD SIGNALING TEST VS. APOPTOSIS TEST IN XIAP-DEFICIENT PATIENTS: A PILOT STUDY
Seak Hee Oh, Korea
PP-G-03: VALUE OF FLUOROSCOPIC DEFECOGRAPHY IN CONSTIPATED CHILDREN WITH ABNORMAL COLON TRANSIT TIME TEST RESULTS
Kyung Min Kim, Korea
PP-G-04: GENETIC ANALYSIS OF CIPROFLOXACIN-RESISTANT NONTYPHOID SALMONELLA IN TAIWAN
Shiuh-Bin Fang, Taiwan
PP-G-05: AETIO-CLINICAL PROFILES OF PANCREATITIS IN CHILDREN: EXPERIENCE AT THE DEPARTMENT OF PAEDIATRIC GASTROENTEROLOGY, BSMMU
Khan Lamia Nahid, Bangladesh
PP-G-06: TWO CASES OF PROTEIN LOSING ENTEROPATHY CONSIDERED TO BE CAUSED BY INFECTIOUS GASTROENTERITIS DUE TO NEUTROPENIA MAEYAMA
Takatoshi, Japan
PP-G-07: MALE SEX AND BODY MASS INDEX ARE POSITIVELY ASSOCIATED WITH PERIANAL MODIFIERS IN PEDIATRIC CROHN'S DISEASE PATIENTS AT DIAGNOSIS
Ben Kang, Korea
PP-G-08: EPIDEMIOLOGY OF PEDIATRIC ACUTE PANCREATITIS IN TAIWAN: A NATIONWIDE POPULATION STUDY
Yu-Jyun Cheng, Taiwan
PP-G-09: USTEKINUMAB TREATMENT FOR PATIENTS WITH PEDIATRIC-ONSET CROHN'S DISEASE IN A TERTIARY CHILDREN'S HOSPITAL
Ichiro Takeuchi, Japan
PP-G-10: CAPSULE ENDOSCOPY IN PEDIATRIC OBSCURE GASTROINTESTINAL BLEEDING: CLINICAL OUTCOMES
Filippo Torroni, Italy
PP-G-11: MUCOSAL HEALING IS ASSOCIATED WITH TRANSMURAL HEALING AFTER 1-YEAR TREATMENT WITH ANTI-TNF AGENTS IN PEDIATRIC CROHN'S DISEASE PATIENTS
Ben Kang, Korea
PP-G-12: GASTRIC MOTILITY DISTURBANCES AMONG ASTHMATIC CHILDREN
Manori Vijaya Kumari, Sri Lanka
PP-G-13: VEGETABLES AND FRUITS FREQUENTLY CAUSE FOOD ALLERGY IN TAIWAN
Zheying Liu, Taiwan
PP-G-14: PARENTS' VIEWS, ATTITUDES AND RESPONSE TOWARDS ABDOMINAL PAIN IN CHILDREN WITH FUNCTIONAL ABDOMINAL PAIN DISORDERS (FAPDS): A SCHOOL BASED, CROSS SECTIONAL STUDY
Amaranath Karunanayake, Sri Lanka
PP-G-15: HEALTH CARE SEEKING BEHAVIOURS IN FUNCTIONAL ABDOMINAL PAIN DISORDERS (FAPDS); SCHOOL BASED, CROSS SECTIONAL STUDY
Amaranath Karunanayake, Sri Lanka
PP-G-16: IMPACT OF EARLY LIFE EVENTS (ELE) ON SEX-RELATED VULNERABILITY IN DEVELOPMENTS OF FUNCTIONAL ABDOMINAL PAIN DISORDERS (FAPDS) IN 5-12 AGE GROUP
Amaranath Karunanayake, Sri Lanka
PP-G-17: IDENTIFICATION OF A NOVEL SLC5A1 MUTATION IN RARE CASE OF CONGENITAL GLUCOSE-GALACTOSE MALABSORPTION
Muhammad Almas Hashmi, Pakistan
PP-G-18: CLINICAL CHARACTERISTICS AND DISEASE BEHAVIOUR OF PAEDIATRIC INFLAMMATORY BOWEL DISEASE IN SOUTHEAST ASIAN CHILDREN
James Guoxian Huang, Singapore

PP-G-19: CHYLOUS DISORDERS: A RARE ENTITYIN CHILDREN
Huma Arshad Cheema, Pakistan
PP-G-20: TECHNICAL FEASIBILITY OF ENDOSCOPIC BALLOON DILATATION FOR POSTOPERATIVE ESOPHAGEAL STRICTURE IN INFANT AND CHILDREN WITH CONGENITAL ESOPHAGEAL ATRESIA
Yeoun Joo Lee, Korea
PP-G-21: UPPER GASTROINTESTINAL ENDOSCOPIES IN CHILDREN – OUR EXPERIENCE IN TERTIARY CARE HOSPITALS, KARACHI, PAKISTAN
Iqbal Ahmad Memon, Pakistan
PP-G-22: INTESTINAL TUBERCULOSIS, A REAL DIAGNOSTIC CHALLENGE: A CASE SERIES
Shu Ching EE, Malaysia
PP-G-23: INFLUENCE OF VACCINATION IN DEVELOPING HENOCH-SCHÖNLEIN PURPURA IN CHILDREN
Eun Jae Chang, Korea
PP-G-24: RISK FACTORS FOR THE OCCURRENCE OF PROLONGED DIARRHEA IN CHILDREN LESS THAN TWO YEARS-OLD WITH ACUTE DIARRHEA: DEVELOPING AND TESTING THE SCORING SYSTEM
Dedy Rahmat, Indonesia
PP-G-25: DIEULAFOY'S LESION OF THE HEPATIC FLEXURE IN A 4-YEAR OLD BOY, A RARE CONDITION: CASE REPORT
Busara Charoenwat, Thailand
PP-G-26: GASTRIC AND JEJUNAL TRICHOBEZOAR CAUSING BILIOUS VOMITING IN 8 YEARS OLD GIRL
Kittiya Setrkraising, Thailand
PP-G-27: EOSINOPHILIC GASTROENTERITIS AS A CAUSE OF NON-HELICOBACTER PYLORI, NON-GASTROTOXIC DRUGS ULCERS IN CHILDREN
Hye Ran Yang, Korea
PP-G-28: ASSOCIATION BETWEEN VITAMIN D DEFICIENCY AND FUNCTIONAL GASTROINTESTINAL DISORDERS IN CHILDREN
Eell Ryoo, Korea
PP-G-29: CLINICAL CHARACTERISTICS OF OMENTAL INFARCTION IN CHILDREN
Jee-Hyoung Yoo, Korea
PP-G-30: ENDOSCOPIC FINDING AND TREATMENT OUTCOME IN CHILDREN WITH HELICOBACTER PYLORI INFECTION
Chayakamon Niyasom, Thailand
PP-G-31: STRONGYLOIDES ENTEROCOLITIS MIMICKING INFLAMMATORY BOWEL DISEASE (IBD)
Choy Chen Kam, Malaysia
PP-G-32: TWO XIAP DEFICIENCY CASES IN TWIN
SoonChul Kim, Korea
PP-G-33: THE CHANGE OF GASTRIC MUCOSAL CANCER-RELATED GENE EXPRESSION BEFORE AND AFTER THE ERADICATION THERAPY FOR PEDIATRIC HELICOBACTER PYLORI INFECTION
Nobuyasu Arai, Japan
PP-G-34: A RARE CASE OF PERSISTENT HYPOALBMINEMIA IN THE PAEDIATRIC POPULATION: A CASE SERIES
Abdul Manan Muhammad Muizz, Malaysia
PP-G-35: PREDICTORS OF POUCHITIS AFTER ILEAL POUCH-ANAL ANASTOMOSIS FOR ULCERATIVE COLITIS IN PEDIATRIC PATIENTS
Mikihiro Inoue, Japan
PP-G-36: A BOY WITH DUODENOCOLIC FISTULA MIMICKING FUNCTIONAL GASTROINTESTINAL DISORDER
Koji Yokoyama, Japan
PP-G-37: ASSOCIATION OF IL23R VARIANTS WITH CROHN'S DISEASE IN KOREAN CHILDREN
Jeana Hong, Korea

PP-G-38: ANALYSIS OF THE GUT MICROBIOTA BY ADMINISTRATED PROBIOTICS IN A 5-FLUOROURACIL TREATED MOUSE MODEL
Chuen-Bin Jiang, Taiwan
PP-G-39: A ONE-YEAR-OLD BOY WITH ACUTE HEMORRHAGIC GASTRIC ULCERS DUE TO TRANSIENT INFECTION OF HELICOBACTER PYLORI
Tomoyuki Imagawa, Japan
PP-G-40: ANALYSIS OF RISK FACTORS FOR ANEMIA IN KOREAN ADOLESCENTS
Tae Hyeong Kim, Korea
PP-G-41: LUPUS ENTERITIS, AN UNCOMMON INITIAL PRESENTATION OF SYSTEMIC LUPUS ERYTHEMATOSUS: A CASE SERIES
Choy Chen Kam, Malaysia
PP-G-42: TRANSIENT ANTIBODY TO INFLIXIMAB IN PEDIATRIC INFLAMMATORY BOWEL DISEASE
Soyoon Choi, Korea
PP-G-43: PARENTAL CONCERN AND ASSOCIATED FACTORS OF FUNCTIONAL GASTROINTESTINAL SYMPTOMS IN INFANTS YOUNGER THAN 6 MONTHS OF AGE
Nopaorn Phavichitr, Thailand
PP-G-44: A NOVEL MUTATION OF INTERLEUKIN-10 RECEPTOR ASSOCIATED WITH VERY EARLY ONSET INFLAMMATORY BOWEL DISEASE: A CASE REPORT
Atchariya Chanpong, Thailand
PP-G-45: HIGH ENDOSCOPIC RELAPSE RATE AND POOR MEDICATION ADHERENCE IN KOREAN CHILDREN WITH ULCERATIVE COLITIS
Jae Hong Park, Korea
PP-G-46: FECAL MICROBIOTA ANALYSIS OF HEALTHY KOREAN NEWBORNS: PROFILES BY DELIVERY MODE AND FEEDING TYPE
Mijin Kim, Korea
PP-G-47: VARIANTS OF THE CFTR GENE IN JAPANESE PATIENTS WITH CHILDHOOD PANCREATITIS
Manami Iso, Japan
PP-G-48: ESOPHAGEAL ACHALASIA IN A CHILD WITH NEUROFIBROMATOSIS TYPE 1
Chomchanat Tubjaroen, Thailand
PP-G-49: ENDOSCOPIC BALLOON DILATATION IN A CHILD WITH PYLORIC STRICTURE FROM CORROSIVE AGENT
Patcharin Amornvipas, Thailand
PP-G-50: THE TRANSITION OF PEDIATRIC INFLAMMATORY BOWEL DISEASE
Masamichi Sato, Japan
PP-G-51: THE CHANGE OF GUT MICROBIOTA AND HUMORAL IMMUNITY IN SMALL BOWEL TRANSPLANT PATIENTS
Pi Feng Chang, Taiwan
PP-G-52: ANTI-CAGA IGA ANTIBODY POSITIVITY PREDICTS MORE PRECISELY ACTIVE MUCOSAL INFLAMMATION THAN ANTI-CAGA IGG ANTIBODY POSITIVITY IN CHILDREN
Hee-Shang Youn, Korea
PP-G-53: ESOPHAGEAL SENTINEL POLYP IN A CHILD
Jong-Myeon Hong, Korea
PP-G-54: BMPR1A VARIANT AS A CANDIDATE GENE PREDISPOSED TO JUVENILE POLYPOSIS SYNDROME ASSOCIATED CONGENITAL HEART DEFECTS OF FAMILIAL AGGREGATION
Akio Ogawa, Japan
PP-G-55: AN ALBINISM PEDIATRIC PATIENT ASSOCIATED WITH IDIOPATHIC COLONIC VARICES TREATMENT WITH PROPRANOLOL
An-Chyi Chen, Taiwan
PP-G-56: USE OF ALARM SYMPTOMS TO DISCRIMINATE ABDOMINAL PAIN-RELATED TO ORGANIC GI DISEASES FROM FUNCTIONAL GASTROINTESTINAL DISORDERS
Punnapatch Piriyanon, Thailand
PP-G-57: ENTERIC DUPLICATION CYST WITH TORSION
Jun Nong Chen, Taiwan

PP-G-58: ANAPLASTIC LARGE CELL LYMPHOMA OF THE DUODENUM IN A TEENAGE GIRL
Hansa Sriphongphankul, Thailand
PP-G-59: FECAL MICROBIOTA TRANSPLANTATION AND EARLY MICROBIAL CHANGES IN PEDIATRIC ULCERATIVE COLITIS PATIENTS
Sowon Park, Korea
PP-G-60: JUVENILE POLYPS: A CASE SERIES OF 30 PEDIATRIC PATIENTS
Ayako Suda, Japan
PP-G-61: SURVEY ON MANAGEMENT OF ACUTE GASTROENTERITIS IN CHILDREN WITH THE KOREAN SOCIETY OF PEDIATRIC GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION
Ji-Hyun Seo, Korea
PP-G-62: VALIDITY AND RELIABILITY OF THE THAI VERSION OF THE ROME IV QUESTIONNAIRES FOR PEDIATRIC FUNCTIONAL GASTROINTESTINAL DISORDERS
Sakonkarn - Siajunboriboon, Thailand
PP-G-63: GASTROINTESTINAL MANIFESTATIONS AND CLINICAL OUTCOME OF HENOCH-SCHÖNLEIN PURPURA IN PEDIATRIC PATIENTS IN KING CHULALONGKORN MEMORIAL HOSPITAL
Varisa Piriyakitphaiboon, Thailand
PP-G-64: NATIONWIDE POPULATION-BASED EPIDEMIOLOGIC STUDY ON CHILDHOOD INTUSSUSCEPTION IN SOUTH KOREA
Hye Ran Yang, Korea
PP-G-65: ABDOMINAL PAIN: AN OVERLOOKED SYMPTOMS OF TESTICULAR TORSION- 10 YEARS EXPERIENCE OF DITMANSON MEDICAL FOUNDATION CHIA-YI CHRISTIAN HOSPITAL
Jen-Shyang Lin, Taiwan
PP-G-66: WHAT IS THE FIRST BIOLOGICS OF CHOICE IN PEDIACTIC CROHN'S DZ?: A SYSTEMATIC REVIEW
Yoon Lee, Korea
PP-G-67: PATIENTS' CHARACTERISTICS AND ANESTHETIC MANAGEMENT OF PEDIATRIC GASTROINTESTINAL ENDOSCOPIC PROCEDURES
Somchai Amornyotin, Thailand
PP-G-68: IMPAIRED GASTRIC MOTILITY AMONG CHILDREN WITH ABDOMINAL PAIN PREDOMINANT FUNCTIONAL GASTROINTESTINAL DISORDERS (AP-FGIDs)
Manori Vijaya Kumari, Sri Lanka

POSTER PRESENTATION Hepatology

PP-L-01: ALANINE AMINOTRANSFERASE CUTOFF VALUES AND PREVLAENCE OF NONALCOHOLIC FATTY LIVER DISEASE IN TAIWANESE CHILDREN
Yu-Cheng Lin, Taiwan
PP-L-02: A CASE OF GLYCOGEN STORAGE DISEASE TYPE IV WITH LAFORA BODY IN HEPATOCYTE
Ayano Inui, Japan
PP-L-03: HEPATITIS B VIRAL INFECTION IN CHILDREN: OUR 40-YEAR EXPERIENCE IN JAPAN
Fujisawa Tomoo, Japan
PP-L-04: HEREDITARY PANCREATITIS IN CHILDREN
Huma Arshad Cheema, Pakistan
PP-L-05: PEDIATRIC CAROLI'S DISEASE: CLINICAL PRESENTATION, MANAGEMENT AND OUTCOME
Nadia Salman, Pakistan
PP-L-06: EFFECTS OF SEASONAL AND TEMPERATURE VARIATIONS ON VARICEAL BLEEDING IN KOREAN CHILDREN
Sowon Park, Korea
PP-L-07: MOLECULAR DIAGNOSIS OF GLYCOGEN STORAGE DISEASE TYPE VI AND IX USING GSD GENE PANEL
Tae Hyeong Kim, Korea
PP-L-08: PROFILES OF NEONATAL CHOLESTASIS IN BANGLADESHI CHILDREN
Md Rukunuzzaman, Bangladesh
PP-L-09: SUCCESSFUL TREATMENT OF NEONATAL HEMOCHROMATOSIS WITH EXCHANGE TRANSFUSION AND INTRAVENOUS IMMUNOGLOBULIN
Thitima Ngoenmak, Thailand
PP-L-10: CONGENITAL HEPATIC FIBROSIS WITH AUTOSOMAL RECESSIVE POLYCYSTIC KIDNEY DISEASE: A CASE REPORT
Busara Charoenwat, Thailand
PP-L-11: NON-ENDOSCOPIC PREDICTORS OF ESOPHAGEAL VARICES IN CHILDREN WITH CHRONIC LIVER DISEASE AND THEIR UTILITY IN RESOURCE CONSTRAINTS COUNTRIES
Rubaiyat Alam, Bangladesh
PP-L-12: A CASE OF DEVELOPING SYSTEMIC LUPUS ERYTHEMATOSUS DURING TREATMENT OF DE NOVO AUTOIMMUNE HEPATITIS AFTER LIVER TRANSPLANTATION
Kenji Fukushima, Japan
PP-L-13: STUDY OF ASCITIC FLUID IN CHILDREN WITH CHRONIC LIVER DISEASE IN DIFFERENT VARIANTS OF PERITONITIS
Kamal Hossen, Bangladesh
PP-L-14: VALUE OF URINARY COPPER ESTIMATION BEFORE & AFTER PENICILLAMINE CHALLENGE IN THE DIAGNOSIS OF WILSON'S DISEASE IN CHILDREN
Subarna Rani Das, Bangladesh
PP-L-15: OMEGA-3 POLYUNSATURATED FATTY ACIDS IMPROVES CHOLESTASIS IN CHOLESTATIC LIVER DISEASES IN CHILDREN
Aram Kwon, Korea
PP-L-16: BILE PLUG SYNDROME MIMICKING CHOLEDOCHAL CYST
Soon Chul Kim, Korea
PP-L-17: CLINICAL AND GENETIC FEATURES OF NEONATAL DUBIN JOHNSON SYNDROME IN KOREA
Kwang Yeon Kim, Korea
PP-L-18: Natural course of bacterial sepsis-induced cholestasis in neonates: A retrospective longitudinal study
Jirachart Phrommas, Thailand
PP-L-19: POST-TRANSPLANT LYMPHOPROLIFERATIVE DISORDER IN FIVE PEDIATRIC LIVER TRANSPLANTATION RECIPIENTS
Lila Simakachorn, Thailand

PP-L-20: GLYCOGENIC HEPATOPATHY: AN UNDERDIAGNOSED CAUSE OF HEPATOMEGALY
Pontipa Engkakul, Thailand
PP-L-21: ETIOLOGY OF CHOLESTATIC JAUNDICE DURING INFANCY IN THAMMASAT UNIVERSITY HOSPITAL
Boonyanurak Sihaklang, Thailand
PP-L-22: PREVALENCE AND LONG-TERM OUTCOME OF DE NOVO HEPATITIS B INFECTION IN PEDIATRIC LIVER TRANSPLANT RECIPIENTS
Chatmanee Lertudomphonwanit, Thailand
PP-L-23: TWO CHILDREN WITH SEVERE JAUNDICE THAT COULD AVOID LIVER FAILURE BY STEROID PULSE THERAPY
Kyoko Fujitani, Japan
PP-L-24: ETIOLOGY OF HEPATIC CHOLESTASIS IN CHILDREN – A SIGLE CENTER STUDY
Miho Fukui, Japan
PP-L-25: AN UNUSUAL PRESENTATION OF PEDIATRIC ACUTE MYELOID LEUKEMIA (AML) WITH CHOLESTASIS JAUNDICE
Chomchanat Tubjaroen, Thailand
PP-L-26: ETIOLOGY, COMPLICATIONS AND OUTCOME IN PEDIATRIC ACUTE PANCREATITIS
Anjum Saeed, Pakistan
PP-L-27: HEPATOCELLULAR CARCINOMA AND ACUTE-ON-CHRONIC LIVER FAILURE IN AN INFANT WITH NICCD
Dahye Kim, Korea
PP-L-28: SUBTLE MANIFESTATION OF PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS TYPE 3: CASE REPORT
Novitria Dwinanda, Indonesia
PP-L-29: RATIO OF ASPARTATE AMINOTRANSFERASE TO ALANINE AMINOTRANSFERASE AND ALKALINE PHOSPHATASE TO TOTAL BILIRUBIN IN WILSONIAN ACUTE LIVER FAILURE IN CHILDREN
Afsana Yasmin, Bangladesh
PP-L-30: A PROGNOSTIC SCORE WITH SERIAL LABORATORY VALUES IN PEDIATRIC ACUTE LIVER FAILURE
Jae Sung Ko, Korea
PP-L-31: USEFULNESS OF SERUM MAC-2 BINDING PROTEIN GLYCOSYLATION ISOMER IN CHILDREN WITH PRIMARY SCLEROSING CHOLANGITIS
Shuichiro Umetsu, Japan

POSTER PRESENTATION Nutrition

PP-N-01: COMPARISON OF CRYING AND FUSSING PATTERNS DOCUMENTED BY AUTOMATED WEARABLE VERSUS PARENTAL DIARIES
Puspita Roy, Singapore
PP-N-02: EFFICACY AND SAFETY OF SUCCUS ENTERICUS REINFUSION INTO THE DISTAL SMALL BOWEL OF EXTREMELY OR VERY LOW BIRTH WEIGHT INFANTS WITH ENTEROSTOMY
Kiyoaki Yabe, Japan
PP-N-03: SPHINGOMYELIN IN BRAIN AND COGNITIVE DEVELOPMENT – PRELIMINARY DATA
Jonas Hauser, Switzerland
PP-N-04: NUTRITION AND HEALTH CHALLENGES FOR INFANTS AND CHILDREN IN THAILAND
Jacques Bindels, Netherlands
PP-N-05: THE RELATIONSHIP BETWEEN CHILDREN'S EATING BEHAVIOR AND DIETARY INTAKE IN OBESE THAI CHILDREN
Ekkarit Panichsillaphakit, Thailand
PP-N-06: HIGHER DAILY IRON INTAKE FROM IRON FORTIFIED COMPLEMENTARY FOOD COMPARED TO HOME-BASED COMPLEMENTARY FOOD IN 9-12 MONTH-OLD BABIES
Kartika Sari Widuri, Indonesia
PP-N-07: IRON PROFILE OF 9-12 MONTH-OLD BABIES: CORRELATION WITH NUTRITIONAL STATUS, ENHANCERS AND INHIBITORS OF IRON ABSORPTION IN DAILY DIETARY INTAKE
Kartika Sari Widuri, Indonesia
PP-N-08: UNDERSTANDING MALNUTRITION IN ASMAT, PAPUA, INDONESIA: AN OBSERVATION SUPPORTED WITH CROSS-SECTIONAL STUDY
Cut Nurul Hafifah, Indonesia
PP-N-09: CHOLINE -RELATED METABOLITES INFLUENCED BY FEEDING PATTERNS IN PRETERM AND TERM INFANTS
Hiromichi Shoji, Japan
PP-N-10: CORRELATIONS BETWEEN FEEDING TYPE AND BLOOD IONIZED MAGNESIUM LEVELS IN JAPANESE PRETERM INFANTS
Akiko Watanabe, Japan
PP-N-11: HANDGRIP STRENGTH AMONG KOREAN ADOLESCENTS WITH METABOLIC SYNDROME IN 2014-2015
Yunkoo Kang, Korea
PP-N-12: THE ENERGY AND NUTRIENT CONTRIBUTION OF GROWING UP MILK IN 12-36 MONTHS OLD CHILDREN IN CHINA AND MEXICO
Dantong Wang, Switzerland
PP-N-13: GASTRIC DIGESTION CHARACTERISTICS OF FORMULA MADE FROM GOAT AND COW MILK
Elizabeth Carpenter, New Zealand
PP-N-14: IMPACT OF PREMATURITY ON PARENTAL PERCEPTION OF CHILDHOOD FEEDING BEHAVIOURS
Marion Margaret Aw, Singapore
PP-N-15: GOAT MILK FORMULA WITHOUT ADDED WHEY
Colin Prosser, New Zealand
PP-N-16: GOAT AND COW MILK PRODUCE DIFFERENT FEEDING RESPONSES AND APPETITE-RELATED NEURAL GENE EXPRESSION IN LABORATORY ANIMAL MODELS
Colin Prosse, New Zealand
PP-N-17: OUR EXPERIENCE WITH COMISS QUESTIONNAIRE IN GP
Katerina Bajerova, Czech Republic
PP-N-18: NUTRITIONAL STATUS AND MICRONUTRIENTS DEFICIENCIES IN NON-ORGANIC FAILURE TO THRIVE PATIENTS
Junho Hong, Korea
PP-N-19: KNOWLEDGE, ATTITUDE, AND PRACTICE OF SCURVY AMONG CARE-GIVERS AT QUEEN SIRIKIT NATIONAL INSTITUTE OF CHILD HEALTH
Saovanit Jitthai, Thailand

PP-N-20: HOSPITAL CHARGE IN OBESE PATIENTS ADMITTED AT QUEEN SIRIKIT NATIONAL INSTITUTE OF CHILD HEALTH
Kanokwan On-im, Thailand
PP-N-21: DIETARY INTAKE AMONG SUBSET OF CHILDREN AGED 2 – 3 YEARS IN JAKARTA, INDONESIA
Anova Fatimah, Indonesia
PP-N-22: STOOL PATTERN AMONG SUBSET OF CHILDREN AGED 2 – 3 YEARS IN JAKARTA, INDONESIA
Anova Fatimah, Indonesia
PP-N-23: PEDIATRICIAN-NURSE INTERRATER AGREEMENT OF STRONGKIDS NUTRITIONAL SCREENING TOOL IN CIPTO MANGUNKUSUMO HOSPITAL, INDONESIA
Klara Yuliarti, Indonesia
PP-N-24: VALIDITY OF STRONGKIDS NUTRITIONAL SCREENING TOOL FOR PEDIATRIC IN-PATIENTS AT SIRIRAJ HOSPITAL, THAILAND
Supawan Kunnangja, Thailand
PP-N-25: RE-SCORING METHOD OF SUBJECTIVE GLOBAL NUTRITION ASSESSMENT (SGNA) DETERMINING PEDIATRIC MALNUTRITION CLASSIFICATION IN INDONESIA'S TERTIARY LEVEL HOSPITAL (EDIT)
Fadhila Ika Sani, Indonesia
PP-N-26: HOSPITAL MALNUTRITION AND EVALUATION OF PEDIATRIC NUTRITION CARE IN PEDIATRIC DEPARTMENT, DR. HASAN SADIKIN HOSPITAL, BANDUNG, FEBRUARY – MARCH 2016
Tisnasari Hafsah, Indonesia
PP-N-27: A THEOBROMINE-CONTAINING DIET STIMULATES CENTRAL CREB/BDNF PATHWAYS AND MOTOR LEARNING IN YOUNG MICE
Naotoshi Sugimoto, Japan
PP-N-28: EFFICACY ORAL GLUTAMINE TO PREVENT ORAL MUCOSITIS AND REDUCE HOSPITAL COSTS DURING CHEMOTHERAPY IN CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA
Nur Aisiyah Widjaja, Indonesia

Speakers' Abstracts

KA-1

NEW INSIGHTS IN PEDIATRIC FUNCTIONAL GASTRO-INTESTINAL DISORDERS

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Although functional gastrointestinal disorders (FGID) such as regurgitation, infantile colic (IC) and constipation in infants are considered to be benign conditions, they are often frustrating and distressing parents and caregivers. These functional GI disorders occur in up to 50% of infants, each accounting for 20 to 25%. Many infants present with a combination of GI symptoms. Functional GI symptoms are considered to be self-limiting transient conditions, suggesting that time is the cure. Limited data suggest that functional GI symptoms such as IC may be associated with recurrent abdominal pain, migraine, allergic disorders, sleep disturbances, and maladaptive behaviour such as aggressiveness later in life.
The Rome IV consensus proposes diagnostic criteria for these symptoms but not for their management. Functional GI symptoms are not a reason to stop breastfeeding. At least one formula change occurs in almost half of all infants because of GI symptoms during their first six months of life. The frequency of changing formula reflects the anxiety of parents, the search for action by the doctor. The natural course of these symptoms is one of spontaneous disappearance.

Children with cows' milk allergy (CMA) can present with one or a combination of the above symptoms and the clinical discrimination between functional GI disorders and CMA may be challenging. Symptoms of CMA are non-specific. Therefore, it is more appropriate to designate these symptoms as related to cow's milk. As it is difficult for primary health care providers to diagnose CMA, the preferred terminology is "cow's milk related symptom" as this does not differentiate between FGID and CMA as cause of the symptoms. Because of the long-term impact of the diagnosis of CMA on later health outcome, such as an increased risk for other atopic manifestations or disease, this diagnosis should only be made by specialists. Asthma, allergic rhinitis and eczema are more common in children with a history of CMA than would be expected in the general population. While the self-reported lifetime prevalence of CMA is 6.0% (5.7-6.4), the food-challenge-defined prevalence is only 0.6% (0.5-0.8).

An improved recognition and management common functional GI disorders and cow milk related symptoms in infants would be welcomed by parents and infants. Practical recommendations and algorithms have been proposed but these may need to be adapted to local possibilities and individual patient situations. By providing complete and updated parental education, reassurance and nutritional advice, healthcare professionals can optimise the management of FGIDs and related symptoms and reduce the inappropriate use of medication or dietary interventions.

KA-2

THE IMPACT OF EARLY LIFE NUTRITION ON GOOD HEALTH

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A convincing body of scientific evidence demonstrates that early nutrition and lifestyle factors acting during sensitive time periods of developmental plasticity in pregnancy, infancy and early childhood have long-lasting programming effects on later health, performance and disease risks (1-4). Early growth characteristics are closely linked with later health outcomes including physical and cognitive performance, and with disease risks. Evidence is particularly convincing for early growth modulation of later risks of obesity, adiposity, and associated non-communicable diseases such as type 2 diabetes, hypertension, cardiovascular diseases, and asthma. Infant growth is modulated by genetic, epigenetic, inflammatory, endocrine, nutritional and metabolic factors. Improved nutrition offers major preventive opportunities. We aim to explore metabolic modulators of growth and health outcomes by applying quantitative targeted metabolomic profiling of small molecules <1.5 KDa in biological samples. The use of high-performance liquid chromatography coupled to triple quadrupole mass spectrometry (LC-MS/MS) enables us to quantify hundreds of molecules in small samples, e.g. 50 µl plasma. The pattern of determined metabolites, that includes substrates, intermediates and products of biological processes, can provide biomarkers of exposures and outcomes, and it can allow insights into underlying metabolic mechanisms. For example, we analyzed metabolic predictors of infant birthweight in venous cord blood samples from 753 infants participating in the German birth cohort study LISAplus (5). Some 581 metabolites were measured of which 209 passed our quality control criteria. Birth weight was positively associated with specific lysophosphatidylcholines and glycerophospholipid fatty acids and inversely correlated to omega-3 non-esterified fatty acids (NEFA). Interestingly, there was a clear sex effect, with closer associations of several metabolites to birthweight in newborn girls, as compared to boys. Several metabolites, particularly NEFA species, also predicted weight gain from birth to 6 months and to BMI at age 15 years, but these associations did not remain statistically significant with the available sample size after correction for multiple testing (5). In a large double-blind randomized trial that enrolled 1678 term infants after birth, we demonstrated causal effects of infant substrate supply on short- and long-term growth by comparing formula feeding in the first year of life either with conventionally high protein or with reduced protein contents. A reduced protein supply, more similar to the intake with breastfeeding, prevented excessive early weight gain (6) and markedly reduced obesity at school age (adjusted relative obesity risk 0.35, 95%CI: 0.15-0.82, P=0.016) (7). Metabolomic analysis showed that the conventionally high protein supply induced elevated infant plasma concentrations of indispensable amino acids, particularly of the branched-chain amino acids (BCAA) which may induce insulin secretion, β-cell dysfunction, and fat deposition (8). BCAA are also thought to upregulate the mTOR (mammalian target of rapamycin) pathway, a possible trigger for promoting protein and fat synthesis and weight gain. The infant's capacity of BCAA breakdown via branched chain-α-ketoacid dehydrogenase appears to be exceeded with high plasma amino acid concentrations induced by conventionally high protein intakes (8). We consider it prudent not to provide

protein to infants in amounts which exceed their capacity for metabolizing the supply. Moreover, the conventionally high protein supply suppressed the initiation step of fatty acid beta-oxidation (8), which may explain enhanced body fat deposition and increased adiposity after higher protein intakes in infancy (9). Among the amino acids generally considered dispensable, tyrosine plasma concentration was markedly elevated. We have shown that high plasma tyrosine is associated with elevated insulin concentrations and insulin resistance in obese children before and after weight loss (10). In our randomized intervention trial, a high protein supply to infants did induce an elevated secretion of the two growth factors insulin and IGF-1 (11). In a path model analysis of data from another randomized infant feeding trial comparing formulae with different protein quality, we found a stronger response of insulin than of IGF-1 to plasma amino acids, and very different relative effects of individual amino acids (12). This may be one of several mechanisms by which the protein quality provided to infants significantly modifies the energetic efficiency of infant formulae for weight and length gain (13). Together, the available data show that plasma metabolites responding to nutritional supplies are related to birthweight, postnatal weight gain and later body weight and obesity risk. Better insights into the metabolic regulation of early weight gain can offer opportunities for more targeted and optimized health prevention though nutritional interventions that promote physiological growth and reduce the risk of later obesity, adiposity and related NCD.

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KA-3

PEDIATRIC HEPATOLOGY IN ASIA – THE PAST, PRESENT AND FUTURE

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Pediatric Hepatology is a relatively new field in Pediatric Digestive Science in the world. It works for the health and diseases of the hepatobiliary system in children. Before the formal development of Pediatric Hepatology, due to the clinical needs, there already had some studies in Asia for prolonged obstructive jaundice in infancy, metabolic/inherited /toxic liver disorders in children, and viral hepatitis, etc.

There has been increasing need of pediatricians with focused specialized knowledge and skills to work for the hepatobiliary system and diseases in children, which has allowed the establishment of Pediatric Hepatology in Asia. The development of this focused clinical, research, and educational programs improves the health care of hepatobiliary diseases in children.

Through clinical and basic researches, and the advancement of imaging, laboratory and genetic diagnostic technology, the diagnosis and management of hepatobiliary diseases in children has improved with time. The Asian pediatric hepatologists, not only worked as world pioneers to improve the diagnosis of previously unknown pediatric liver diseases, but also contributed to the prevention, screening, and early intervention of liver diseases in children. In cooperation with multi-discipline team members, pediatric liver transplantation has developed and advanced actively in Asia.

The past and present contribution of Asian clinicians and researchers lead to the prosperous development of pediatric hepatology. The future efforts in research and education program in pediatric hepatology, with newly developed preventive and screening strategies, therapeutic agents and technology, will further upgrade the health of children with hepatobiliary diseases in Asia and in the world.

PN-2

NUTRITION AND ADVANCING BONE HEALTH

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Osteoporosis is a major and increasing cause of morbidity and mortality. Osteoporosis risk is influenced by the peak bone mass (PBM) reached at skeletal maturity, so maximizing PBM is viewed as a potential target for primary prevention. Bone mass increases forty-fold from birth to adulthood, with 40-60% of accretion during adolescence. Although PBM is to a large extent (70-80%) genetically determined, modifiable factors during fetal life, infancy and childhood are also important, including nutrition. Available data are consistent with an association between growth and later skeletal size, and suggest that optimizing growth may increase PBM. Reported effects of infant nutrition on later bone health are inconsistent. Overall, there is good quality evidence for positive effects of childhood calcium intake on bone mass, with some evidence for a threshold effect; however, randomized trials of calcium supplementation generally show transient effects that are not sustained. Evidence for effects of other dietary components or patterns is weaker. Trials of vitamin D supplementation suggest no overall effect on bone mass, although beneficial effects may be seen in subjects with low baseline concentrations, or certain vitamin D receptor genotypes. By contrast, evidence is consistent in showing beneficial effects of exercise and physical activity on bone mass and possibly also bone structure; with greater effects in pre-pubertal children and in those with higher calcium intakes.

Although further research is required, especially in populations with habitually low calcium intakes, there is evidence that osteoporosis may be at least partly preventable by lifestyle interventions designed to optimize linear growth, nutrition and activity during childhood. Such initiatives are important given generally sub-optimal intakes of calcium and vitamin D, and sedentary lifestyles, amongst children in many settings.

JS-1-1

ROLE OF GUT MICROBIOTA ON GOOD HEALTH

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Our gut microbiota is important for many biological functions in the body, including intestinal development, barrier integrity and function, metabolism, the immune system, and central nervous system. The colonization of fetal gut begins in utero from the swallowing of amniotic fluid, as shown in our study that found in meconium. A healthy term vaginally delivered newborn ingests maternal vaginal and colonic (fecal) microbiome, on passing through the birth canal.

The early development and establishment of the gut microbiota during infancy is influenced by numerous factors of which mode of delivery, antibiotics and feeding remain the three foremost factors that play a prominent role in shaping the microbiota.

The intestinal composition of breastfed infants has been known to be predominant by Bifidobacteria strains due to the bifidogenic effect to which human breast milk oligosaccharides (HMOS) greally contribute. HMOS and their metabolites also affect health-promoting microorganisms such as Lactobacillus, and clostridium species.

Babies born via Cesarean (C)-section acquire a heavy inoculum of bacteria from the maternal skin and the surrounding hospital environment. Such differences in the gut microbiota, dysbiosis, from those of vaginally born have been found to present even in young adults in our study. It is now known that C-section delivery is a risk factor for non-communicable diseases (NCDs) including obesity in the offspring.

Pivotal to brain development and function is an intact blood-brain barrier (BBB), which act as a gate keeper to control the passage of molecules and nutrients between the circulatory system and the brain parenchyma, and it begins to develop during the early period of fetus. And it is now known that gut microbiota affect BBB in both the fetal and adult brain.

JS-1-2

UPDATE ON CLINICAL PRACTICE GUIDELINES FOR PROBIOTIC USE

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A balanced gut microbiota is crucial for health. Conversely, an altered gut microbiota composition and/or activity (dysbiosis) contributes to diseases. A low diversity of gut microbiota may be considered a marker of dysbiosis. At least, in part, dysbiosis contributes to the development and progression of diseases such as allergy, obesity, irritable bowel syndrome, necrotizing enterocolitis, type 1 diabetes, and autism (in addition to other factors such as genes or environmental factors). Targeting gut microbiota by using probiotics and/or prebiotics has the potential to prevent or even treat diseases. Probiotics are live microorganisms that, when administered in adequate amounts, confer a health benefit on the host. The most commonly used probiotics are Bifidobacterium and Lactobacillus species, and a yeast, Saccharomyces boulardii. Possible main mechanisms of probiotic action include: production of metabolites such as short-chain fatty acids, the majority of which are acetate, propionate, and butyrate; modulation of the composition and/or activity of the host microbiota (e.g., through colonization); enhancement of epithelial barrier integrity; modulation of the host immune system; adherence to the mucosa and epithelium, with inhibition of pathogen adhesion and/or growth; production of enzymes (e.g., lactase to promote lactose digestion); production of bacteriocins. The best documented is the efficacy of certain probiotics for the treatment of acute gastroenteritis, for the prevention of antibiotic-associated diarrhea and nosocomial diarrhea, and for the prevention of necrotizing enterocolitis; however, in the latter condition it is not clear which probiotic(s) should be used. There is some evidence to support the use of certain probiotics to prevent or treat other conditions, such as infantile colic and atopic eczema. Not all probiotics are equal. The clinical effects and safety of any single probiotic or combination of probiotics should not be extrapolated to other probiotics. It is reasonable to use the regimens proven to be effective in well-designed and executed randomized controlled trials in a given population. The use of products with no documented health benefits and should be discouraged. As it happens that what is on the label is not always in the product, and the quality of probiotic products vary considerably between the product category and geographical regions, probiotic products should have a more stringent quality control process.

JS-1-3

PREBIOTICS FOR HEALTH & CLINICAL USES: EVIDENCE-BASED APPROACH

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It is quite humbling to know that Prebiotics is the second largest component of breast milk, it's even more than the protein component. It is there for a good reason, that's to keep us healthy. Prebiotics, which is a non-absorbable fiber, that selectively stimulates the growth of the probiotics. The microbiota "Bacterial System" is the largest organ in our body. Having a healthy microbiota is essential to maintain a healthy balance, that affects not only our GI system but expand to affect other body organs.

There is a huge amount of research being done all over the world to demystify this unique system. There is more than 1000 different microbiota species in our guts; thus it's very difficult to add all these to our diet. It is probably easier to modifying the gut microbiota with certain prebiotic mixture; making it more bifidogenic; has its protective effect in both short and long terms. One of these areas is about reducing the risk of allergy development if used early in life.

Hostile environment like birth by cesarean section, formula fed, frequent use of antibiotics or severe chronic illness my affect the microbiota milieu negatively. These kinds of patients may benefit from restoring their bacterial system. Strong evidence-based practice guidelines by International societies are limited; available studies vary in study populations, methodology, prebiotic mixture, and outcomes. Currently available guidelines and metanalysis studies will be presented and discussed in length during my presentation.

JS-2-1

CHALLENGES IN GASTROINTESTINAL ALLERGY

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Establishing the diagnosis of Gastrointestinal (GI) allergies or non-IgE mediated food allergy amongst formula fed and breastfed infants is a clinical challenge. Reflux, colic, eczema and changing bowel habit are commonplace amongst infants, and clinicians who adopt a symptom-targeting approach risk missing the possibility of a unifying cause such as non-IgE mediated food allergies. Despite a series of studies there is no robust evidence that any bio-markers show clinical validity for the diagnosis of GI food allergy. Consensus documents guiding clinical practice have highlighted the need for taking an allergy-focused history, supported by elimination diets and subsequent re-introduction of the likely culprit food allergen for all cases of GI food allergy. In this lecture various challenges will be covered.

The first two challenges cover the recognition and acceptance of GI allergy and that this is not a fashionable diagnosis but one in which children suffer significant health problems with increasing prevalence worldwide. The next challenges are that GI allergy is not a short-term disease but in fact the first steps along an allergic march and a long-term disease. The choice of formulae is key and should be tailored to each of our patients needs with an immediate view to accelerating recovery and preventing long-term consequence of GI allergy. The quality of life impact and burden both personal and economic can be significant on the family unit as a whole and the faster the recovery the better the outcome.

JS-3-2

MANAGEMENT OF CHILDHOOD OBESITY

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The increased prevalence of child and adolescent obesity, including in low and middle income countries, as well as the associated short- term and long term complications emphasise the need for effective treatment.

In this Review, we aim to describe the evidence for, and elements of, behaviour management and adjunctive therapies and highlight the opportunities and challenges presented by obesity management in adolescence. The broad principles of treatment include management of obesity- associated complications; a developmentally appropriate approach; long- term behaviour modification (dietary change, increased physical activity , decreased sedentary behaviours and improved sleep patterns); long term weight maintenance strategies; and consideration of the use of pharmacotherapy , more intensive dietary therapies and bariatric surgery. Bariatric surgery should be considered in those with severe obesity and be undertaken by skilled bariatric surgeons affiliated with teams experienced in the medical and psychosocial management of adolescents. Adolescent obesity management strategies are more reliant on active participation than those for childhood obesity and should recognize the emerging autonomy of the patient. The challenges in adolescent obesity relate primarily to the often-competing demands of developing autonomy and not yet having attained neurocognitive maturity.

PL-1

PRACTICAL ASPECTS OF BREASTFEEDING

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The rate of human milk feeding has been decreasing despite the diverse efforts of many physicians and nurses, as well as numerous professional organizations and various international health institutions. The number of physicians who can provide proper guidance for human milk feeding and offer appropriate knowledge and techniques to allow the most beneficial and convenient manner of breastfeeding (BF) is quite deficient. It is suggested that physicians and nurses be trained not only to teach and educate about the medical importance of human milk feeding to lactating mothers but also to solve diverse clinical problems which are developing in mother and baby during BF.

WHO and UNICEF initiated the “Baby-Friendly Hospital Initiative” (BFHI) in 1991. The American Academy of Pediatrics endorsed the Ten Steps program in 2009 to enhance BF initiation after birth, the proper duration of BF, and a commitment to exclusive BF.

Even though there are many policies and regulations to accomplish exclusive BF, and several organizations and institutes have offered educational programs for the medical professionals since two decades ago, BF-related problem solving in clinical setting does not seem to be improving much.

The following practical aspects would be explained in this lecture; physiology of human milk lactation, nutrients of human milk and gastrointestinal disease, night time BF, BF and jaundice, loose stool of BF baby, substance uses during BF, vitamin D and iron supplement during BF, human milk storage, proper BF methods, and the role of pediatricians for BFHI.

PL-2

PAEDIATIRC ACUTE LIVER FAILURE

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Paediatric acute liver failure (PALF), although rare, is a condition associated with high morbidity and mortality. It's definition has been revised over time, with the aid of large multicentre data. PALF is currently defined as the acute onset of liver disease with no evidence of chronic liver disease and hepatic-based coagulopathy (Pro-thrombin Time, PT □ 20s; International Normalised Ratio, INR □ 2) not corrected by parenteral vitamin K with or without hepatic encephalopathy (HE) or hepatic-based coagulopathy (PT 15-19.9s; INR 1.5-1.9) with HE. The incidence of PALF in USA is around 5.5/million/year among all ages. Emergency liver transplantation (LT) remains the only definitive treatment, with PALF accounting for 10-15% of all paediatric LT.

Aetiology in PALF varies significantly according to age and worldwide geographic location. Infection, metabolic, toxin- and drug –induced, vascular/ischemic, infiltrative/malignancy, immune dys-regulation and indeterminate are the main categories of aetiology. In the developed world, the commonest cause of PALF amongst all age groups is indeterminate. Research is on-going to understand this group in more detail and more exhaustive investigative panels in PALF are suggested. Clinical management of PALF entails identifying conditions that have specific medical treatments (ii) ensuring supportive therapy and (iii) determining the likelihood of either spontaneous native liver recovery or death to aid decisions regarding the need for LT whilst continually considering any contra-indications for LT. Accurate prognostication in PALF would ensure that only patients that were likely to die would be listed for emergency LT and that those likely to spontaneously recover would not undergo unnecessary LT. Prognostication is also key in allocating newer extra-corporeal liver support systems (ELSS) and auxiliary LT to those patients with higher chances of spontaneous recovery. However, determining these prognoses remains a challenging mission. Use of auxiliary liver transplantation or human hepatocyte transplantation could avoid the uncertainty about spontaneous native liver recovery and risk of over transplantation.

The lecture will cover definition, diagnosis, aetiologies, prognosis, medical and surgical management and advances like human hepatocyte transplantation.

PL-4

ADVANCES IN PEDIATRIC ENDOSCOPIC INTERVENTIONS

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Endoscopy has become important part of standard healthcare of infants, children and adolescents. Upper and lower GI endoscopies, variceal band ligation, stricture dilation, percutaneous endoscopic gastrostomy, polypectomy, endoscopic retrograde cholangiography and stenting of CBD and pancreatic duct are well established procedures in children. In recent years newer imaging, endoscopic histology techniques, resection techniques, novel ablation and creative extraluminal applications have taken pediatric endoscopy to newer heights.

High Definition endoscopy has become part of standard care in children. Narrow band imaging can define heterotopic lesions, Barrett's esophagus, gastric metaplasia, polyps with metaplasia or dysplasia, eosinophilic esophagitis, erosive esophagitis and targeting biopsies from duodenum in celiac disease. Wide- view full spectrum endoscopy has given advantage of wider view that helps in defining smaller lesions and improving the ileal intubation. Confocal laser endomicroscopy helps to take endoscopic images of lesions akin to histology. Molecular imaging will have great future for better imaging and may help in drug delivery and response. Development of colon capsule endoscopy and pan-enteric capsule endoscopy are helpful to diagnose without sedation. These are useful for monitoring of chronic disorders like ulcerative colitis and Crohn disease. Optical coherence tomography helps to visualise the internal microstructure of tissues.

Per oral endoscopic myotomy is well established therapeutic procedure in adults as well as in children. It is nonsurgical treatment and well tolerated by children. The advantages of various procedures in children are reduction of procedure time, less invasive, decreased sedation and cost, improved diagnostic yield and better monitoring of chronic diseases and therapeutic options.

PL-5

BODY COMPOSITION AND ENERGY EXPENDITURE MEASUREMENT IN PEDIATRIC PRACTICE

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Nutritional status on admission to the PICU has been associated with poor outcomes. Studies have utilized WFA z-scores to classify patients according to their nutritional status. Lean body mass is a better predictor of outcomes when compared with weight alone. Skeletal muscle mass loss, or sarcopenia, predicts poor outcomes in critically ill patients. The relationship between obesity and pediatric critical care outcomes remains unclear. Anthropometric measurements such as mid-arm circumference, triceps skinfold thickness, mid-arm muscle circumference, and mid-arm muscle area have been used to describe fat and lean mass but may not be accurate in detecting specific body compartments. Hence, body composition measurement is an important aspect of nutritional assessment in critically ill patients. A variety of methods, such as bioelectric impedance analysis, bioelectric impedance spectroscopy, CT scan, and muscle ultrasound have been utilized to assess body composition in children. Ultrasound is noninvasive, non-ionizing, inexpensive, and is readily available at the bedside in most ICUs. Its role at the bedside for serial muscle mass assessment is currently being examined. Optimal nutritional therapies must aim to preserve lean body mass and function during critical illness.

A variety of equations have been developed to predict energy expenditure, and they rely on age, gender, and other factors. However, these equations were developed in healthy populations and are frequently inaccurate in the critically ill population, resulting in unintended underfeeding or overfeeding. Accurate assessment of energy requirements is critical to the planning and prescription of nutrients during this period. Cumulative imbalance between energy intake and requirement during illness has been associated with poor hospital outcomes. With recent advances in technology, accurate minute-to-minute gas exchange and energy expenditure measurements are now available in the modern PICU. The increasing availability of indirect calorimetry at the bedside may allow a titrated approach to energy delivery for patients, ushering in a new era of individualized nutrition therapy.

PL-6

AUTOIMMUNE LIVER DISEASE

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Autoimmune hepatitis and primary sclerosing cholangitis are relatively rare diseases of childhood but occupy a lot of time in paediatric gastroenterology/hepatology clinics as they require consistent expert management in order to delay or avoid the need for liver transplantation, particularly given that both of these diseases can recur after transplantation. In this presentation, the various modalities and controversies of available treatment will be discussed as well as new data from international multi-center cohorts of long term outcome of these diseases.

S-1-2

MANAGEMENT OF MALNUTRITION IN HOSPITALIZED PEDIATRIC PATIENTS: CASE ILLUSTRATION

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Diseases increase the risk of malnutrition in hospitalized infants and children as a consequence of various factors such as decreased food intake from anorexia or vomiting, nutrient loss from diarrhea, or hypermetabolic state from the underlying diseases. Medications and starvation from treatment additionally subject patients to acute malnutrition on top of the existing chronic undernutrition situation. Hospital malnutrition is associated with adverse clinical conditions including hospital acquired infectious complications, prolonged hospital stay and increased morbidity. Nutrition deterioration was found in one study to be statistically significant in patients with 5 or more stools a day, patients hospitalized 5 or more days, and patients with lower respiratory tract disease. Nutrition intervention is frequently complicated by fluid and electrolyte imbalance, myocardial and respiratory dysfunction, and metabolic disturbances of patients' primary diseases. However nutrition rehabilitation should be cautiously administered to avoid refeeding syndrome. Severity of malnutrition, overaggressive nutritional support in the early phase without adequate correction of phosphate, thiamine, potassium and magnesium deficiencies are common factors leading to this condition. Awareness, early detection, slow introduction of refeeding during the first week while restoring mineral and vitamin status are key elements for prevention and treatment of refeeding syndrome.

S-2-2

UPDATE IN IBD: DIAGNOSIS AND DISEASE MONITORING

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IBD is a chronic relapsing disorder that is difficult to cure. Therefore once it occurs even if the incidence is low, and it is an important disease that increases the morbidity continuously and burdens socially. In Asia, where the frequency is relatively low, the incidence is increasing steadily. Disease occurs in a wide area of intestine and causes various symptoms and complications, which is a burden to diagnosis for doctors in Asian countries with less experience like me. It is a disease that does not recover life long, so a complete diagnosis should be considered for the first diagnosis. Therefore, I would recommend that you fully understand and apply the guidelines such as the Porto criteria. First, you need to understand the signs and symptoms that can suggest IBD, and when this happens, you need to apply the appropriate tests. Second, you need to know endoscopic findings that are the basis of diagnosis. Third, the location, behavior, and severity of the lesion should be determined at the same time as diagnosis of CD, UC, and IBDU. Fourth, nutrition, puberty and immunization status should be evaluated. Children should be considered for monogenic IBD, particularly in young children up to six years of age. Once the diagnosis is made and the treatment begins, the patient should be monitored. Recently, the target to treat of IBD treatment is mucosal healing. Although mucosal healing is evaluated by endoscopy, there is a limit to practice each time considering the cost and difficulty of implementation especially in children. Activity index, laboratory test, fecal calprotectin, and endoscopy should be monitored appropriately. This lecture will be based on the above.

S-3-1

MATERNAL AND CHILD MICRONUTRIENT DEFICIENCIES AND THE FIRST 1000 DAYS OF LIFE: ASIAN PERSPECTIVES

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Micronutrient deficiencies among children and women are global public health problems in low- and middle-income countries (LMIC). Functional and economic consequences of deficiencies in iron, iodine, vitamin A and zinc have been well researched. This paper highlights the significance of these micronutrients during the first 1000 days of life (i.e., from conception to 2 years of age). Epidemiologically, iron and iodine deficiencies in mothers, reproductive-age women and infants vary widely in Asia, being more severe in South and Southeast Asia. Vitamin A deficiency in children has improved as a result of improved coverage of supplementation programs. While it is not definitive if zinc deficiency is a public health problem, zinc supplementation is recommended in the treatment of severe-acute malnutrition. Vitamin D deficiency in mothers and children has been reported in many Asian countries. Micronutrient deficiencies during pregnancy affect birth outcomes, growth, and micronutrient status of infants, which in early infancy can result in irreversible damage to cognitive development. Due to the severity of the problems, supplementation of specific or a combination of micronutrients has been the prime intervention in Asia LMIC. Successful implementation and reduction of severity is now broadly appreciated. For sustainability, efforts to ensure micronutrient adequacy through food-based strategies (dietary diversification, nutrition education, biofortification and food fortification) during the 1000 days window of opportunity should be the way forward. Great opportunity exists but needs to be accelerated by re-orientating the food system and strengthening measures to curb environmental enteropathy, to effectively address micronutrient needs of mothers/children in LMIC in Asia.

S-3-2

RECENT KNOWLEDGE ON MICRONUTRIENTS IN PEDIATRIC PRACTICE

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Micronutrient deficiencies are common nutritional problems in pediatric patients and can affect physical growth and neurocognitive development as well as disease outcomes. However, micronutrient deficiencies often remain undiagnosed and thus untreated in practice although it is treatable with supplementation of the elements in lack. Trace elements such as iron and zinc and vitamins such as vitamin A and vitamin D are key micronutrients of concern.

When approaching pediatric patients suspected of micronutrients deficiencies in practice, thorough dietary history taking and nutrition-focused physical examination come first for clinical assessment of such deficiencies, and then biochemical testing for serum levels of micronutrients on the basis of clinical cues may be supportive in detecting micronutrients deficiencies.

In specific disease conditions such as inflammatory bowel diseases, micronutrient deficiencies are relatively common. However, serum levels of some micronutrients can change in the presence of systemic inflammatory responses irrespective of true deficiency. Therefore, serum micronutrient levels should be cautiously interpreted based on underlying conditions of the patients.

Micronutrients (multi-trace elements and multi-vitamins) supplementation should be considered in all pediatric patients receiving parenteral nutrition, particularly when clinical symptoms and signs of deficiencies are present in pediatric patients at risk of malnutrition.

In practice, micronutrient deficiencies as the adverse effect of drug-micronutrient interactions should also be considered, especially in chronically ill patients.

Recently, the new concept of predictive, preventive, and personalized medicine on the basis of nutrigenomics was introduced for individualized supplementation of selected micronutrients.

S-4-1

UPDATE ON CHILDHOOD *HELICOBACTER PYLORI* INFECTION

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Therapeutic approach to peptic ulcer disease has been changed dramatically after discovery of *Helicobacter pylori* (Hp) by Marshall BJ. And Warren JR. Its global prevalence, however, has been still high in certain geographic areas despite much improving in general hygiene. Parallelly, antibiotic resistance becomes an issue of effective eradication. This session aims to comprehensively review current scientific evidences and guidelines for management of Hp infection.

International Pediatric Societies of Gastroenterology, Hepatology, and Nutrition, including ESPGHAN and NASPGHAN, have been established and continuously revised clinical practice guidelines since 2000. They agree upon the recommendation against a test and treat strategy. All children suspected Hp infection should be approached under the endoscopy-treat strategy, in which only patients diagnosed as peptic ulcer disease (ulcer/erosion of the stomach and duodenum) are strongly recommended for eradication with high level of evidences. Careful diagnosis by both histopathology and a rapid urease test is also strongly advised including susceptibility tests either by culture- or molecular-based techniques. Prior use of proton pump inhibitors and GI bleeding may decrease the sensitivity of the tests. We and other studies found that gastritis and antral nodularity were significantly associated with the presence of Hp. However, the positive correlation between clinical alarm features and the infection has remained inconclusive. Although there have been evidences that Hp eradication could regress intestinal metaplasia and gastric atrophy, considered as precancerous lesions, and reduce a cumulative risk of gastric cancer compared to general population, international experts have still been reluctant to recommend eradication in children with incidental finding of Hp infection without peptic ulcer disease.

As mentioned earlier, the antibiotic resistance rates have been increasing over the past two decades, particularly for clarithromycin, metronidazole, and levofloxacin. This finding possibly results from community-wide macrolide prescription. Even though triple therapy has still been effectively first-line treatment, new therapeutic recue approaches have been introduced according to the result of susceptibility tests, for instance high-dose triple therapy, bismuth-based quadruple therapy, concomitant quadruple therapy, quinolone-based triple therapy, and sequential therapy, etc.

Hp eradication may have beneficial effects in some non-GI conditions related to Hp infection, including unexplained iron-deficiency anemia and chronic ITP. However, the level of evidence has still been insufficient for grading strong recommendations.

S-4-2

CURRENT TRENDS IN ACUTE DIARRHEA

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Diarrhea continues to be a leading cause of morbidity in developing countries. While the mainstays in the management of acute diarrhea remain to be oral rehydration therapy, zinc supplementation, and continued feeding, other treatment strategies have been utilized to complement the standard recommendations. Probiotics and an antisecretory agent racecadotril have become routine modes of care among some practitioners. While certain strains of probiotics (Lactobacillus rhamnosus GG and Saccharomyces boulardii) and racecadotril have been shown in systematic reviews to reduce the duration of diarrhea by about 1 day and 2.2 days respectively, the cost of these agents for patients in resource-limited communities may be untenable. Diosmectite as an adjunct in the treatment of acute diarrhea has been demonstrated in a meta-analysis to reduce diarrhea also by 1 day with a 4-fold increased cure rate at day 5. However, the main drawback in these studies has been its open-label design. Following the demonstration that short-chain fatty acids stimulate colonic absorption of fluids and sodium, the addition of high-amylose maize starch (HAMS) to oral rehydration solutions as a source of non-absorbable carbohydrate has been reported in 3 randomized controlled trials to cause a substantial shortening of the duration of acute diarrhea. Not to be overlooked, the effectiveness of rotavirus vaccination on diarrheal morbidity has been substantiated in resource-limited communities with the demonstration of a significant decline in all-cause diarrheal admissions and outpatient consultations.

S-4-3

ROLE OF INFECTIONS IN CHRONIC DIARRHEA

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Diarrheal stools in the volume of 10g/kg/day (toddlers/infants) or over 200g/day in older children lasting over fourteen days, defined as chronic diarrhea, irrespective of cause (s), will lead to extra ordinary impact on growth and nutrition besides the fluids, electrolytes and micronutrients; specially in younger child.

The global prevalence ranges from 3-20% and an reported incidence of 3.2 episodes / child year.

All situations of chronic diarrhea have varying degree of blunting of villi, loss of brush border enzymes with resultant decrease of surface area / absorptive cum digestive capacity as well as shortened transit time; all this adds to the persistence and aggravation of malnutrition and diarrhea.

Infections commonly inflict acute episodes of diarrhea but role of infections, direct and or indirect, in chronic diarrhea is also well documented.
Amongst the infective causes, while the Parasites are major contributors but certain bacteria and at times viruses, rarely fungi have been found to be responsible agents of havoc. Congenital or acquired Immuno-suppressed conditions or autoimmune conditions may often add to the complexity of diagnosis and management; small bowel bacterial overgrowth, tropical sprue and whipple disease do also add to the wide vista of chronic diarrhea situations of Infective etiologies.

Appropriate management requires, not only the identification of possible pathogen, specific therapeutic measures accordingly but importantly nutritional rehabilitation along with replenishment of the micronutrients and minerals as well as renewal of Microbiota equilibrium.

Careful evaluation and appropriate cum adequate rehabilitation nutritionally as well as specific therapy can improve the outcome for children involved. The situation of chronic diarrhea needs thorough care to avoid consequences.

S-5-1

PAEDIATRIC LIVER TRANSPLANTATION- IMMUNOSUPPRESSION AND OUTCOMES

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Over the last two decades, paediatric liver transplantation has seen significant improvements in morbidity and mortality. This improvement is in part related to immunosuppression (IS) after transplantation. Traditionally, IS regimens focused on the prevention of rejection and graft loss. However, complications in children tend to come from infection rather than rejection. Growth and renal impairment and risk of lymphoproliferative disease are important long-term post-transplant complications. As children grow the overall level of IS is seldom increased at the same rate, thus naturally lowering the level of IS and helping to reduce complications. Impaired renal function may be silent in the early stages and 'sensitive' routine (annual) assessment of renal function is mandatory as serum creatinine is inadequate for this risk

Post-transplant IS is changing with increasing use (30-40%) of induction IS, particularly IL-2 receptor antibodies or antithymocyte globulin. The mainstay of maintenance IS is still provided by calcineurin inhibitors (CNI), although cyclosporine (CsA) has virtually been replaced by tacrolimus. Mycophenolate mofetil or azathioprine are used to supplement IS if there has been severe or recurrent acute rejection, for CNI toxicity and renal sparing or to manage denovo post-transplant auto-immune liver disease. Experience with m TOR inhibitors and current status of antibody based therapies will also be discussed,

50% of all children are on a single immunosuppressant (usually tacrolimus) 18 months post-transplant. Advances in surgical technique and perioperative management of children who undergo a LT have led to continued improvement in outcomes over the last two decades. According to data from UNOS, adjusted graft survival for both deceased and living donor liver transplant programs have achieved optimal survival rates at all ages. Of note, survival falls after 4-years post-transplantation in the adolescent population. This is true for all diseases, but particularly non-cholestatic cirrhosis and acute liver failure have the worst outcome in adolescents compared to other age groups. The reason for this difference may in part be related to non-adherence and complications related to IS, but further research is needed.

The lecture will discuss evolution of immunosuppressive medications, monitoring, avoidance and management of immunosuppression related complications. Long-term graft and patient survival, quality of life will be discussed with special attention to adolescence and transition to adult services.

S-5-2

PEDIATRIC LIVER TRANSPLANTATION: EAST MEETS WEST

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Liver transplantation (LT) is an established and accepted lifesaving procedure for children with acute and chronic liver failure, metabolic liver disease and hepatic malignances. It has now evolved from being offered in centers in the West to a procedure readily accessible in several centers in the developing world with comparable results. Published data from across the world, especially the Japanese and Korean registries (which are predominantly living related programs) have consistently shown 5-year survival figures of above 90% and 20 year survival close to 80%. Recently published data from India has mirrored similar success and results of programs worldwide. In the West, approximately 2-3 pediatric liver transplants per million population are performed annually. At that rate, around 2-3000 children will need liver transplants in India every year. This estimate is likely to be representative, since the incidence of EHBA (1/12,000 to 1/18,000), which is the commonest indication for LT, is similar throughout the world. The need for a LT program in India was felt way back in the early 1990s and the first successful pediatric LT was performed at Indraprastha Apollo Hospital, New Delhi in November 1998. The first decade was full of challenges. Many children requiring LT were often referred late, most of them belonged to the economically deprived strata of the society and were financially incapable of affording a LT. In addition, there was considerable apprehension among the potential donors along with a deep-seated prejudice against the girl child. Initial growth was slow, there was a learning curve and mortality was significant. Establishment of pediatric LT over the last decade can be attributed to increasing expertise in pediatric transplant surgery, pediatric hepatology and intensive care. In addition, multidisciplinary teams armed with extensive international experience with support from Indian corporates who wanted to revolutionize health care in the country helped the growth. Since the first transplant for EHBA in November 1998, several other firsts have been achieved. In 2008, the first successful transplant in India for Crigler-Najjar syndrome was performed. The world's youngest domino liver transplant was reported from India in 2011. Successful combined liver kidney transplants and ABO incompatible transplants have been performed. The expected survival from LT is above 90%. With the use of generic immunosuppressants and indigenous consumables, transplant programs like ours have been able to substantially decrease costs and bring LT into the realm of affordability. At a cost of 30-35000 USD, the pediatric LT cost is 1/5th of that overseas. Patients from several countries visit India given the high quality/ low cost value proposition. As we celebrate the 20th Anniversary of successful Liver Transplant in India about 120 pediatric transplants are performed in India each year.

S-5-3

SHORT- AND LONG-TERM SURGICAL COMPLICATIONS

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Regarding liver transplantations in Japan, with no progress having been made in deceased donor liver transplantations, a living donor liver transplantation carried out on a boy with end-stage cirrhosis of the liver due to biliary atresia in November 1989 was the first case of its kind. Unlike deceased donor liver transplantations, living donor liver transplantations have two major advantages. First, as organs are donated from healthy adults, it is possible to transplant organs with better viability compared to deceased donor organs which have been preserved in cold storage for a long time. Second, depending on the condition of the recipient, it is possible to conduct elective surgery at the optimal timing. In Japan, the number of annual liver transplantation cases is approximately 400, with the number of annual pediatric liver transplantation cases stable at approximately 120 cases. The patient survival rate of pediatric liver transplantation cases is relatively good at 89.4% over the course of 1 year, 86.8% over 5 years, 84.4% over 10 years, and 80.9% over 20 years.

The liver transplantation program was initiated at the National Center for Child Health and Development, Tokyo, Japan, in November 2005, providing liver transplantation medical treatment to 510 pediatric patients with end-stage liver disease to date. This presentation outlines the post transplant surgical complications (Q and A) encountered at the National Center for Child Health and Development.

S-6-1

PARENTERAL NUTRITION IN CRITICALLY ILL CHILDREN

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Nutrition optimization remains an important aspect of care among critically ill children to prevent micro and macronutrient deficiencies, avoid-negative nitrogen balance, and to encourage anabolism during a fluctuating metabolic state. Enteral Nutrition (EN) is the preferred route of nutrition support in the critically ill child; however, PN use is considered when EN is not feasible or is contraindicated. Despite more than 40 years of parenteral nutrition use in children, there remains no clear consensus on the optimal timing of its initiation among children who are critically ill. However, concerns about the harmful effects of parenteral nutrition have prompted a risk benefit assessment when utilizing this mode to achieve nutrient delivery in the critically ill patient.

In 2018, the collaboration between two organizations, American Society of Parenteral and Enteral Nutrition (ASPEN) and the Society of Critical Care Medicine (SCCM), resulted in a guidelines document that describes best practices in nutrition therapy in critically ill children. Based on a single RCT (PEPaNIC 2016), the guidelines do not recommend the initiation of PN within 24 hr of PICU admission. In children tolerating EN, we suggest stepwise advancement of nutrient delivery via the enteral route and delaying commencement of PN. Based on current evidence, the role of supplemental PN to reach a specific goal for energy delivery is not known. The time when PN should be initiated to supplement insufficient EN is also unknown. The threshold for and timing of PN initiation should be individualized. Based on a single RCT, supplemental PN should be delayed until 1 week after PICU admission in patients with normal baseline nutritional state and low risk of nutritional deterioration. Based on expert consensus, we suggest PN supplementation in children who are unable to receive any EN during the first week in the PICU. In patients who are severely malnourished or at risk of nutritional deterioration, PN may be supplemented in the first week if they are unable to advance past low volumes of EN. The optimal timing of supplemental PN in children failing to meet their nutrient delivery goals enterally must be individualized based on the nutritional and clinical status of the patient, and anticipated nutrient deficits during the course of illness.

S-6-2

PARENTERAL NUTRITION IN GUT FAILURE

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Intestinal failure (IF) is an increasing disease entity in the field of pediatric nutritional support. Aggressive surgical interventions and supportive cares targeted for patients with volvulus, necrotizing enterocolitis and Hirschsprung disease make this possible. Recently improved postoperative supportive care including parenteral nutrition (PN), use of hydrolysate formula, and various enteral feeding protocols make also better outcomes than yesterdays. However, about one thirds of the patients with extensive bowel loss still could not tolerate well without PN. There are many unmet needs for this group of patients.

In this lecture, I will briefly summarize the recent advance of pediatric parenteral and enteral nutrition for the children with IF and short bowel syndrome. Enteral autonomy is the key factor of the treatment to overcome the handicaps of short bowel or non-functioning bowel. To achieve the enteral autonomy, we usually try to use the tolerable enteral nutrition and prevent the intestinal failure associated liver disease (IFALD). Use of omega-3 based emulsion and ursodeoxycolic acids seems to be better for the prevention or treatment of pediatric IFALD according to a few reports. For the patients with PN dependency, home PN could be applied. Process of home PN is a kind of meticulous technique. This needs lots of knowledge, understanding, cooperation both from parents and patients.

We are still in shortage of resources for the care of IF in children worldwide. Doctors, hospitals managers, governmental officers, pharmaceutical companies and families with patients should cooperate together to overcome this big huddle in health of children.

S-7-3

CURRENT MANAGEMENT OF FUNCTIONAL ABDOMINAL PAIN DISORDERS

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Functional abdominal pain disorders (FAPDs) are a group of disorders comprises of functional dyspepsia, irritable bowel syndrome, functional abdominal pain and abdominal migraine. The pathophysiology of these disorders are extremely complex and thought to be intricate interactions between gastrointestinal motility, visceral hypersensitivity, intestinal microbiota and the central nervous system through the brain-gut, microbiota axis. FAPDA are a clinical diagnosis and most of the routine and complex investigations play a limited role in day to day management of these disorders.

Therapeutic interventions for FAPDs in children are limited. The routine pharmacological approach using antispasmodics, centrally acting drugs such as amitriptyline and acid suppressants are not very effective in reducing pain episodes in children with FAPDs. Similarly, dietary modifications such as increasing fiber in the diet and low FODMAP diets have not able to alleviate symptoms in these children. It had shown that domperidone, which improves gastrointestinal motility has shown a promising results. However, non-pharmacological interventions such as gut directed hypnotherapy and cognitive behavioral therapy were found to have both long term and short term benefits. In the light of limited therapeutic interventions and long term repercussions on quality of life and economic burden to the society, it is imperative that clinicians and community physicians get together to find preventive strategies for FAPDs in children.

S-8-1

HOW TO IMPROVE THE OUTCOME OF BILIARY ATRESIA: KASAI PROCEDURE AND BEYOND

Kazuhiko Bessho

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Biliary atresia results from progressive fibroinflammatory obstruction of the extrahepatic bile ducts that develop in the first few weeks of life. It is the most common causes of neonatal cholestasis, and if untreated, rapidly proceeds to biliary cirrhosis that could be fatal within the first few years. A surgical intervention with hepatoportoenterostomy (also known as Kasai procedure) to restore biliary flow to the intestine has dramatically changed the outcome of biliary atresia, but progression of intrahepatic disease results in bunch of complications of cirrhosis in most of the patients, and biliary atresia is the primary indication for liver transplantation worldwide in children. Many studies to explore factors that can improve outcomes of this devastating disease have been conducted, but without understanding of the underlying causes and pathogenesis of the disease, the only reliable factor that has been accepted to affect transplant-free survival is the age at time of Kasai procedure. In this presentation, we will first update the recent studies focused on how to achieve early Kasai Procedure, especially on development of screening methods and biomarkers for diagnosis, and on adjuvant therapies to modify the consequence of Kasai procedure, then will discuss the recent advance in strategies to “treat” this incurable cholestasis based on findings obtained from patient-based studies coupled with experimental models of the disease.

S-8-3

PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS

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Progressive familial intrahepatic cholestasis (PFIC) is a group of inherited cholestatic liver diseases causing chronic cholestasis, liver cirrhosis, and liver failure in childhood or adulthood. Patients usually manifest jaundice, pruritus, fat and fat-soluble vitamin malabsorption, failure to thrive, and rickets in early childhood. The first three types of PFICs identified (PFIC1, PFIC2, and PFIC3) represent defects in the FIC1 (ATP8B1), BSEP (bile salt export pump, ABCB11), or MDR3 (ABCB4) genes. In the last 5 years, new genetic disorders, such as TJP2, FXR, and MYO5B defects, have been found to cause a similar PFIC phenotype. Inborn errors of bile acid metabolisms also cause progressive cholestatic liver injuries mimicking PFIC; and prompt diagnosis is important because oral primary bile acid replacement may effectively reverse liver failure and restore liver functions. DCDC2 is a newly identified genetic disorder causing neonatal sclerosing cholangitis. The diagnosis of genetic liver diseases has evolved from direct sequencing of a single gene to panel-based next generation sequencing. Whole exome sequencing and whole genome sequencing have been actively investigated. Current treatment modalities include medical treatment, surgery, symptomatic treatment for pruritus, and nutritional therapy. A clinically approved pharmacological chaperone, 4-phenylbutyrate (4-PBA), has been shown to restore the canalicular expression of BSEP. New drug development such as apical sodium-dependent bile acid transporter (ASBT) inhibitor for BSEP defect is underway. Clinical awareness of genetic cholestasis aids in diagnosis, better patient care, development of treatment, and also genetic counseling for patients and families.

S-9-1

ASIAN PERSPECTIVE OF COMPLEMENTARY FEEDING

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The author declare no conflict of interest

The WHO Multicentre Growth Reference Study (MGRS) established that children linear growth from diverse ethnic groups very similar during the first 5 y of life when their physiological needs are met and environments support healthy development. However, in 2017, globally there were 151 million children under 5 year of age have stunted growth due to chronic nutrition deprivation.and more than half of them lived in Asia (61,2 million in southern and 15,1 millions in south eastern Asia). In 2010, Indonesia has the world fifth highest number of stunted children with more than 7.6 million children (37%). Evidence shows that the largest proportion of stunting in developing countries occurs during the complementary feeding period (6–23 months), the ~500 day transition time from exclusive breastfeeding to consuming a wide range of family foods while breastfeeding continues. Consumption animal source food was a protective factor of stunting Besides as a source of high quality protein , animal source food was found to have a variety of micronutrients including vitamin A, vitamin B-12, riboflavin, calcium, iron and zinc that are difficult to obtain in adequate quantities from plant source foods alone. It is important that infants eat high-quality and easily digestible proteins, which are found in breastmilk and in animal products. Based on Basic Health Research Indonesia 2010, only 37,8% children age 6-23 months consumed meat and/or egg and only 37,2% consumed dairy or its product. In South Asia only 17.1% are fed complementary foods containing meat, fish, poultry and/or eggs.Traditional cultural practices among rural people and the inflation in food prices resulted in low frequency of consumption of animal source foods. Chicken,ducks, eggs or fish were kept in many households; however, they did not consume them often, because they usually sold them for income. Long-term planning to change community behavior and practice toward consuming animal source food since complementary food is the most effective health education which is critical means to reduce stunting in Asia.

S-9-2

GLOBAL PERSPECTIVES AND CHALLENGES IN COMPLEMENTARY FEEDING

Mary Fewtrell

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Complementary foods are necessary for both nutritional and developmental reasons and are an important stage in the transition from milk feeding to family foods. The complementary feeding (CF) period is one of rapid growth and development when infants are susceptible to nutrient deficiencies and excesses, and during which there are marked changes in the diet with exposures to new foods, tastes and feeding experiences that may have consequences for long-term as well as short-term health and development. However, the relatively limited scientific evidence-base is reflected in considerable variation in CF recommendations and practices between and within countries. The situation is complicated by the fact that, whilst broad guiding principles for CF can be identified, specific issues vary depending on a number of factors related to the infant (eg. birthweight, illness, risk of allergy), environment (sanitation, clean water, food availability) and culture (acceptability of foods, religion, traditions); and these may differ even within countries or regions. Thus the main problems and potential solutions need to be considered at a local or individual level. Specific issues of current concern in CF include its role in preventing both under- and over-nutrition, particularly the quantity and quality of protein; provision of adequate iron and zinc; and limiting the intake of sugar-containing food and drinks and unhealthy snack foods. The goal should be to promote a diverse and nutrient-rich diet, as far as possible using locally available, acceptable and affordable foods. It is also important to encourage responsive parenting practices and broader aspects of a healthy lifestyle for the infant, including play opportunities that promote physical activity.

S-10-1

UPDATE IN VIRAL HEPATITIS: HAV AND HEV

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Hepatitis A virus (HAV) infection has been a major public health problem world-wide especially in the low-income countries. The symptoms are related to the age of the patient. Most infections in children below the age of 6 years are asymptomatic, where as those in older children and adults are usually symptomatic presenting with jaundice and may lead to complication such as prolonged cholestasis and fulminant hepatitis. Compared with healthy individuals, patients with underlying liver disease have higher tendency of developing potentially fulminant hepatitis if they contact hepatitis A infection. Children whom HA vaccination should be targeted to include; children in child care centers and institutions for the mentally handicapped, children with chronic liver disease, children traveling to countries with high endemic rates of HAV infection, children who live in endemic area of hepatitis A.The majority of countries in SE Asia has not yet implemented universal hepatitis A vaccines into immunization programs. The cost-benefit analysis of universal vaccination in this area should be performed before implementation.

Hepatitis E virus (HEV) is a public health problem in developing countries and an increasing as problem in developed countries. HEV infection also causes a high mortality rate among pregnant women. Clinical manifestations of the disease can range from asymptomatic or mild to fulminant hepatic failure. Based on molecular characterization, human HEV can be divided into 4 genotypes. Thailand is an endemic area for hepatitis B (HBV), and nowadays has deceasing trended due to universal immunization program. Hepatitis A is decreasing due to improved sanitation and hygiene. Although sporadic, acute and symptomatic hepatitis E virus infections are more common than previously recognized particularly in immunocompromised individuals. Most infections caused by HEV genotype 3, which is similar and closely related to swine HEV circulating in Thailand. The seroprevalence of hepatitis E virus was lower in children than in adults, suggesting that increasing age is a risk factor. Specifically, the seroprevalence in Narathiwat province, which is 85% Muslim, was lower than Lop Buri province (a mostly Buddhist population which consumes pork). We investigated the potential zoonosis of HEV from dietary consumption of pork and variety meats sold in fresh markets. We found approximately 0.3 % in liver and pork. However, the HEV RNA was detectable 3-5% in bile and feces of pig from the slaughterhouse. We also studied the prevalence of HEV among healthy blood donors in Thailand in which we screened 30,115 individual blood donors for HEV RNA. HEV RNA was found in 26 healthy individuals or approximately 1 in 1,000 blood donors. The cost-benefit for screening in the blood donors should be evaluated. Currently, a promising vaccine produced from the viral capsid protein of HEV genotypes 1 and 4 is available in China. The efficacy of this vaccine would require evaluation in HEV genotype 3 prevalent areas.

S-10-2

HBV: PREVENTIVE STRATEGIES AND TREATMENT

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The world's first nationwide hepatitis B virus (HBV) universal vaccination program for infants was launched in Taiwan in July, 1984. Though different countries provide different schedules, the majority of the universal programs consist of 3 doses of recombinant HBV vaccines and hepatitis B immunoglobulin (HBIG). The first dose and the HBIG should be administered within 24 hours after birth or even earlier.

Taiwan's story is a good example of the successful vaccination to prevent cancer. The prevalence of hepatitis B surface antigen (HBsAg) carriers declined from 9.8% to 0.6% in children in Taipei City after 30 years of universal vaccination. In line with the decrease of chronic HBV infection, the incidence of pediatric hepatocellular carcinoma (HCC), which is closely related to chronic HBV infection, also decreased in Taiwan. From 1981 to 1994, the incidence of HCC in 6 to 9 year-olds declined from 0.52/100,000 for those born between 1974 and 1984 to 0.13 for those born between 1984 and 1986 ($p<0.001$). We extended the observation to 2000, the incidence of HCC per 100,000 children declined from 0.54 to 0.20.

Indeed this successful universal hepatitis B immunization program eradicated most of the childhood chronic HBV infection. However, there are still some cases which failed this program. Among those HBsAg carriers born after the vaccination program, 89% of their mothers were positive for HBsAg. In the meantime, almost all of the pediatric HCC cases whose mothers are HBsAg carriers. The importance of maternal transmission in the pathogenesis of chronic hepatitis B infection cannot be over-emphasized and should be intervened. The incorporation of antiviral therapy in the last trimester of pregnancy in the high-risk mothers is gradually adapted in the vaccination program against HBV. In addition to the primary prevention with universal infant vaccination, the effect of secondary and tertiary prevention of HBV-related complications by antiviral therapies was proven recently. What we need to do is to detect the patients with risk and continue monitoring their disease progression. Pediatric medications for HBV are much limited as compared with the adults, however, more and more emerging novel therapies can bring the hope for eradication.

S-10-3

CHANGING PARADIGM FOR TREATMENT OF CHILDHOOD HCV INFECTION

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Curative therapy for hepatitis C in children has become a reality in the last 5 years with rapid advances in all oral regimens which have been trialled and approved for use in the US and in Europe. This talk will focus on the practical aspects of management and monitoring of children with hepatitis C, including an update on the currently available drugs, how they work in practice and what we can expect in the future.

Oral Presentation Abstracts

OP-G-01

EFFECT OF GUT MICROBIOTA ON INTESTINAL EPITHELIAL TIGHT JUNCTION PERMEABILITY IN JUVENILE RATS WITH FOOD ALLERGY

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Background and objectives: Increased intestinal permeability is thought to be associated with the pathogenesis of food allergy. However, the specific mechanisms underlying the relationship between intestinal epithelial barrier function and regulation of microbiota have not been clarified. The present study was conducted to investigate the relationship between gut microbiota and food allergy affecting the mucosal barrier.
Methods: SPF juvenile rats were divided into an ovalbumin (OVA) sensitization group (n = 7) and a control group (n = 6), and both groups were subdivided into those receiving added antibiotics (n = 6) or probiotics (Clostridium butyricum, etc., n = 7). The serum levels of OVA-IgE were determined, and histopathological features were studied using HE staining and electron microscopy, as well as immunofluorescence staining using antibodies against tight junction (TJ)-associated proteins. Intestinal permeability was assessed using a lactulose/mannitol assay kit, and expression of mRNAs for TJ molecules was analyzed by real-time PCR.
Results: Serum OVA-IgE levels and intestinal permeability were significantly increased in the sensitized rats relative to the controls. Although the gut mucosae were inflamed in the sensitized groups, those in rats that had received C. butyricum were only mildly affected. Expression of mRNAs for TJ molecules (ZO-1, occludin, claudin-2, 8, 9, 15) was decreased in rats given OVA with antibiotics but increased in rats treated with C. butyricum. The levels of TJ proteins (ZO-1, claudin-3, 5, 7) revealed by immunofluorescence staining were decreased in each of the OVA groups. TJs in rats treated with OVA and antibiotics were elongated, disrupted and indistinct in comparison to those in controls. However, the TJ structure in rats administered C. butyricum was almost normal.
Conclusion: Gut microbiota is thought to play a role in regulating the barrier function of the epithelium, and probiotics may help to prevent food allergy through upregulation of TJ proteins.

OP-G-02

GUT MICROBIOTA CHARACTERISTICS IN CHILDREN AFTER THE USE OF PROTON PUMP INHIBITOR

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Background and Objectives: Prolonged acid suppression from proton pump inhibitor (PPI) has been shown to cause an alteration in gut microbiota which may lead to an increased risk of infection by promoting growth of pathogenic organisms. We aimed to characterize gut microbiota profiles in children after the use of PPI.
Methods: Children aged 1-18 years who underwent PPI therapy were included during April-December 2017. We excluded children who previously used antibiotics or acid blocker, had a history of acute gastroenteritis and/or specific food avoidance one month prior to the enrollment. Demographic data, type and duration of PPI, and infection-related adverse effects were collected. The stool samples before and after continuous PPI use for 4-8 weeks were collected for gut microbiota composition. The 16s ribosomal RNA gene sequencing was performed by using Illumina MiSeq. The differences in gut microbiota composition (number of species and predominant bacteria) after the use of PPI were compared to the pre-PPI profile.
Results: We completed stool collection in 20 children (median age of 5.8 years and 60% were female). PPI use was associated with significant increase in the number of bacteria in phylum Firmicutes among males (P=0.03) and a trend increase in children living in urban area (P=0.10). In four children who had infection-related adverse effects (two children with upper respiratory tract infection and the other two children with diarrhea), we also found a significant increase number of phylum Firmicutes (P=0.001). We found no significant change in the overall number of species-level taxonomy categories. The subgroup analyses were performed with regards to age, overweight/obese, and PPI data which showed no change in the microbiota diversity.
Conclusions: Even the total number and overall predominant gut microbiota do not significantly change after 4- to 8-week course of PPI, we noted an increased ratio of Firmicutes in certain subgroups of children.

OP-G-03

SCID/NOD MICE MODEL FOR 5-FU INDUCED INTESTINAL MUCOSITIS: SAFETY AND EFFECTS OF PROBIOTICS AS THERAPY

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Background: For chemotherapy patients, intestinal mucositis is a frequent complication. Previously, we evaluated the beneficial effect of oral probiotics in 5-Fluorouracil (5-FU) induced mucositis in BALB/c mice. Here, we used SCID/NOD mice instead to simulate the immunodeficiency of chemotherapy patients: first, evaluate the safety of probiotic supplementation and second, the probiotic effect in response to 5-FU intestinal mucositis.
Methods: 36 SCID/NOD mice were injected saline (3 control groups) or 5-FU (3 experimental groups) intraperitoneally daily for 5 days. Mice were given either oral saline daily, probiotic suspension of Lactobacillus casei variety rhamnosus (Lcr35, Antibiophilus™, France) or Lactobacillus acidophilus and Bifidobacterium bifidum (LaBi, Infloran™, Italy). Blood, liver, spleen, and lymph node tissue samples were evaluated for probiotic translocation via culture and Q-PCR. Weight change, diarrhea score, jejunal villus height (VH) and crypt depth (CD), and serum cytokine levels of TNF-α, IFN-Y, IL-1β, IL-6, IL-4, IL-10, IL-13, and IL-17 were also assessed.
Results: No weight loss was found in the SCID control group. Mean weight loss of 10.63±0.87% was noted by day five in 5-FU group without probiotics but only 6.2±0.43% if given Lcr35 ($p<0.01$) and 7.1±1.80% ($p<0.01$) if given LaBi. Diarrhea score of 5-FU group without probiotics was 2.0±0.0 by day five and dropped to 1.33±0.17 ($p<0.05$) and 1.42±0.24 ($p<0.05$) with Lcr35 and LaBi respectively. Average VH significantly decreased and CD significantly increased in SCID mice given 5-FU. With probiotics, average CD improved ($p<0.05$) while VH lengthened as well. Besides IL-13, all cytokine levels increased in 5-FU SCID mice. Both Lcr35 and LaBi significantly inhibited serum cytokines ($p<0.05$). No probiotic strains were detected in blood cultures of all mice.
Conclusion: Using SCID/NOD mice as a novel model for 5-FU induced intestinal mucositis, we find that probiotics Lcr35 and LaBi does not lead to bacteremia, can improve diarrhea and body weight, restore jejunal crypt depth, and significantly inhibit cytokines TNF-α, IL-1β, IFN-Y, IL-6, IL-4, IL-10, and IL-17.

OP-G-04

ASSOCIATION BETWEEN FUNCTIONAL GASTROINTESTINAL DISORDERS AND ASTHMA IN ADOLESCENTS: A SCHOOL BASED STUDY

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Background and objectives: The association between asthma and abdominal pain predominant functional gastrointestinal disorders (AP-FGIDs) has been previously assessed only in one type of AP-FGIDs (Irritable bowel syndrome) but not in other types (functional dyspepsia, abdominal migraine and functional abdominal pain). Further this association has not been previously studied in children. Therefore this study was undertaken to find an association between asthma and different types of AP-FGIDs among the adolescents.
Methods: A cross sectional study was conducted among a group of 13 to 15 year-olds from 6 randomly selected mixed schools in Sri Lanka. Validated Rome III and International Study on Asthma and Allergies in Childhood (ISAAC) questionnaires were self administered to identify children with AP-FGIDs and asthma respectively.
Results: Of the 1101 who participated, 157 had asthma (14.3%) and 101 had at least one AP-FGIDs (9.2%). Of children with asthma, 19.1% had at least one type of AP-FGID. Logistic regression showed an independent association between asthma and three gastrointestinal disorders, namely, functional abdominal pain [odds ratio (OR) 3.1, 95% confidence interval (CI) 1.6–6.0], functional dyspepsia (OR 3.9, 95% CI 1.1-13.5) and abdominal migraine (OR 10.2, 95% CI 2.6-39.5). The severity of abdominal pain in AP-FGIDs predicts the likelihood of occurrence of asthma (OR 2.8, CI 1.5-5.3). Upper gastrointestinal symptoms such as abdominal pain, bloating, nausea and loss of appetite were significantly more prevalent among asthmatics. However lower gastrointestinal symptoms were not significantly associated with asthma.
Conclusion: We have shown a strong independent association between asthma and different types of AP-FGIDs for perhaps the first time in the paediatric literature. Our findings perhaps would lay a foundation to find a common patho-physiological mechanism for these two common disorders.

OP-G-05

FECAL CALPROTECTIN IS A GOOD SURROGATE MARKER FOR DETECTING MUCOSAL HEALING IN PEDIATRIC CROHN'S DISEASE PATIENTS IN SUSTAINED CLINICAL REMISSION WITH BIOLOGICS

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Background & objectives: Although mucosal healing (MH) evaluated by ileocolonoscopy is the currently acknowledged therapeutic goal of Crohn's disease (CD) in the treat-to-target era, its feasibility into real-life practice is limited in children and adolescents. We aimed to investigate whether fecal calprotectin (FC) may serve as a surrogate marker for detecting MH in pediatric CD patients who had sustained a clinical remission with biologics for at least 6 months.
Methods: Patients included in this multicenter retrospective cross-sectional study were (1) pediatric CD patients diagnosed before the age of 19, (2) in sustained clinical remission for at least 6 months with biologics, and (3) had simultaneously performed ileocolonoscopies and FC as well as other laboratory tests. The correlation between Simple endoscopic score for Crohn's disease (SES-CD) and FC levels, as well as the association between MH and FC were investigated. MH was defined as SES=0.
Results: A total of 129 patients (86 males, and 43 females) were included in this study. FC levels were significantly higher in patients with MH compared to those without MH (median 46.0 vs. 436.8 μg/g, P<0.001). SES-CD scores and FC levels showed a significant correlation (r = 0.68, P<0.001). According to logistic regression analysis, FC*10-2 was the only factor associated with both MH (OR=0.51, 95% CI 0.38-0.65, P<0.001). According to receiver operating curve analysis, the optimal cut-off level of FC in predicting MH was 100.5 (AUC=0.882, 95% CI 0.821-0.942, sensitivity 84.3%, specificity 86.4% P<0.001).
Conclusions: FC may serve as a good surrogate marker for MH in the treat-to-target era and also play a role in deciding who will strongly require follow-up ileocolonoscopy, among pediatric CD patients who have sustained a clinical remission with biologics for at least 6 months.

OP-G-06

INFLIXIMAB TROUGH LEVELS ARE ASSOCIATED WITH TRANSMURAL HEALING DURING MAINTENANCE TREATMENT IN PEDIATRIC CROHN'S DISEASE PATIENTS

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Background & objectives: There is limited data regarding the association between transmural healing (TH) and infliximab (IFX) trough levels (TLs), especially in the pediatric population of Crohn's disease (CD). Therefore, we aimed to investigate whether TH evaluated by magnetic resonance enterography (MRE) was associated with IFX TLs in pediatric patients with CD.
Methods: Pediatric CD patients in whom ileocolonoscopies and MRE were performed simultaneously during maintenance IFX treatment were included in this cross-sectional study. TH was defined as wall thickness ≤ 3 mm with the absence of ulcers, edema, contrast hyperenhancement, fat creeping, Comb's sign, and complications on all ileocolonic segments evaluated by MRE. MH was defined as a Simple Endoscopic Score for Crohn's disease (SES-CD) < 3 on ileocolonoscopy. The association between TH and IFX TL, as well as MH and IFX TL were investigated in subjects with available IFX TL results.
Results: A total 83 coupled performances of ileocolonoscopy and MRE were conducted in 61 patients (40 males, and 21 females) under maintenance IFX treatment. Among the 83 coupled performances, IFX TL results were available in 62 performances. MH and TH was observed in 58.1% (36/62), and 27.4% (17/62). IFX TLs were significantly higher in those who achieved MH (median 5.8 vs. 4.8, P=0.023), and TH (median 6.0 vs. 4.6, P=0.047). According to receiver operating curve analysis, the optimal IFX TL cut-off for MH association was 5.42 μg/mL (AUC=0.67, 95% CI=0.531-0.809, sensitivity 61.1%, specificity 73.1%, P<0.001), and 5.72 μg/mL for TH association (AUC=0.678, 95% CI=0.509-0.846, sensitivity 81.2%, specificity 68.8%, P<0.001).
Conclusion: IFX TLs were associated with TH during maintenance IFX treatment in pediatric CD patients. A higher therapeutic range for IFX TLs may be required during maintenance IFX when the therapeutic goal is aimed for TH in pediatric CD patients.

OP-N-01

THE EFFECT OF A FOCUSED FACE-TO-FACE BREASTFEEDING COUNSELING INVOLVING THE FATHER ON EXCLUSIVE BREASTFEEDING AT 6 MONTHS: A RANDOMIZED CONTROLLED TRIAL

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BACKGROUND AND OBJECTIVES: Several research have shown that father's support is critical in breastfeeding outcomes and is strongly correlated with women's willingness to breastfeed. This study aimed to design an intervention to help women increase breastfeeding duration in the form of partner support. The primary objective of this study was to determine the effect of a postnatal face-to-face breastfeeding counseling involving the fathers on the duration of exclusive breastfeeding.
METHODS: This was a prospective single-blinded randomized controlled trial. Postpartum mothers along with their partners were recruited in the Maternity ward of the UST Hospital Clinical division from July 2016 to February 2017 and randomly assigned to either intervention or control group. Participants in the intervention group received 2 additional face-to-face breastfeeding counseling involving the fathers while participants in the control group had no breastfeeding counseling for the father. The primary endpoint was exclusivity of breastfeeding at 1 and 6 months postpartum among mothers in the control and intervention groups. The percentage of mothers who will report receiving relevant help in breastfeeding from their partner was also analyzed.
RESULTS: Sixty mother-father dyads were randomized into those who received additional paternal breastfeeding counseling (50%) and those who did not (50%). There was a trend showing improved maternal satisfaction with paternal breastfeeding support in the intervention compared to the control group. There was no significant difference on the exclusivity of breastfeeding at 1 (p value 0.766) and 6 months (p value 0.795) postpartum from both groups.
CONCLUSION: Involving fathers in a coparenting breastfeeding support intervention has a beneficial effect on boosting maternal confidence in breastfeeding. We hope that our data will serve as a springboard for breastfeeding advocates to expand and intensify the current strategy employed in this research to increase the incidence and duration of breastfeeding.

OP-N-02

PEDIATRIC REFERENCE INTERVALS FOR PLASMA AMINO ACIDS IN A THAI POPULATION MEASURED BY LIQUID CHROMATOGRAPHY TANDEM MASS SPECTROMETRY

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Background and Objectives: Plasma amino acids are influenced by age, race, dietary intake and analytic method. Although reference intervals of amino acids are required for the diagnosis and management of inherited metabolic disorders, there are limited data in Thailand. Higher precision and shorter runtime make liquid chromatography tandem mass spectrometry (LC-MS/MS) a recent alternative to HPLC. This study aimed to establish age-specific reference intervals for plasma amino acids using LC-MS/MS in a Thai pediatric population.
Methods: A cross-sectional study of 191 healthy children from birth to 6 years was conducted. Anthropometric, clinical and dietary information were recorded. Non-fasting plasma specimens were collected along with dried blood spots at King Chulalongkorn Memorial Hospital from March 2016 to May 2017. Plasma amino acid analysis was performed by derivatized LC-MS/MS using AbsoluteIDQ p180 kit (Biocrates Life Sciences AG).
Results: Levels of 22 plasma amino acids were reported as median and interval from 2.5th-97.5th percentiles. All essential amino acid levels were steady from birth throughout school-age. Non-essential amino acid levels were also constant; except for alanine, glutamine, glycine and taurine which diversed between age groups. After birth, alanine and glutamine increased while glycine decreased; whereas taurine increased during toddler-age. Only alanine was negatively associated with dietary protein intake ($r = -0.28$, $p=0.04$). Most amino acid levels were approximate to the previous upper ranges of a study using HPLC in Thai children, and were higher than those of the Caucasian.
Conclusion: The first age-specific reference intervals of plasma amino acids using LC-MS/MS were established in a Thai pediatric population. The difference from previous studies emphasizes the recommendation that reference intervals of amino acids should be specific for the particular population and analysis method. Acknowledgments: This study was supported by Thailand Research Fund (IRG5780015) and Helena Thai Laboratories Co., Ltd.

OP-N-03

CLINICAL RESPONSE TO TWO FORMULAS IN INFANTS WITH PARENT-REPORTED FEEDING INTOLERANCE: A MULTI-COUNTRY, DOUBLE-BLIND, RANDOMIZED TRIAL

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Background and objectives: Feeding intolerance affects up to 55% of all infants in the first months of life. The study evaluated the effect of a partially hydrolyzed 100% whey protein formula with high sn-2 palmitate and reduced lactose (formula A) compared to an alpha-lactalbumin-enriched whey-predominant intact protein formula with full lactose (formula B) in healthy infants with mild-to-moderate feeding intolerance.
Methods: Healthy formula-fed infants aged 30-90 days whose parents reported feeding intolerance (Fussiness and crying for ≥2 hours per day plus gassiness or stooling difficulties) and intended to switch formula, were randomly assigned to formula A (n=130) or B (n=129) for 14 days. Primary endpoint was the daily duration of fussing-crying behavior derived from the validated Baby's Day Dairy that parents completed on 3 consecutive days.
Results: The mean±SD of fussing-crying duration substantially decreased in group A from baseline within the first three days and continued deceasing till the study end (Baseline: 291±162; Day 1-3: 188±109; Day 12-14: 140±93 minutes/day, -52%, $p<0.001$). It similarly reduced in group B (313±164; 213±134; 153±124 minutes/day, -51%, $p<0.001$). The reduction of fussing-crying behavior from baseline were statistically significant even within the first 24 hours of consuming either formula ($p<0.001$). The reductions did not differ between groups A and B throughout the study ($p\geq0.12$). Similarly, other feeding related symptoms and behaviors (e.g., stool characteristics, gassiness, spitting-up/vomiting, sleep patterns) improved by study end in both groups, and so was the scores for overall GI symptom burden (via 13-item Infant Gastrointestinal Symptom Questionnaire Index), infant temperament (via Infant Characteristic Questionnaire) and maternal anxiety (via State-Trait Anxiety Inventory).
Conclusion: Switching from standard formulas available in the participating countries to either of the study formulas was shown to lead to a rapid improvement of gastrointestinal symptoms and associated behaviors in infants with parent-reported feeding intolerance.

OP-N-04

NO ASSOCIATION BETWEEN BETA-LACTOGLOBULIN IN BREAST MILK AND COW MILK PROTEIN ALLERGY IN EXCLUSIVELY BREAST-FED INFANTS

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Background and Objectives : Inconsistent research showing that beta-lactoglobulin (BLG), a fraction of cow milk protein may be secreted in breast milk and cause cow milk protein allergy (CMPA) in exclusively breast-fed infants. The objective of this study is to explore the relationship between the presence of BLG in breast milk and CMPA.
Methods: Mothers of infants diagnosed with CMPA (atopic dermatitis, urticaria, and allergic proctocolitis) were enrolled alongside those having healthy infants. Maternal cow milk protein intake was assessed, 3 days prior to breast milk collection. At least 60 mL of breast milk before cow milk elimination were collected from one breast and kept frozen until analysis. BLG was analyzed by sandwich ELISA with lower limit of detection 0.068 ng/mL. The detection of BLG between the two groups was compared using logistic regression.
Results: There was no statistically difference in cow milk protein intake between the mothers of infants with CMPA and normal infants. BLG was found in 1/10 samples from CMPA group (10%)vs.7/46 samples from control group (15.2%) . No difference in the proportion was found between the two groups, (OR 1.08, 95% CI 0.80 to 1.45). The median level of BLG in breast milk of mother with healthy infants was 0.67 ng/mL(range 0.07 -3.7 ng/mL) vs. 0.119 ng/mL in breast milk from CMPA group.
Conclusion: This study showed no difference in the chance of detection of BLG in breast milk between the mothers of infants with CMPA and normal infants. The BLG per se cannot explain the development of CMPA in exclusively breast-fed infants. Funding Acknowledgement Rachadapiseksompoch Research Fund, Faculty of Medicine, Chulalongkorn University: Grant no. RA 57/069 and the TRF institutional fund for the Pediatric Department, Faculty of Medicine, Chulalongkorn University: Grant no. IRG 5780015

OP-N-05

SPECIFIC SYNBIOTICS (SCGOS/LCFOS AND BIFIDOBACTERIUM BREVE M-16V) IMPROVES GUT RESILIENCE IN HEALTHY INFANTS

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Background and Objectives: The infant's gut microbiota is normally dominated by infant-type Bifidobacterium species which play key roles in early life gut development and immune maturation. Establishment and maintenance of a homeostatic beneficial microbial community increase the gut microbiota resilience. During early life, the gut microbiota is constantly exposed to environmental challenges such as antibiotics and formula feeding, which have been shown to compromise colonization resistance against opportunistic pathogens such as C.difficile. The aim of the study was to assess a specific synbiotic mixture with different doses of probiotics on the bifidogenic effects and opportunistic pathogen reduction during early life.

Methods: An exploratory, multi-centre randomised, double-blind, placebo-controlled study was conducted in 290 healthy Thai infants aged from 6-19 weeks. Infants received either a control formula or one of the two investigational formulas (control formula supplemented with 0.8g/100ml scGOS/lcFOS and B.breve M-16V at a dose of either 1x104cfu/ml (Syn4) or 1x106cfu/ml (Syn6) for 6 weeks. Exclusively breastfed infants were included as reference. Analyses were performed on the Intention-To-Treat group.

Results: Compared to control, Syn4 and Syn6 significantly increased bifidobacterial abundance and the prevalence of B.breve in healthy infants after 6 weeks intervention. Synbiotic supplementation also decreased the abundance and prevalence of C.difficile. Multivariate analyses of all microbiota related parameters demonstrated that the synbiotic supplementation resulted in a gut ecosystem closer to the breastfed reference group after 6 weeks intervention.

Conclusion: With an infant-type bifidobacterial strain at a level close to the bacterial level found in human milk, the synbiotic combination of B.breve M-16V and scGOS/lcFOS (9:1) creates a gut environment similar to that of the reference group (healthy breastfed infants) and improves gut resilience. Acknowledgement: The authors thank all the participants for their contributions. This study was financially supported by Danone Nutricia Research. SW, RM, JK, ST and GR are employees of Danone Nutricia Research.

OP-N-06

RELATIONSHIP BETWEEN GUT MICROBIOTA AND DIETARY FIBER INTAKE IN OBESE THAI CHILDREN

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Background and objectives: Recent studies have shown that gut microbiota may play an important role in the pathogenesis of obesity. Dietary fiber is fermented in the colon and may modify these gut microbiota composition to be more favorable. The aim of this study was to investigate the gut microbiota composition and their relationship with dietary fiber intake in obese Thai children.
Methods: Cross-sectional study of obese children aged 7-15 years was conducted between October and December 2017. Obesity was defined as BMI above 2SD according to WHO reference. Dietary fiber intake was assessed by 24-hour dietary recall. The DNA was extracted from the stool samples for 16S rRNA sequence analysis for relative abundance of gut microbiota composition. The relationships between gut microbiota and dietary fiber intake were assessed by Spearman correlation.
Results: Twenty nine obese Thai children participated in the study; 18 (62%) were boy. Median age was 10 [IQR 3] years and average BMI z-scores was 3.05±0.64. The median total energy and fiber intake were 1666.5 [903.79] kcal/day and 2.3 [3] g/1000 kcal. The most abundant bacterial groups belonged to the phyla Bacteroidetes (46%) and Firmicutes (39%). The proportion of Proteobacteria, Actinobacteria and Fusobacteria were 11%, 2% and 2%, accordingly. Total dietary fiber intake was positively associated with Lactobacillales (r=0.31, p=0.09) but not with Bifidobacteriales (r=0.11, p=0.57).
Conclusions: Higher dietary fiber intake was associated with more favorable gut microbiota composition in obese Thai children; however, none consumed fiber above the recommended intake of 14 g/1000 kcal. New intervention to increase fiber intake in obese children could potentially concur additional health benefits. Acknowledgements This study was supported by the Ratchadapiseksompotch Fund (RA 60/122) and the Pediatric Nutrition STAR, Faculty of Medicine, Chulalongkorn University, Thailand; NSTDA Research Fund (Grant no. FDA-CO-2561-5614-TH), Ministry of Science and Technology, Thailand.

OP-L-01

HEALTH-RELATED QUALITY OF LIFE IN PEDIATRIC LIVER TRANSPLANT RECIPIENTS

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Background and objectives: Pediatric liver transplant (LT) recipients had a longer survival as compared to the previous decades. Health-related quality of life (HRQoL) has therefore been studied in this population. Previous studies demonstrated that pediatric LT patients had a good quality of life but still lower than the general population. We aimed to develop and evaluate HRQoL by using Thai version of Pediatric Quality of Life Inventory Transplant Module (PedsQLTM) and find potential associated factors with suboptimal HRQoL.
Methods: We initially included 102 children aged 2-18 years who underwent LT for > 1 year without irreversible brain damage and performed a pilot test via cognitive interview in 20 children and their primary caregivers by using the previously translated PedsQLTM (phase 1). The revised PedsQLTM was then used to evaluate psychometric properties in 50 patients (phase 2), therefore these patients needed to be excluded from the formal evaluation of HRQoL in the last phase. Finally, we evaluated 52 patients for HRQoL-related issues.
Results: The initial phase 1 showed that child's self-report had good internal consistency ($\alpha = 0.72$), substantial reliability (interclass correlation = 0.77) and an upper limit of validity coefficient of 0.89. The studied children had median age and post LT duration of 6.5 (IQR: 4.6, 9.4) and 4.7 (IQR: 3.3, 7.2) years. The mean (SD) of the child-self report and parent report scores were 79 (12) and 77 (12), respectively. Lower child-self report score correlated with higher number of immunosuppressive agents, adolescence (aged > 10 years) and vascular complications.
Conclusion: The Thai version of PedsQLTM transplant module is a suitable option to evaluate HRQoL in pediatric LT recipients. Most children had a good HRQoL after LT. More attention should be paid to optimize appropriate immunosuppressive therapy, management of vascular complications and care in adolescent group to improve HRQoL.

OP-L-02

HIGH ANTIBODY RESPONSE TO STANDARD AND DOUBLE DOSE OF HEPATITIS B VACCINE IN CHILDREN AFTER LIVER TRANSPLANTATION: A RANDOMIZED CONTROLLED TRIAL STUDY

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Background and objectives: High prevalence of hepatitis B(HB)-antibody loss after liver transplantation(LT) and de novo HB infection was documented; hence strategy to prevent HB infection will be considered. We aim to determine the antibody response to 2 different regimens of HB vaccine.
Methods: Children after LT from 2011-2017 who were HBV responder but anti-HBs loss(<10IU/L) after LT, clinical stable and no prednisolone used, were recruited and randomized into 2 groups; one received standard(0.5 ml) 2-dose and another received double(1 ml) 2-dose HB vaccine at 0 and 1 month. Anti-HBs was assessed at 0, 1 and 6 months after the first injection. All received DTH skin tests with HB vaccine and induration ≥5 mm at 48 hours defined as positive.
Results: In total, 25 children were recruited. 14 and 11 received standard and double-dose regimen, respectively. Anti-HBs before and after LT were 258(10-1000) and 1.7(0-10)IU/L. Time of anti-HBs loss after LT was 3.23(0.64-11.2) years. There was rising of anti-HBs after first and second dose of HB immunization(271.4[2-1000] and 1000[45.2-1000] respectively,P=0.03). However, there was no significant difference of the anti-HBs response in standard and double-dose group. Children who received tacrolimus(N=7) had low anti-HBs after first dose compared to children who received cyclosporine(N=18) (173.5[2-1000] and 1000[58-1000] IU/L,P=0.01) but there was no difference of anti-HBs after the second dose(1000[168-1000] and 1000[45-1000],P=0.20). No serious side effect(SSE) in all participants was reported. No significant difference of anti-HBs in children who had positive(N=17) and negative(N=8) DTH skin test.
Conclusion: Children after LT had a good response to HB revaccination especially after the second-dose HB vaccine without SSE. However, there was no different rising of anti-HBs between standard and double-dose regimen in short-term assessment. DTH skin test with HB vaccine was useless to predict anti-HBs response. Further study in the larger number and long-term anti-HBs assessment are needed.

OP-L-03

URINARY COPPER/CREATININE RATIO A NEWER TOOL FOR DIAGNOSIS OF WILSON'S DISEASE IN CHILDREN

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Background and objective: Wilson's disease (WD) is one of the most common metabolic liver disease encountered in children. Early diagnosis of the disease is essential for better patient management. Urinary copper excretion after d-penicillamine challenge is valuable for diagnosis of Wilson's disease. But there is difficulties in accurate and timed collection of urine. To observe the efficacy of spot urinary copper/creatinine ratio as a newer tool for the diagnosis of WD.
Methods: This cross-sectional study was carried out at the department of Paediatric Gastroenterology, BSMMU, Dhaka on 60 children presented with liver disease after three year of age. Thirty children who fulfilled the inclusion criteria of Wilson's disease were considered as cases (Group-I) and remaining Thirty children were considered as non-Wilsonian liver disease and were labeled as control (Group-II). Along with other physical findings and laboratory investigations, spot urinary samples were collected and estimated for urinary copper/creatinine ratio in all patients. Twenty-hour urinary copper excretion was also done in each patient after giving one gram d-penicillamine 12 hour apart irrespective of age and body weight. The efficacy of copper /creatinine ratio was studied. Study result was analyzed statistically.
Results: The mean age of WD patients was 9.183± 2.7 years, male female ratio was almost equal (1.1: 1). Most common presentation was jaundice (70%). K-F ring was found in 50% of cases. There were significant low serum ceruloplasmin level in 76.7% of cases ($p < .001$). Correlation of urinary spot copper/creatinine ratio with 24-hour urinary copper was found highly significant ($r=0.697$). The sensitivity of this new test was 90% and specificity was 90% at 0.01604 as a cut-off value.
Conclusion: Spot urinary copper creatinine ratio seems to be a promising test in diagnosis of Wilson's disease.

OP-L-04

A COMPARISON STUDY: FULMINANT WILSON'S DISEASE VS. ACUTE LIVER FAILURE IN CHILDREN

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Background & objectives: The mortality of fulminant Wilson's disease (WD) is practically 100% unless urgent liver transplantation. Despite this urgent setting, WD-specific diagnostic modalities such as ceruloplasmin, urine copper, and genetic test may take several days to months to get the results, whereas coombs-negative hemolytic anemia and a low ratio of alkaline phosphatase (ALP)/total bilirubin (TB) are known to be fast and also specific. The aim of this study is to compare initial parameters of children with fulminant WD and non-WD pediatric acute liver failure (PALF).
Methods: We conducted a retrospective review of clinical parameters among children with fulminant WD and non-WD PALF with liver transplantation in a single center (2005 to 2015). The diagnosis of WD were confirmed by genetic tests of the ATP7B gene.
Results: Eighteen fulminant WDs and 37 PALFs were identified. Children with fulminant WD had more liver cirrhosis (94% vs. 11%), splenomegaly (94% vs. 27%), and hemolysis (94.4% vs. 16%). In the serologic comparison between fulminant WD and PALF, significant differences were also noted in serum hemoglobin (g/dL) (9.1± 1.8 vs. 11.1 ± 2.6), aspartate aminotransferase (AST, U/L) (118 ± 52 vs. 2636 ± 2568), TB (mg/dL) (25 ±15 vs. 16 ± 8.5), ALP (U/L) (152 ±194 vs. 422 ± 249), INR (2.7 ± 0.8 vs. 3.8 ± 2.2), ammonia (umol/L) (50 ±26 vs. 118 ±82), and ceruloplasmin (mg/dL) (8.4 ± 6.4 vs. 24.6 ± 6.9). The ALP/TB ratio < 4 was more noted among WD (50% vs. 0%; sensitivity=50% and specificity=100%).
Conclusion: Fulminant WD in children had several characteristics compared to PALF, such as high rate of hemolysis and cirrhosis, and low AST despite higher bilirubin. The ALP/TB ratio, known as a precise diagnostic marker in adult studies, was highly specific in the identification of fulminant WD in children.

OP-L-05

PEDIATRIC LIVING DONOR LIVER TRANSPLANTATION: A SINGLE-CENTER EXPERIENCE

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Objectives: The experience of pediatric living donor transplantation (LDLT) has been accumulating since its first performance in 1989. We aimed to learn the characteristics and outcome of pediatric LDLT in Asan medical center located in Korea.
Methods: This retrospective review between 1994 and 2016 included 250 pediatric cases with LDLT performed at a single center. Recipients whose first liver transplant (LT) was deceased donor were excluded. Outcome was analyzed by comparing the patient and graft survival in two groups, 1994-2005 and 2006-2016.
Results: Two hundred fifty LDLT were performed in 241 children. Thirty patients (5.4%) required a first re-transplantation, 3 patients (1.2%) required a second re-transplantation. ABO incompatible LDLT were performed in 13 cases (5.4%). Median age at liver transplantation was 1.7 years (range 0.25-17). Median body weight at liver transplantation was 11kg (range 4.9-80). Graft-recipient weight ratios were 4.1% (2.5-5.8), 3.0% (1.5-4.5), 1.8% (1.0-3.3), 1.4% (0.9-1.6), and 0.9% (0.7-1.7) in weight 6 or less, 7-10, 11-20, 21-30, and 31kg and more, respectively. The most common indications were biliary atresia (49%), acute liver failure (22.4%), and Wilson disease (7.1%). The fatty change of graft was the most frequent in 0-10% (180/210, 85.8%). From 1994 to 2005, cumulative patient/graft survival rates at 1-, 5-, and 10-year were 89.8/88.2, 83.3/81.8, and 82.4/80.0%, respectively. Patient survival rates at 1-, 5-, and 10-year survival rates after 2006 were significantly increased 94.8/92.9, 94.8/91.1, and 93.5/91.1%, respectively.
Conclusion: The outcome of pediatric LDLT in this series has been improved over time, as the short-term success in survival reflected the long-term outcome.

OP-L-06

ASSOCIATION BETWEEN VITAMIN D DEFICIENCY AND SUSPECTED NONALCOHOLIC FATTY LIVER DISEASE IN AN ADOLESCENT POPULATION

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Background: Recent studies have shown that vitamin D deficiency is associated with obesity and metabolic syndrome. The purpose of the study is to examine the relationship between vitamin D deficiency and nonalcoholic fatty liver disease (NAFLD) in adolescents.
Methods: Data were obtained from the Korean National Health and Nutrition Examination Survey 2008-2014. A total of 3,878 adolescents were included. Vitamin D deficiency was defined as a 25-hydroxyvitamin D concentration < 20 ng/mL, and suspected NAFLD was defined as a alanine transaminase concentration > 30 U/L.
Results: Vitamin D deficiency was noted in 78.9%. Age, body mass indexes, waist circumferences, and blood pressure levels, as well as glucose, cholesterol and triglyceride levels were significantly higher in adolescents with suspected NAFLD than in adolescents without suspected NAFLD, while the mean vitamin D level was significantly lower in adolescents with suspected NAFLD. The multivariate-adjusted odds of suspected NAFLD were higher with increased age, male gender, obesity, and metabolic syndrome. Vitamin D deficiency was at higher risk for suspected NAFLD (odds ratio 1.76, 95% confidence interval 1.05-2.94) after adjustment for age, gender, obesity and metabolic syndrome.
Conclusions: Vitamin D deficiency is associated with suspected NAFLD independently of obesity and metabolic syndrome in adolescents.

Poster Presentation Abstracts

PP-G-01

SEVERE CROHN'S DISEASE WITH IL10RA DEFICIENCY: SINGLE-CENTER EXPERIENCE

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Background & objectives: Defects in the interleukin (IL)-10 pathway underlie the pathology of an important subgroup of very early-onset inflammatory bowel disease (VEO-IBD). Hematopoietic stem cell transplantation is the only therapeutic option in the treatment of infantile-onset IBD children in IL-10 or IL10R deficiencies. Therefore, decision-making must be meticulous based on the precise genetic diagnosis and functional analyses to confirm pathogenicity of the candidate variants in genes of IL-10 pathways is important. We identified five VEO-IBD cases with IL10RA deficiency and confirmed the pathogenicity of their variants.
Methods: Whole exome sequencings (WES) were conducted for the children with refractory IBD. InterVar program was used to predict the pathogenicity based the ACMG guideline. In addition, protein structures among candidate IL10RA variants were predicted by template-based modeling (TBM) (GALAXY casp12 TS protocol). For a functional validation of deleterious variants in IL10RA, IL10-induced STAT3 phosphorylation test, fluorescence assisted cell sorting (FACS), and immunofluorescence (IF) staining were performed.
Results: WES identified deleterious variants of IL10RA gene in five children with VEO-IBD. All the children showed severe activities in Pediatric Crohn's Disease Activity Index. The detailed clinical phenotypes and genotypes were described on Table 1. Of them, two died of sepsis and patient #3, #4, and #5 had functional analyses. All the patients showed defective Stat3 phosphorylation to IL10 stimulation and showed no cell surface expression of IL10RA on FACS. On the IF staining, both T179T and Y91C variants were associated to defective morphology and distribution of IL10RA protein on the patients' PBMCs. Galaxy TBM suggested a possibility of directional instability of IL10RA protein structure of Y91C mutation.
Conclusion: We report a single-center experience of IL10RA deficiency. Despite developing analytic tools of variants, functional study is still important in the confirmation of the pathogenicity of IL10RA candidate variants.

PP-G-02

DIAGNOSTIC ROLE OF NOD SIGNALING TEST VS. APOPTOSIS TEST IN XIAP-DEFICIENT PATIENTS: A PILOT STUDY

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Objectives and study: Deficiency of XIAP causes an immunodeficiency syndrome, X-linked lymphoproliferative disease type 2, in which 20% of patients develop severe inflammatory bowel syndrome (IBD). There are two methods (NOD signaling and activation-induced cell death tests) to screen the functions of XIAP protein. However, their diagnostic roles have not been determined. The aim of the study is to evaluate the two functional studies to confirm the pathogenicity of XIAP variants.
Methods: In our cohort of pediatric IBD, whole exome study identified five XIAP-deficient patients. For them, peripheral blood mononuclear cells (PBMCs) from the five XIAP-deficient patients and five healthy controls were unstimulated or treated with IL-1, muramyl dipeptide (MDP), or Tri-DAP for 24 hours (NOD signaling test) and IL-8 was measured by ELISA test. The PBMCs were also used to evaluate death response to T cell stimuli (apoptosis test). Cells were stimulated for 2 days with phytohemagglutinin and on Day 7, phytohemagglutinin blasts were harvested and cultured on plates coated with antibodies to CD3 (OKT3). After 24 hours, cells were stained with Annexin V/propidium iodide.
Results: In the NOD signaling test, PBMCs of four XIAP-deficient patients showed defective response to compared to those of healthy controls MDP (mean ratio of IL-8 level with MDP per IL-8 basal level= 1.2 vs. 38). However, the ratio of MDP/basal IL-8 in patient #2 was 5, indicative of a partial response to MDP. In the apoptosis tests, all the patients showed enhanced cell death response to OKT3. The ratio of apoptosis with OKT3/without OKT3 in XIAP deficient patients and healthy controls were 2.7±1.12 vs. 1.2 ± 0.12, respectively. The apoptosis ratio of the patient #4 was 1.5. However, the patient #4's NOD signaling was defective.
Conclusions: The two functional tests may be complementary in the diagnosis of XIAP deficiency, until normal cut-off values are established.

PP-G-03

VALUE OF FLUOROSCOPIC DEFECOGRAPHY IN CONSTIPATED CHILDREN WITH ABNORMAL COLON TRANSIT TIME TEST RESULTS

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Back ground & objective: Colon transit time (CTT) test is regarded as the gold standard for evaluating colon transit function. Defecography is a dynamic radiologic test to assess the anorectal function at rest and during defecation. To evaluate defecography in constipated children with abnormal CTT test results.
Patients and Methods: Fifty-one children (M=24, F=27; mean age 9.8±3.2yr) who met Rome III criteria for constipation and older than 6 years with abnormal CTT test (Metcalf protocol) results underwent fluoroscopic defecography. According to CTT test result, outlet obstruction (OO) type was 35/51 (68.6%), slow transit (ST) type was 16/51 (31.4%).
Results: As a whole, 27 out of 51 (52.9%) showed positive findings on defecography: Pelvic floor dyssynergia 10/27 (37.0%), structural abnormality 15/27 (55.6%), both 2/27 (7.4%). In terms of structural abnormality: Rectocele 8/15 (53.3%), intussusception 5/15 (33.3%), both 2/15 (13.4%). In OO type, Pelvic floor dyssynergia 8/19 (42.1%), structural abnormality 9/19 (47.4%), both 2/27 (10.5%). In terms of structural abnormality: Rectocele 5/9 (55.63%), intussusception 2/9 (22.2%), both 2/9 (22.2%). In ST type, Pelvic floor dyssynergia 2/8 (25.0%), structural abnormality 6/8 (75.0%). In terms of structural abnormality: Rectocele 3/6 (50.0%), intussusception 3/6 (50.0%). In 2 children with ST type on CTT test, Puborectalis relax failure was found on defecography.
Conclusions: Defecography was valuable both for diagnostic point and interpretation CTT test result in children with abnormal CTT test results.

PP-G-04

GENETIC ANALYSIS OF CIPROFLOXACIN-RESISTANT NONTYPHOID SALMONELLA IN TAIWAN

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Background & objectives: Ciprofloxacin resistance rates in non-typhoid Salmonella (NTS) are increasing. However, genetic epidemiology of quinolone resistance has rarely been completely studied. This study aims to investigate the incidence of the documented genetic loci associated with ciprofloxacin resistance in the NTS clinical isolates in Taiwan.
Methods: Thirty-nine ciprofloxacin-resistant NTS isolates from different regions of Taiwan during 2010-2016 were used in this study. Their total DNAs were isolated to generate PCR amplicons for gene sequencing of gyrA, gyrB, parC, and parE in which the reported genetic mutations in quinolone resistance determining regions (QRDR) were examined. PCRs were performed for identifying the 13 reported plasmid-mediated quinolone resistance (PMQR) genes using their specific primers.
Results: Nine reported mutations in QRDR (C248T, C248A, A260G, and G259A in gyrA, C170G, G239T, A238C, and G250A in parC, and T1372C in parE) with 6 amino acids with substitutions were detected in the 39 ciprofloxacin-resistant NTS isolates, including 21 with Ser83Phe (53.8%), 10 with Ser83Tyr (25.6%), 9 with Asp87Gly (23%), 10 with Asp87Asn (25.6%), 23 with Thr57Ser (58.9%), 8 with Ser80Ile (20.5%), 9 with Ser80Arg (23%), 1 with Glu84Lys (2.6%), and 8 with Ser458Pro (20.5%). Additionally, 6 known QRDR genes were identified in the 39 ciprofloxacin-resistant NTS isolates, including 2 with qnrB (5.1 %), 4 with aac(6')-Ib-cr (10.3 %), 11 with oqxA (28.2%), 11 with oqxB (28.2%), 1 with qnrVP (2.6%), and 1 with qnrVV (2.6%). On the other hand, 10 isolates (26%) comprise both QRDR mutation(s) and PMQR gene(s), 23 isolates (59%) contain QRDR mutation(s) only, 5 isolates (12.8%) contain PMQR gene(s) only, and one isolate (2.6%) consists of neither reported QRDR mutations nor known PMQR genes.
Conclusion: QRDR mutations are more common than PMQR genes in ciprofloxacin-resistant NTS in Taiwan. The one NTS isolate without reported QRDR mutations and PMQR genes could contain novel genetic loci associated with quinolone resistance.

PP-G-05

AETIO-CLINICAL PROFILES OF PANCREATITIS IN CHILDREN: EXPERIENCE AT THE DEPARTMENT OF PAEDIATRIC GASTROENTEROLOGY, BSMMU.

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Background & Objectives: Pancreatitis is an inflammatory condition of the pancreas. Acute pancreatitis (AP) is reversible and most prevalent, whereas chronic pancreatitis (CP) is irreversible. Few have recurrent episodes of acute pancreatitis (Acute recurrent pancreatitis, ARP). This study was conducted to determine the clinical presentation and aetiology of pancreatitis in children.
Methods: This descriptive cross-sectional study was conducted in the Department of Paediatric Gastroenterology, BSMMU from 1st January to 31st December, 2016. Seventy two (72) subjects of pancreatitis (age of <18 years) were studied. Classification of pancreatitis was based upon International Study Group of Pediatric Pancreatitis: In search for cure (INSPPIRE) criteria. Clinical characteristics, laboratory, imaging profile of subjects and etiologies, complications of pancreatitis were studied. Data was analysed with SPSS ver20.
Results: Among 72 studied subjects (mean age 10.27±3.71 years), 52.8% were male and 41.7 % had acute, 26.4% had ARP and 31.9% had chronic pancreatitis. Common clinical features were: abdominal pain 100%, 52.2% and 78.9%; vomiting 74%, 26.5% and 84.2% in acute, chronic and ARP respectively. As mean ± SD, Serum amylase (U/L) was 1294.0±2119.6, 556.2±882.8 and 1141.1±2344.1 (p 0.478); serum lipase was 2093.2±3034.5, 1354.7±2525.5 and 2340.2±1902.2 (p 0.480) in acute, chronic and ARP respectively. USG studies revealed: swollen pancreas 26.4%, biliary tree abnormality 16.7%, ascites 5.6% and main pancreatic duct dilatation with stone 12.5%. MRCP and CT abdomen were done in 23 and 14 subjects respectively. Aetiology of pancreatitis were: idiopathic 65.3%, tropical calcific pancreatitis 13.9%, hepatobiliary tract abnormalities 12.6%, biliary ascariasis 4.2 % and acute hepatitis A 1.4%.
Conclusion: Present study revealed that abdominal pain was the most common clinical presentation of pancreatitis. Serum lipase and amylase were relatively higher in AP and ARP than CP. Serum calcium and triglyceride level were normal in almost all patients. Commonest cause of pancreatitis is Idiopathic (65.3%).

PP-G-06

TWO CASES OF PROTEIN LOSING ENTEROPATHY CONSIDERED TO BE CAUSED BY INFECTIOUS GASTROENTERITIS DUE TO NEUTROPENIA.

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Introduction: Protein losing enteropathy (PLE) is often caused by congenital or secondary intestinal lymphangiectasis, but infectious enterocolitis may also be the cause. We report two cases that infectious enteritis due to neutropenia caused PLE.

Case1: A 6 months old girl showed vomiting and diarrhea 5 days before hospitalization. She had lower limbs/eyelid edema which had continued from 3 months of age Hypoalbuminemia and abnormal coagulation test were observed. Upper and lower endoscopy were performed under general anesthesia. Ileocecal severe swelling and vitiligo were revealed, but histological analysis did not detect lymphangiectasis. Although protein leakage scintigraphy was negative image, she was diagnosed as PLE from her symptoms and laboratory findings. MRSA was detected in fecal culture, but it was cure without administration of anti-MRSA drug and seemed to be not pathogenic. Following her improvement of diarrhea and vomiting, the neutrophil count gradually decreased and reached about 80-100/μl. No abnormality was detected in her bone marrow examination or in levels of anti-neutrophil antibodies, and benign neutropenia was considered.

Case2: A 5 months old boy vomited 1-2 times/day from 2 weeks before visit. Since diarrhea began in addition to vomiting,, he received medical examinations. Hypoproteinemia, pleural effusion, ascites, edema and abnormal coagulation test were noticed. Protein leakage scintigraphy was positive, so he was diagnosed as PLE. Upper and lower gastrointestinal endoscopes were performed, and white villi were observed in the duodenum. However no lymphatic dilation was observed histologically and only inflammation was found. After hypoproteinemia improvment, neutropenia appeared. Anti-neutrophil antibody was negative, and he did not show susceptibility to infection.

Discussion: Three major mechanisms of pathology of PLE are considered: lymphatic disorder, increased vascular permeability, and intestinal mucosal epithelium disorder. It is considered that intestinal mucosal epithelial disorder occurred in these two cases as a result of infectious enterocolitis and it seems that neutropenia has been one of the causes. No abnormality were detected in pancreatic exocrine function in these patients, therefore Shwachman-Diamond syndrome was excluded.

PP-G-07

MALE SEX AND BODY MASS INDEX ARE POSITIVELY ASSOCIATED WITH PERIANAL MODIFIERS IN PEDIATRIC CROHN'S DISEASE PATIENTS AT DIAGNOSIS

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Background & objectives: Perianal modifiers, namely perianal fistulas and/or abscesses, are a distinct complication of Crohn's disease (CD) that distinguishes CD from ulcerative colitis. They are more frequently observed at diagnosis in Korean children and adolescents with Crohn's disease compared to their counterparts in Western countries. We aimed to investigate factors associated with the presence of perianal modifiers in pediatric CD patients at diagnosis.
Methods: Korean children and adolescents who were newly diagnosed with CD before 18 years-old from 2013 to 2016 were included in this multicenter retrospective study. Medical charts of 263 patients were reviewed and disease phenotype at diagnosis was classified according to the Paris classification. Factors associated with the presence of perianal modifiers at diagnosis were analyzed by logistic regression analyses.
Results: A total of 241 patients who had completed full workup of the entire GI tract were included. The median age at diagnosis was 14.7 years (range: 0.8-17.9), and M:F ratio was 1.9:1. Perianal modifiers were observed in 108 patients (44.8%). Comparison between Korean patients with and without any perianal modifiers showed that patients with perianal modifiers were constituted with a higher proportion of patients with male sex (73.1% vs. 57.9%, P=0.02), had a higher Z-scores for weight (mean ± standard deviation: -0.7±1.3 vs. -1.1±1.3, P=0.036) and higher Z-scores for body mass index (BMI) (median -0.7 vs. -1.2, P=0.021), and a higher proportion of patients with any L4a involvement (upper disease proximal to ligament of Treitz) (44.4% vs. 30.1%, P=0.03). According to multivariate logistic regression analysis, male sex (OR=1.93, 95% CI=1.10-3.43, P=0.022) and BMI Z-score (OR=1.23, 95% CI=1.01-1.52, P=0.04) were significantly associated with the presence of perianal modifiers at diagnosis.
Conclusion: Male sex and BMI Z-score were positively associated with the presence of perianal fistulas and/or abscesses in pediatric CD patients at diagnosis.

PP-G-08

EPIDEMIOLOGY OF PEDIATRIC ACUTE PANCREATITIS IN TAIWAN: A NATIONWIDE POPULATION STUDY

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Objectives: The pediatric acute pancreatitis (AP) are different in various aspect from adults. This study aims on the epidemiology and resource use of pediatric AP in Taiwan. Methods: AP cases were identified from the Taiwan National Health Insurance Research Database based on the International Classification of Diseases, Ninth Revision (ICD-9) code of AP 577.0. The medical resource were measured by length of hospital stay and hospital charges.
Results: Between 2000 and 2013, a total 2127 cases of pediatric (0~18 years of Age) AP were collected which represented a hospitalization rate of 2.83 per 100,000 population. The incidence by age had two peaks that the first peak was at age of 4~5 years old and the second peak appeared in the adolescents. The incidence by year increased from 2.33 to 3.07 cases per 100,000 population during the study period. Significant differences between females and males were found in ALOS, medical cost, endoscopic retrograde cholangiopancreatography (ERCP) and with gallstone/biliary tract diseases ($p < 0.05$).
Conclusion: The incidence of pediatric AP in Taiwan is in a slowly rising trend. There is gender difference that females have longer hospital stay and higher medical expenditure than males.

PP-G-09

USTEKINUMAB TREATMENT FOR PATIENTS WITH PEDIATRIC-ONSET CROHN'S DISEASE IN A TERTIARY CHILDREN'S HOSPITAL

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Background and objectives：Ustekinumab (UST) is a human monoclonal antibody targeting interleukin-12 and interleukin-23, with reported efficacy for Crohn's disease (CD). However, only a few studies have reported UST use for pediatric-onset CD. This study aimed to evaluate the efficacy of UST for pediatric-onset CD.

Methods: The medical records of patients with CD treated by UST between August 2006 and May 2018 at National Center for Child Health and Development in Tokyo, Japan, were retrospectively reviewed.

Results：UST was introduced in 6 patients with pediatric-onset CD (M:F=3:3, Paris Classification: A1a:A1b=2:4, L3:L3L4ab=2:4, B1:B1p=4:2). All but one patient was treated with other biologics prior to UST. The indications of UST treatment were: loss of response (LOR) to infliximab (IFX) in 2; adverse reactions to adalimumab (ADA) (psoriatic rash and depression) in 2; and LOR and severe infusion reaction to IFX in 1. One patient chose UST for active disease despite the use of enteral nutrition and immunomodulator. The mean duration from first biologics use to UST was 56 (10-116) months. The mean follow-up period with UST was 32 (13-47) weeks. No adverse event to UST was reported during follow-up. One girl with failed treatment by IFX and golimumab achieved steroid-free remission in 22 weeks with UST, and one boy with very early-onset CD who was on prednisolone, tacrolimus, and IFX with total parenteral nutrition achieved reduction in prednisolone and tacrolimus doses by switching IFX to UST. Psoriatic rash and depression improved without relapse of CD after switching ADA to UST. One girl who had LOR and severe infusion reaction to IFX remained on UST without adverse event.

Conclusions：UST is a useful treatment option in patients with pediatric-onset CD having LOR or adverse reactions to IFX/ADA. Its effectiveness and safety in children should be further studied prospectively.

PP-G-10

CAPSULE ENDOSCOPY IN PEDIATRIC OBSCURE GASTROINTESTINAL BLEEDING: CLINICAL OUTCOMES

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Background/Aim: Small bowel lesions were difficult to investigate before capsule endoscopy (CE). Main indication is OGIB in adulthood, inflammatory bowel disease in pediatrics. Aim: to evaluate small bowel capsule endoscopy findings and clinical outcomes. Patients and
Methods: Results of CE performed for OGIB and chronic anemia, between 2008 and 2018, and clinical outcomes were collected.
Results: CE was performed in 517 patients; 71 CE for OGIB/anemia (48/23, M/F), mean age 10.87 yrs (range 1-25); lower weight 8 kg. All patients underwent upper and lower endoscopy: two patients had angiodysplastic lesions in stomach and colon and they underwent endoscopic argon-plasma coagulation treatment; one patient had colic Crohn disease; other 68 upper and lower endoscopy were negative for lesions. All 71 patients underwent capsule endoscopy, swallowed or placed, depending on the age. Positive CE findings were detected in 32/71 (45%) patients. Seventeen/71 (23.9%) patients had ileal ulcers, 5 of these on previous surgical anastomotic site; 6/17 patients had ileal Crohn's disease. They had medical treatment. Eleven/71 (15.4%) patients had small bowel angiodysplastic lesions: two patients with jejunal lesions were treated by single balloon enteroscopy with argon-plasma coagulation; nine patients with ileal lesions underwent surgery. Other 4/71 (5%) patients needed surgical intervention for capsule endoscopy findings in jejunum-ileum tract: one jejunal adenocarcinoma, two Meckel diverticulum (negative Tc99scan), one single ileal polyp. Total of 13/71 (18.3%) patients needed surgery. No complications and relapses occurred in all operated patients. In 7 patients CE impaction occurred; in 4 patients CE was endoscopically removed, in three corticosteroids were administered.
Conclusions: CE was safe, and in our small series a high diagnostic yield was observed (45% positive findings). Endoscopy and surgery, often, may be complementary in small bowel lesions treatment.

PP-G-11

MUCOSAL HEALING IS ASSOCIATED WITH TRANSMURAL HEALING AFTER 1-YEAR TREATMENT WITH ANTI-TNF AGENTS IN PEDIATRIC CROHN'S DISEASE PATIENTS

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Background & objectives: Although, the currently acknowledged treatment goal in Crohn's disease (CD) is mucosal healing (MH), transmural healing (TH) is recently emerging as a potential treatment goal. We aimed to investigate factors associated with TH at 1-year treatment with anti-TNF agents in pediatric CD patients.
Methods: Pediatric patients with luminal CD diagnosed before 19 years were enrolled in this prospective study. Included patients were anti-TNF naïve patients who had simultaneously conducted ileocolonoscopies and magnetic resonance enterography (MRE) before starting treatment with anti-TNF agents. The primary endpoint was TH rate at 1-year treatment. TH was defined as wall thickness ≤ 3 mm with the absence of ulcers, edema, enhancement, and complications on all ileocolonic segments evaluated by MRE. Factors at baseline and 1-year treatment were investigated for their association with TH.
Results: A total 74 patients were included in this study. At 1-year treatment, TH and MH was observed in 20.3% and 52.7% of the patients. All patients with TH had achieved MH at 1-year treatment. According to multivariate logistic regression analysis, 1-year Simple Endoscopic Score for Crohn's disease (SES-CD) score was the only factor associated with TH at 1-year (OR=0.58, 95% CI=0.32-0.88, P=0.035). Meanwhile, disease duration from diagnosis to anti-TNF initiation and 1-year Magnetic Resonance Index of Activity (MaRIA) score were associated MH on multivariate logistic regression analysis (OR=0.52, 95% CI=0.27-0.86, P=0.02 and OR=0.84, 95% CI=0.74-0.92, P=0.001, respectively). According to receiver operating characteristic curve analysis, the optimal cut-off of 1-year SES-CD for detecting TH was SES-CD<3 (AUC=0.726, Sensitivity=100%, Specificity=53.8%, PPV=38.5%, NPV=100%, P < 0.001).
Conclusion: TH is a more stringent goal to achieve when compared to MH. However, early anti-TNF treatment during the disease course of CD may lead to higher rates of MH, which may further lead to higher rates of TH.

PP-G-12

GASTRIC MOTILITY DISTURBANCES AMONG ASTHMATIC CHILDREN

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Background & objectives: Gastrointestinal symptoms and functional gastrointestinal disorders (FGIDs) are known to occur frequently associated with asthma. It is reported that gastric motility is impaired in FGIDs. However none of studies have assessed gastric motility in children with asthma. Therefore we aimed to compare gastric motility between asthmatic children and children suffering from both asthma and functional gastrointestinal disorders.
Method: This was a case control study comprising four study groups. Twenty five asthmatic children diagnosed according to American thoracic society (ATS) criteria who are free with gastrointestinal symptoms were recruited. Twenty five children who fulfilled Rome III criteria for FGIDs and who are free with respiratory symptoms were recruited. Twenty five children who fulfilled both Rome III criteria and ATS criteria were recruited as children suffering from both diseases. Diagnosis of asthma was confirmed with bronchodilator reversibility test. None of patients with AP-FGIDs had clinical or laboratory evidence of organic diseases.Twenty five healthy children who are free with gastrointestinal and respiratory symptoms served as controls. Liquid gastric emptying rate (GER) and antral motility parameters were assessed using real-time ultrasonography.
Results: The mean GER (39.7% in asthmatics vs. 57.5% in controls, $p<0.0001$), amplitude of antral contractions (42.8% vs. 63.6%, $p<0.0001$) and antral motility index (3.9 vs. 6.0, $p<0.0001$) were significantly lower in asthmatics compared to controls. Similarly GER and antral motility parameters were significantly reduced among children having both diseases and children having only FGIDs compared to controls. Furthermore GER (32.2% vs 39.7%, $p<0.05$) was significantly lower in children having both diseases compared to children with only asthma, but the antral motility parametes were insignificant.
Conclusion: Gastric motility parameters were significantly impaired in children with asthma compared to controls. These findings highlight the possible role of gastrointestinal motility abnormalities in the pathophysiology of frequent occurrence of gastrointestinal disorders among asthmatics.

PP-G-13

VEGETABLES AND FRUITS FREQUENTLY CAUSE FOOD ALLERGY IN TAIWAN.

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Background and objectives: Food allergy (FA) is a potentially serious immune response that could cause fatal reactions. Milk, eggs, peanuts, shellfish, and wheat are well-known food allergens. However, the precise burden of vegetable and fruit on atopic diseases was unclear. We aimed to investigate the parent-reported prevalence of fruits and vegetables on atopic diseases and its clinical characteristics in Taiwanese schoolchildren and their family members.
Methods: This is a nationwide, cross-sectional and randomized questionnaire survey. We enrolled children aged 6 to 13 years old and their family members. We analyzed the association between food allergens and common atopic diseases including allergic rhinitis, asthma, atopic dermatitis and urticaria. We defined the diagnosis of FA as respondents reported physician-diagnosed FA.
Results: 19609 effective questionnaires were enrolled. There were 5.13% of respondents with fruit allergy and 3.04% of respondents with vegetable allergy. Fruit was the third leading allergen on atopic dermatitis (AD), urticaria, asthma and allergic rhinitis (AR), (15.2%, 13%, 11.1% and 7.8%, respectively). Vegetable was the fourth common allergen for urticaria and AR (8.2% and 4.4%) and the fifth reason for AD and asthma (7.9% and 6.4%). The five common vegetable allergens were taro, bamboo shoot, eggplant, mushroom and chili (35.7%, 26.3%, 20.3, 19.6 and 16.1%, respectively). The five common fruit allergens were mango, kiwi, pineapple, orange and watermelon (65.6%, 19.7%, 9.0, 8.9 and 7.9%, respectively). In respondents with fruit allergy, 49.7% had AR, which was similar to those with vegetable, shrimp and crab allergy (47.7%, 47% and 48.9%, respectively).
Conclusion: Other than shellfish, fruits and vegetables are also common major allergens. Taro, bamboo shoot, eggplant, mango, kiwi and pineapple are common vegetable and fruit allergens. Patients with atopic diseases should not only be assessed prudently for allergies to fruits and vegetations but also be provided with appropriate education accordingly.

PP-G-14

PARENTS' VIEWS, ATTITUDES AND RESPONSE TOWARDS ABDOMINAL PAIN IN CHILDREN WITH FUNCTIONAL ABDOMINAL PAIN DISORDERS (FAPDS): A SCHOOL BASED, CROSS SECTIONAL STUDY

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Introduction: This study assessed parents' views, attitudes and response towards abdominal pain in children with FAPDs among of 5-12-year age group.
Methods: A cross-sectional survey was conducted in four randomly selected schools in Gampaha District of Sri Lanka. Data was collected using a translated and validated parental questionnaires. FAPDs were diagnosed using Rome III criteria.
Results: There were 82 (12.6%) FAPDs children (63.4% girls, mean 9.2years, SD 1.9years). During the analysis, 571 healthy children were conceded as controls (51.1% girls, mean 8.8years, SD1.9 years). The occurrence of frequent attacks of abdominal pain (48.8%), prolonged duration of abdominal pain (34.1%), the severity of pain (17.1%) was considered as a sign of a disease by the parents. The parents accepted that a disease (17%), family factors (13.4%), and school factors (8.5%) contribute to child's abdominal pain. However, there was no statistically significant difference between boys and girls on the above observations ($p > 0.05$, Mann-Whitney U test). Parents detected their child's pain after child complaining (84.1%), facial expression (7.1%) and behavioural changes (6%). The majority (69.5%) of the parents observed that their child was suffering from pain at home. 19.5% of the parents were informed by the school that their child had pain during school hours. Child's pain was relieved by giving analgesics (54.9%) and rubbing the abdomen (18.3%). Spontaneous recovery was anticipated by 20.7%. Analgesic use for abdominal pain was significantly higher among the patients (51.2% vs. 18.7%, $p=0.001$). Changing the eating pattern was observed by 30.4% of parents in their child after developing abdominal pain.
Conclusion: The parents' observations, attitudes and response for FAPDs may be an important factor in the management of FAPDs in children.

PP-G-15

HEALTH CARE SEEKING BEHAVIOURS IN FUNCTIONAL ABDOMINAL PAIN DISORDERS (FAPDS); SCHOOL BASED, CROSS SECTIONAL STUDY

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Introduction: This study healthcare-seeking behaviour of FAPDs children in 5-12 age group.
Methods: A cross-sectional survey was conducted in four randomly selected schools in Gampaha District of Sri Lanka. Data was collected using a translated and validated parental questionnaires. FAPDs were diagnosed using Rome III criteria.
Results: There were 82 (12.6%) AP-FGIDs children (63.4% girls, mean 9.2years, SD 1.9years). During the analysis, 571 healthy children were conceded as controls (51.1% girls, mean 8.8years, SD1.9 years). The number of healthcare consultations for abdominal pain during the past year and past three months before the diagnosis was significantly higher in FAPDs group. Thirty-two (39%) FAPDs children had average healthcare consultations of 2.94 (SD 1.6 consultations, range 1-6 visits per year) during the past one year for abdominal pain. 33 (40.2%) children had 1.92 mean consultation (SD 1.1 consultations, range 1-12 visit per month) during the past 3 months for abdominal pain. The majority (38.7%) of the children received treatment from a hospital. The family doctor has treated 32.2% of children. Medical advice was sought from a consultant paediatrician by 29.0% children. Multiple logistic regression analysis showed that nausea was significantly associated with healthcare consultations (p=0.01), and the presence of a family member with chronic pain was associated with healthcare consultations (p=0.03).). However, early satiety (p=0.729) and abdominal fullness (p=0.09) were not associated with consultation.
Conclusion: The majority of the children did not seek consultations for abdominal pain. It may be an indicator of the prevalence of ``silent sufferers`` in the comm

PP-G-16

IMPACT OF EARLY LIFE EVENTS (ELE) ON SEX-RELATED VULNERABILITY IN DEVELOPMENTS OF FUNCTIONAL ABDOMINAL PAIN DISORDERS (FAPDS) IN 5-12 AGE GROUP

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Introduction: The pathophysiology of FAPDs in children is poorly understood. Animal and human data have suggested that adverse ELE such as pain or stress can induce long-term changes in the neurons. Apart from the abuse other aspects of early life have not been well investigated.
Methods: ELE was evaluated in 182 FAPDs (62.1% female) using the parental questionnaire. FAPDs were diagnosed by Rome III criteria.
Results: Compared to female patients male patients had significantly higher post-natal complications (17.4 vs. 10.6, p=0.007), PBU care (3.5 vs 14.5, p=0.002), Interventions during the labour was (Caesarian sections, vacuum, forceps) significantly higher among the male patients (46.8 vs. 28.3, p=0.004). Mean duration of the hospital stay after the delivery was significantly higher among the male patients (4.68 vs. 2.19) (p=0.002) Antenatal complications (17.4 vs. 13.3, p=0.448), gestational period (35.3 vs 38.0, p=0.0.71) was not significantly different. Period of exclusive breastfeeding (87.5 vs. 83.3, p=0.467), breastfeeding more than 12 months (83.3 vs. 89.8, p=0.239), breastfeeding more than 24 months (41.7 vs. 65.3, p=0.055) was not significantly different. Family factors (age, age at marriage, birth order), number of family members with chronic pain, number of household members, Handedness were not significantly different among the groups.
Conclusion: ELE occurring during the labour and post-natal period may play a role in the development of FAPDs in males.

PP-G-17

IDENTIFICATION OF A NOVEL SLC5A1 MUTATION IN RARE CASE OF CONGENITAL GLUCOSE-GALACTOSE MALABSORPTION.

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Background & Objectives: Congenital Glucose-galactose malabsorption is a rare disorder (few hundred reported cases globally), caused by defective sodium/glucose cotransporter encoded by SLC5A1 gene. We present clinical and molecular investigations of a patient presented with a clinical course of congenital diarrhea.
Methods: Patient was clinically evaluated at Pediatrics Department, Rawalpindi Medical University & Allied Hospitals, followed by molecular screening for SLC5A1 gene at Department of Biotechnology, Quaid-i-Azam University, Islamabad, Pakistan.
Results: The patient was born to consanguineous parents and presented at one year of age with profuse, watery diarrhea associated with diaper rash starting 3rd day of life. He was underweight and short with abdominal distension but no bilious vomiting and visceromegaly. He had recurrent dehydration requiring frequent intravenous rehydration. Extensive biochemical, radiological, and histopathological investigations were done. Ileal biopsy was suggestive of tufting enteropathy. Diarrhea would improve if child was not fed. Stool reducing substances were positive. A therapeutic trial of fructose-based milk formula was given that proved effective with achievement of near normal stool pattern over 2-3 weeks and normal anthropometric measures over 06 months. Patient was screened for all coding exons and exon-intron boundaries, which identified a novel homozygous insertion mutation c.496-497insG in exon 6. The mutation predicts a frameshift with a stop codon after 229th aminoacid of otherwise 664 amino acids long polypeptide, thus lacking major portion of transporter and hence non-functional. The deleterious effect of the mutation was supported by in silico prediction tools (PROVEAN and Mutation Taster). Parents were found heterozygous for the mutation, thus confirming GGM diagnosis. Discussion A novel mutation has been described in patient with typical presentation of congenital GGM, which to our knowledge, is the first case from Pakistan. The study extends the mutation spectrum of SLC5A1 gene and should prove helpful in genetic counselling and prenatal diagnosis of the family.

PP-G-18

CLINICAL CHARACTERISTICS AND DISEASE BEHAVIOUR OF PAEDIATRIC INFLAMMATORY BOWEL DISEASE IN SOUTHEAST ASIAN CHILDREN

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Background: Pediatric inflammatory bowel disease (PIBD) is rising in incidence in Asia and there is lack of regional published data on clinical characteristics and disease behaviour amongst affected children. Objectives: We aim to describe the clinical characteristics and disease behaviour at diagnosis between the two PIBD phenotypes (Crohn's Disease (CD) and Ulcerative Colitis (UC)).
Methods: We analysed clinical, laboratory parameters and endoscopic records of PIBD patients diagnosed between 1994-2018 at National University Hospital Singapore. Anthopometry was standardised as WHO 2007 Z-scores ; individual disease phenotypes were characterized on the Paris classification.
Results: 97 patients were diagnosed with PIBD : 54.6% (CD), 43.3% (UC), 2.1% IBD-Unspecified, in the following ethnic distribution: Chinese 40.2% , Malay 11.3% and Indian 32.0%. 49.5%(n=50) of PIBD patients presented at age 10 or younger ; 23.7%(n=23) 6 years or younger , and 6.2%(n=6) at 2 years and younger. CD patients had significantly lower body-mass-index Z-scores than UC (-1.6 v.s. -0.54, p=0.004) ; CD patients also had significantly higher inflammatory indices at presentation (ESR : 58.2 vs 35.2mm/h , p=0.002), (Platelet count: 530.8 vs 433 x109/L, p=0.014), (C-reactive protein: 60.4 vs 19.6 mg/L, p=0.035). CD patients most commonly presented with (L3) ileocolonic disease (45.3%), followed by L2 (colonic) (34.0%) and L1(distal ileal disease)(17.0%). 57.4% of CD patients had upper gastrointestinal disease , and 19.6% presented with (B3)penetrating/fistulating disease. UC patients most commonly presented with E4 pancolitis (60.5%), followed by E2 left sided disease (18.6%) and E1 proctitis (16.3%).
Conclusions: CD patients present with a distinct anthropometric and biochemical profile to those with UC. Ileocolonic CD and pancolonic UC are the most common disease phenotypes at presentation, consistent with prior Western cohorts[1], although we report a higher incidence of B3 penetrating disease in CD at presentation (19.6% vs 5.0% EUROKIDS[2]) and ulcerative proctitis (16.3% vs 5.0% EUROKIDS[2])

PP-G-19

CHYLOUS DISORDERS: A RARE ENTITYIN CHILDREN

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Background &Objectives: Chylous disorders are a rare group of disorders and the spectrum of presentation ranges from congenital to acquired form with different prognosis and outcome. The management includes stabilization of acute condition followed by specific dietary therapy, MCT oil and fat soluble vitamins.The aim of study is to share our experience about this rare disorder including clinical spectrum, management and outcome perspectives.
Methods: This was a retrospective cross sectional study on chylous disorders conducted at children's hospital, Lahore between the periods of January 2015 to January 2017. The database included age (months), gender, clinical presentation, laboratory parameters, management and outcome. The data was analyzed by SPSS version 22.
Results: There were 15 (65.2%) femaleswith interquartile range (IQR) of 144(1) months out of 23 total chlyous disorders. Seventeen (73.9%) patients had primary variety and Intestinal lymphangiectasia was the leading cause in 13 (56.52%) followed by chylous ascites and effusion. Among the secondary causeswere post-surgical in 4 (17.3%) andone (4.34%) each of malignancy and tuberculosis. Majority of patients had lymphopenia, hypoalbuminemia and milky aspirate on fluid aspiration. Acute management included stabilization with albumin, fluid aspirations to decompress, octreotidesand dietary intervention. Five children required ascitic tap and three pleurodesis for ascites and effusion in addition to thoracic duct ligation in one patient. The majority of children did well on dietary intervention with MCT oil, fat soluble vitamins and three (13.04%) children expired due to non-compliance issues, severe hypoalbuminemia and concurrent infections.
Conclusion: Chylous disorder is a rare entity and primary etiology is more common than secondary pathology in children. Symptoms control is good on dietary modification with MCT oiland supplemented vitamins. Generally, outcome is better if acute crises are handled properly and supervised dietary interventions are applied and followed more closely.

PP-G-20

TECHNICAL FEASIBILITY OF ENDOSCOPIC BALLOON DILATATION FOR POSTOPERATIVE ESOPHAGEAL STRICTURE IN INFANT AND CHILDREN WITH CONGENITAL ESOPHAGEAL ATRESIA

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Introduction: Evidence suggests that postoperative esophageal stricture(ES) frequently develops after correction of congenital esophageal atresia(EA). EBD is well known safe and effective procedure in adults with gastrointestinal stricture. However, clinical experience of EBD in infant and children with postoperative ES with EA surgery is limited. We aimed this study to evaluate technical feasibility of EBD for postoperative ES in infant and children with EA surgery. Patients and
Methods: Between November 2008 and June 2018, children underwent EBD for postoperative ES after EA surgery in Pusan National University Children's Hospital were recruited. The demographic data of children, final EBD balloon size, EBD procedure time, complication and rate of technical failure were investigated.
Results: Between November 2008 and June 2018, 36 children underwent 76 times of EBDs. Sixteen patient underwent only one time of EBD and 20 patients underwent EBDs more than two times. Mean age of EBD was 12.9±30.4 (range: 0.6-178.9) months. Mean body weight at the time of EBD was 6.9±4.9 (range: 2.3-29.8) kg and 63 times and 36 times was done under 10kg and 5kg of body respectively. Mean size of the final EBD balloon was 10.2±1.6 (range: 6.0-15.0)mm. Neither perforation nor bleeding was observed. Two procedures (2.6%) had experienced respiratory holding, however, eventually recovered without any complications. One procedure (1.3%) experienced pneumothorax which needed chest tube insertion due to difficult intubation before EBD. The pneumothorax did not directly relate to EBD procedure itself. One procedure (1.3%) was technically failing due to complete obstruction of ES.
Conclusions: Overall complication and technical failure of EBD for postoperative stricture in infant and children with EA surgery was 5.3%. EBD of 10.2±1.6 in infant and children is technically feasible. Beyond technical feasibility, clinical effectiveness is difficult to evaluate because of lots of comorbidities in congenital esophageal atresia patients, further research would be needed.

PP-G-21

UPPER GASTROINTESTINAL ENDOSCOPIES IN CHILDREN – OUR EXPERIENCE IN TERTIARY CARE HOSPITALS, KARACHI, PAKISTAN

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Background: Gastrointestinal endoscopies are standard care for the diagnostic and therapeutic procedures for pediatric gastrointestinal diseases in the developed countries but in developing countries Pediatric Gastroenterologists with endoscopy skills are scarce and very limited institutes performing Pediatric GI Endoscopies. In fact, this modality is underutilized in developing countries due to cost, non availability and accessibility. Objectives: To determine the indications, endoscopic findings, therapeutics interventions, diagnostic yield and complications of Upper GI Endoscopies in children.
Methodology: Descriptive study; Data was collected retrospectively from National Institute of Child Health and Private sector Hospital at Karachi from May 2001 to May 2018. We included all infants and children who underwent upper GI endoscopy during study period. Total 519 procedures, 421 from Private sector hospital (May 2001 to May 2018) and 98 from NICH Hospital (May 2015 to May 2018) were reviewed from records.
Results: In this study, mean age was recorded 7.9 years (2 months to 15 years). Majority were >10years of age n=215 (41%), 5-10years were n=152 (29%), 1-5years were n=143 (28%) and <1 year were n=9(2%). Male were predominant 290 (56%) and females were 229 (44%). Before 2013, intravenous sedation and analgesia was used in 273(53%) cases after that all cases were done in general anesthesia 246 (47%). Year wise number of procedures is shown in bar chart 1. Indications for Upper GI endoscopy are given in table 1 Endoscopic findings in decreasing frequencies were Decreased number of duodenal folds(scalloping/bald duodenal folds) in 123 (23.5%), Normal in 118 (22.5%), Gastritis in 101 (19.5%), Gastritis with Antral Nodularity 53 (10%), Hiatus Hernia 47(9%), Esophageal Varices 38 (7%), Esophagitis 35 (6.7%), Duodenitis 27 (5%), Lax GE- Junction in 23 (4.5%), Esophageal stricture 13 (2.5%), Duodenal nodularity 12 (2.3%), Starry sky appearance of duodenal mucosa (white villi/spots) 4 (0.8%), Peptic Ulcer 3 (0.6%), Foreign body impaction 2(0.4%), Gastric Polyp with severe Gastritis in 1 (0.2%), Duodenal polyp in 1 (0.2%) and Gastric Outlet Obstruction in 1 (0.2%) was found. More than one finding was present in 63 (12%) of patients. Positive findings were noted in 401 (77%) patients and 118 (23%) had normal endoscopy findings. Therapeutic intervention was done in 35 (6.25%) patients including Injection Sclerotherapy in 33 (6.2%) and foreign body removal in 2(0.5%). Complications of prolong sedation in 3 patients and post general anesthesia fever was documented in 4 patients. No other complication was found.
Conclusion: Malabsorption syndrome was most common indication followed by Upper GI bleed, epigastric pain and vomiting. Decreased duodenal folds with scalloping and gastritis were most common findings found in this study. Sclerotherapy for esophageal varices was main intervention and no significant complication was found. It was concluded that pediatric upper GI endoscopy is safe and effective and can be performed across wide age range.

PP-G-22

INTESTINAL TUBERCULOSIS, A REAL DIAGNOSTIC CHALLENGE: A CASE SERIES.

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INTRODUCTION: Tuberculosis (TB) presenting with predominantly abdominal symptoms is uncommon. Often the symptoms are very similar to inflammatory bowel disease (IBD) especially CD. We described 3 patients who were initially diagnosed as CD but were revised to intestinal TB. CASE SERIES Three patients, aged 14 (ATF), 11 (NR) and 10 (SYW) years old respectively, initially presented with chronic abdominal pain, diarrhea and significant weight loss. Initial endoscopy for ATF showed ulceration and inflammation at terminal ileum. EEN, methylprednisolone and adalimumab was started. However, she responded poorly. Subsequently, she deteriorated, needed resuscitation for intra-abdominal sepsis with septicaemic shock. Anti-TB was commenced when she developed persistent fever, left lower lobe consolidation, a positive Mantoux test and positive AFB smears. She improved but complicated with perforated small bowel during intensive phase of TB treatment. NR had colonoscopic features mimicking CD (aphthous ulcers, exudate, pseudopolyps at caecum and descending colon, narrowed ileo-caecal valve). EEN and azathioprine were started but her symptoms persisted. Diagnosis revised to intestinal TB when further history revealed TB contact, imaging study showed left lung consolidation, a positive Mantoux test and sputum TB culture. SYW had typical purulent discharge from perianal fistula. MRI showed perianal collection and small bowel thickening. Colonoscopy was suggestive of CD (aphthous ulcers with cobblestone appearance at caecum). Clinical course showed intestinal TB (persistent fever with left lower lobe consolidation, positive sputum AFB smear and culture). He responded poorly to EEN. Histopathology examinations for all 3 patients showed active colitis, non-caseating granulomatous inflammation with no AFB seen. They responded well to anti-TB treatment with catch-up weight gain and normal endoscopy findings during follow up. CONCLUSION It is challenging to differentiate intestinal TB from IBD (especially CD). Therefore, it is important to rule out intestinal TB whenever we diagnose IBD as it carries better prognosis with different treatment approach in comparison with IBD.

PP-G-23

INFLUENCE OF VACCINATION IN DEVELOPING HENOCH-SCHÖNLEIN PURPURA IN CHILDREN

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Purpose: This study aimed to investigate triggers for Henoch–Schönlein purpura (HSP) in children and to evaluate the differences in clinical features and outcomes of HSP based on triggers including vaccination and infection.
Methods: We retrospectively recruited 461 children diagnosed with HSP between January 2004 and December 2013. The study subjects were categorized into 3 groups based on the presence of triggers—the vaccination, infection, and no-preceding-trigger group. Demographic data, vaccination history, clinical features, and laboratory tests indicating inflammation and standard and activated coagulation were analyzed in all children and compared between groups.
Results: Among the 461 children with HSP (243 boys, 218 girls, mean age 7.1 years), 14 (3.0 %) reported history of vaccinations and 134 (29.1%) reported history of infections within 2 weeks prior to disease onset. HSP occurred most frequently in spring and least frequently in summer in the infection group ($p < 0.01$), but not in the vaccination group. Age distribution of HSP revealed a significant difference in the infection group ($p = 0.001$) with the most prevalent age groups being between 2 and 12 years of age, without a significant difference in the vaccination group despite the peak age being between 2 and 6 years. The vaccination group revealed a significantly longer hospitalization period ($p = 0.003$), a lower rate of skin involvement at the time of initial diagnosis ($p = 0.007$), and lower serum levels of fibrin degradation products ($p = 0.031$) than were observed in the infection group.
Conclusion: Vaccination is an uncommon trigger for the onset of HSP in children. However, vaccination prior to disease onset may influence clinical features and outcomes of HSP. Thorough history taking regarding prior triggers including infection and vaccination is important to better understand childhood HSP.

PP-G-24

RISK FACTORS FOR THE OCCURRENCE OF PROLONGED DIARRHEA IN CHILDREN LESS THAN TWO YEARS-OLD WITH ACUTE DIARRHEA: DEVELOPING AND TESTING THE SCORING SYSTEM

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Prolonged diarrhea: is increasing the risk of persistent diarrhea 6 times higher. The objectives of this study were to determine the risk factors for the onset of diarrhea, to determine whether etiologic factors of persistent diarrhea have been found in diarrhea, and to establish and apply a scoring system to predict the onset of diarrhea. An operational study with a nested case control design, in children <2 years with acute diarrhea treated in the inpatient ward of Fatmawati Hospital, the number of subjects per case and control group was 62. The risk factors for prolonged diarrhea in both groups followed by cohort and were compared for create a scoring system, find out if etiologic factors of persistent diarrhea have been found in prolonged diarrhea, and validate of the Model 2 score system. All risk factors were analyzed using bivariate and multivariate logistic regression, and the risk factors for prolonged diarrhea were history of antibiotic use, zinc deficiency, stool leukocytes, elevated levels of stool AAT and malnutrition. The etiologic factors of persistent diarrhea have been found in prolonged diarrhea (lactose intolerance, fat malabsorption, and Clostridium difficile infection). The prolonged diarrhea prediction score model had 2 models and validation results Model 2 is proved as a good enough instrument used based on discrimination and calibration aspects. Risk factors for prolonged diarrhea consist of a history of antibiotic use, zinc deficiency, elevated fecal AAT levels, fecal leukocytes, and malnutrition. The etiologic factors of persistent diarrhea have been found in the prolonged diarrhea. Model score made recommended as predictabel model of prolonged diarrhea.

PP-G-25

DIEULAFOY'S LESION OF THE HEPATIC FLEXURE IN A 4-YEAR OLD BOY, A RARE CONDITION: CASE REPORT

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Background: Dieulafoy's lesion (also termed exulceratio simplex or caliber-persistent artery) is an uncommon cause of upper gastrointestinal (GI) hemorrhage and an extremely rare cause of lower GI hemorrhage in children (especially colonic Dieulafoy's lesion). Therefore it can be frequently missed under colonoscopic examination for lower GI hemorrhage. The severity of the GI hemorrhage varies from life-threatening to intermittent and even obscure depending on site and size of the lesion. Objective: To report the first case of Dieulafoy's lesion of the hepatic flexure in a 4-year old boy to be treated successfully using an endoscopic hemoclipping. Case presentation: A 4-year old boy with a medical history of glucose-6-phosphate dehydrogenase (G6PD) deficiency was admitted with intermittent painless hematochezia for 1 month. Physical examination revealed anemia but hemodynamic was stable. A digital rectal examination revealed neither anal fissure nor rectal bleeding. The initial hematocrit was 29 percent. Other complete blood count (CBC) parameters indicated iron deficiency anemia from chronic blood loss. A colonoscopy was performed and revealed an adherent clot in the hepatic flexure. After the clot was washed using endoscopic water perfusion, a reddish protruding vessel, approximately 30 mm wide and 3 mm high and surrounded by normal mucosa was found. The patient was diagnosed with Dieulafoy's lesion according to the endoscopic diagnostic criteria for the condition. Three hemoclips were applied on the lesion and hemostasis was successfully achieved. He was discharged 1 day after the procedure and his hematocrit gradually increased to 34 percent during 6 months follow-up period.
Conclusions: Dieulafoy's lesion of the colon is a rare cause of lower GI hemorrhage in children. However, physician should be kept in mind as one of the differential cause of GI hemorrhage. Endoscopy is a mainstay in terms of diagnostic and therapeutic modalities. Application of endoscopic hemoclips was effective in achieving hemostasis.

PP-G-26

GASTRIC AND JEJUNAL TRICHOBEZOAR CAUSING BILIOUS VOMITING IN 8 YEARS OLD GIRL

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Introduction: Trichobezoars are foreign bodies formed in gastrointestinal tract because of hair accumulation from repeated ingestion over a period of time. In most of cases, nests of swallowed hair are loculated in stomach. It is rarely found in the small intestine. Abdominal pain is a common clinical presentation. Other symptoms are anorexia, weight loss, nausea, vomiting, bowel habit change, bleeding in stomach and gastric outlet obstruction. We reported a 8 years old Thai girl who presented with gastric and jejunal trichobezoar. Case presentation A 8-year-old Thai girl presented with a 3 day history of bilious vomiting and abdominal pain . Palpable abdominal mass was found at epigastrim. Her hair looked normal thickness without focal alopecia. CT scan of abdomen demonstrated marked gastric dilatation and intraluminal mass- like lesion with mottled gas pattern in the stomach and duodenum. Obstruction at duodenum was suspected . Upper gastrointestinal study showed large irregular filling defect with spongy appearance within the stomach, from gastric fundus to antrum with extension to proximal second part duodenum causing partial obstruction. Endoscopic showed the presence of large, oval trichobezoar with tail extending into duodenum. Endoscopic removal with various forceps and basket were attempted to fragment the bezoar. These relieved the duodenal obstruction but failed to remove the whole bezoar. Laparotomy with gastrostomy was finally done . After operation she still had bile content from nasogastric tube. Reexplored laparotomy was done. At operation, an intraluminal hair ball was found in mid jejunum. It was removed and jejunoplasty was done.

Conclusion: Small trichobezoar can be removed by endoscopy. For large trichobezoar, endoscopic removal is not a suitable choice . Laparotomy and gastrostomy is the treatment for gastric trichobezoar. About 9% of the patients undergoing surgery for intestinal bezoar may need a second operation because recurrent bowel obstruction caused by the residual bezoars.

PP-G-27

EOSINOPHILIC GASTROENTERITIS AS A CAUSE OF NON-HELICOBACTER PYLORI, NON-GASTROTOXIC DRUGS ULCERS IN CHILDREN

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Background & Objectives: While the prevalence of Helicobacter pylori (H. pylori) ulcers has declined recently, H. pylori-negative gastric and duodenal ulcers have emerged. This study aimed to analyze the etiology of H. pylori-negative and/or gastrotoxic drug-negative peptic ulcers (HNGN-PU) in children and to investigate the difference of clinical features, endoscopic and laboratory findings of HNGN-PU according to the etiology.
Methods: Between July 2003 and April 2017, 255 children with peptic ulcers (157 boys and 99 girls, aged 1 day-18 years) were recruited. The study subjects were categorized into the 5 groups according to the etiology of ulcer; H. pylori infection (n=51), gastrotoxic drugs (n=18), idiopathic peptic ulcers (n=144), systemic disease (n=23) and EoGE (n=19). Demographic data, clinical features, allergy history, endoscopic findings, and laboratory tests were reviewed and analyzed in all subjects included.
Results: Age at diagnosis ($p<0.001$), ulcer recurrence ($p=0.016$), history of atopic dermatitis ($p=0.002$), white blood cell counts ($p=0.008$), eosinophil counts in blood ($p=0.013$), platelet counts ($p<0.001$), serum albumin ($p=0.027$), serum iron ($p<0.001$), erythrocyte sedimentation rate ($p<0.001$), C-reactive protein ($p=0.016$), and fecal calprotectin ($p=0.025$) differed significantly among the 5 groups. As for endoscopic findings, gastric ulcers ($p=0.005$), duodenal ulcers ($p<0.001$), multiple ulcers ($p=0.023$), and gastric mucosal nodularity ($p<0.001$) differed significantly among the 5 groups. Compared EoGE ulcers with the others, patients with EoGE ulcers were significantly older in age ($p=0.022$) and revealed higher rate of ulcer recurrence ($p=0.018$), atopic dermatitis history ($p=0.001$), and both blood and tissue eosinophilia ($p=0.001$, $p<0.001$).
Conclusion: Our study revealed that the prevalence of EoGE ulcers in pediatric patients with HNGN-PU was 11.4 %, much higher than previously reported. In children with HNGN-PU, ulcer recurrence, peripheral eosinophilia, and history of atopic dermatitis might provide high levels of clinical suspicion for EoGE, requiring thorough investigation of tissue eosinophils counts on the basis of endoscopic biopsy.

PP-G-28

ASSOCIATION BETWEEN VITAMIN D DEFICIENCY AND FUNCTIONAL GASTROINTESTINAL DISORDERS IN CHILDREN

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Background: Functional gastrointestinal disorders (FGIDs) are one of the most common medical conditions seen in primary care and gastroenterology clinics. Vitamin D deficiency is relatively common in infants and children in South Korea. Vitamin D deficiency and down-regulation of the vitamin D receptor are associated with microbiome alteration, which are also associated with FGIDs. Objective: The aim of the study is to observe whether there is an association between vitamin D deficiency and FGIDs in children under 18 year old age, and identify the other risk factors with FGIDs. **Methods:** Forty seven children with FGIDs and 94 children with non-FGIDs matched control without any underlying nor chronic diseases according to age, gender and season were compared retrospectively from Jan. 2013 to Dec. 2015 at Gachon University Gil hospital. Association between vitamin D levels and other variables were analyzed using student's t-test, Chi-square test, and logistic regression analysis. **Result:** There was no significant difference between vitamin D levels in FGIDs children and non-FGIDs children (18.24±8.07 ng/mL vs. 16.38±8.10 ng/mL, $p > 0.05$). There were statistically significant difference in regards to age ($p = 0.00$), seasons ($p = 0.039$), mode of delivery ($p = 0.013$), and mode of nutrition ($p = 0.023$) in FGIDs children only. In the logistic regression model, gender, season, age vitamin D status, mode of delivery, and mode of nutrition had no association with FGIDs children. **Conclusion:** The vitamin D level may not affect the development of FGIDs in children. Further study will be needed with prospective larger set of population to determine the effect of vitamin D on the FGIDs in children.

PP-G-29

CLINICAL CHARACTERISTICS OF OMENTAL INFARCTION IN CHILDREN

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Background & objectives: Omental infarction is an uncommon cause of acute abdomen and a rare disease entity in children. It occurs due to either segmental torsion of arteriovenous supply or idiopathic type without torsion. Omental infarction is frequently misdiagnosed as common surgical emergencies such as appendicitis, cholecystitis, diverticulitis, or gynecologic disease depending on its locations. Because a misdiagnosis can result in an unnecessary laparotomy, a correct diagnosis is of great importance.
Methods: Clinical and radiological characteristics of 6 cases of omental infarction in children were retrospectively reviewed.
Results: The present study enrolled 5 boys (83%) and 1 girl (17%) patients with omental infarction. Mean age of patients was 8.8±0.9 years old. The chief complaint was sudden right upper quadrant (4 cases) or right lower quadrant (2 cases) pain. The usual physical finding was well-localized tenderness with or without rebound tenderness. The results of laboratory tests were normal except mild leukocytosis in one patient. Omental infarction was diagnosed by radiological examinations. Abdominal ultrasonography suggested an omental infarction and computed tomography (CT) confirmed the diagnosis. CT findings consisted of a large, ovoid, dense fatty mass on anterior abdominal wall adjacent to ascending colon. The symptoms were disappeared within one week (mean 3.7days) with conservative management. None of the patients underwent operation.
Conclusion: Though omental infarction presents nonspecific symptoms, it is a self-limiting disease which can be confirmatively diagnosed by CT scan and treated medically without antibiotics. Misdiagnosis can lead to an unnecessary operation and ill-advised delay in patients with surgical conditions, so pediatricians need to be aware of this self-limiting disease and consider it as a possible alternate diagnosis in cases of acute abdominal pain in children.

PP-G-30

ENDOSCOPIC FINDING AND TREATMENT OUTCOME IN CHILDREN WITH HELICOBACTER PYLORI INFECTION

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Background and objectives: Helicobactor pylori (H.pylori) infection is one of the predisposing factors for gastritis, peptic ulcer and duodenal ulcer. Therefore, diagnosis of H.pylori infection is important in planning effective management. However, Culture which leads to definite diagnosis takes many days. The purpose of this study was 1.) To evaluate endoscopic findings in children with chronic abdominal pain and H.pylori infection in helping early diagnosis 2.) To evaluate treatment outcome of H.pylori infection.
Methods: Retrospective study was performed by reviewing medical records of children under 15 years of age with chronic abdominal pain who underwent esophagogastroduodenoscope (EGD) between 2011-2017. H.pylori infection was defined by positive tests for both histology and rapid urease test (RUT) according to ESPGHAN and NASPGHAN guidelines, 2017. The EGD finding, RUT, histopathologic finding and treatment outcome were recorded. The result was analyzed using Pearson chi-square and Fisher's Exact test.
Results: Fourty-eight children presented with chronic abdominal pain (male 47.9%, female 52.1%, mean age was 8.44 ± 2.97 years). Twelve children had H.pylori infection (12/48, 25%). Among 12 children, 8 children were found to have antral nodularity (8/12). While there was no antral nodularity found in children with no H.pylori infection (0/36). This finding was statistically significant difference ($p < 0.001$). Sensitivity and specificity of antral nodularity finding for H.pylori infection were 66.7% and 100.0% respectively. Eradication of H.pylori infection with omeprazole, amoxicillin and clarithromycin improved abdominal pain within 4 weeks (100.0%).
Conclusion: The antral nodularity in endoscopic finding was significantly associated with H.pylori infection. In addition antral nodularity finding showed good sensitivity and high specificity for diagnosis of H.pylori infection. Acknowledgments The authors would like to thanks Ms. Kornthip Jeephet for statistic analysis and Ms. Sasinapa Raleukmoon for nursing care of endoscopy

PP-G-31

STRONGYLOIDES ENTEROCOLITIS MIMICKING INFLAMMATORY BOWEL DISEASE (IBD)

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Title: Strongyloides enterocolitis mimicking inflammatory bowel disease (IBD) Authors: Kam CC,1 Ng RT,1 Chow TK, [2] Lee WS1 Affiliations: Department of Paediatrics1 and Department of Pathology[2], Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia. Introduction Strongyloides stercoralis is a intestinal nematode causes infestation of human intestine. There is overlapping histomorphology between enterocolitis caused by Strongyloides stercoralis and inflammatory bowel disease (IBD). We report a case of Strongyloides enterocolitis in a 11-year-old girl presented with features mimicking IBD. Case Report An 11-year-old a girl who has underlying plague psoriasis, presented with a 5-month history of central abdominal pain with distension and weight loss of 3 kg. Subsequently she developed bilateral periorbital swelling and pedal edema, and hypoalbuminemia. The initial impression was giant fold gastritis with protein losing enteropathy. Upper endoscopy and colonoscopy however were normal. Her symptoms persisted and started to develop diarrhea. A barium swallow showed short segment mucosal thickening at proximal jejunum. The stool calprotectin was > 1000 ug/g. Other inflammatory markers were normal. Stool examinations for enteropathogens were negative but positive for Strongyloides stecoralis PCR. A push enteroscopy showed generalized inflammed edematous mucosa with villous atrophy from proximal to mid-jejunum. Histology demonstrated parasitic larvas embedded within some of the mucosal crypts. There were crypts hyperplasia and the lamina propia was edematous and inflammed. She was treated with albendazole. One month later she showed tremendous improvement with resolution of bowel symptoms, ascites and pedal edema. She gained weight 2 kg and the serum albumin was normalised. Discussion Strongyloides enterocolitis and IBD shared some common signs and symptoms. Endoscopy and microscopic findings are frequently confused with IBD. The diagnosis of this patient demonstrated parasitic larvas histologically which made diagnosis easier. A high index of suspicion is required to avoid misdiagnosis and fatal consequences.

PP-G-32

TWO XIAP DEFICIENCY CASES IN TWIN

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Background and objectives : Early-onset Crohn's disease and lymphoproliferative disease such as HLH are reported in X-linked inhibitor of apoptosis (XIAP) deficiency. In the patient, the same mutation manifested a different, rare phenotype.
Methods : A 4 year-old boy was diagnosed with very early-onset Crohn's disease. He was initially treated with corticosteroids, azathioprine, and elemental formula. Because of persistent symptoms, he transitioned to infliximab and methotrexate, but continued to manifest severe and refractory colitis with deep ulcerations in ileocolonic area, watery diarrhea, perianal fistulas with abscess, and failure to thrive. Colonic biopsies revealed lymphocytic cell infiltration without granuloma. His identical twin brother had been diagnosed and treated for EBV-associated hemophagocytic lymphohistiocytosis (HLH).
Results : Sanger sequencing of the twins revealed novel nonsense mutation of XLP2 exon 7. Both twin boys were identified to have the same hemizygous mutation. Their mother was a heterozygous carrier without symptoms.
Conclusion : Primay immune deficiency such as XIAP deficiency should be considered in a child diagnosed with early-onset Crohn's disease who has an intractable clinical course.

PP-G-33

THE CHANGE OF GASTRIC MUCOSAL CANCER-RELATED GENE EXPRESSION BEFORE AND AFTER THE ERADICATION THERAPY FOR PEDIATRIC HELICOBACTER PYLORI INFECTION.

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Background: In adults, histological changes were observed such as improved inflammatory cell infiltration, mucosal atrophy, and intestinal epithelialization after H. pylori eradication. Although it is suggested that the eradication therapy leads to reducing gastric cancer development, there are few reports on the analysis of histological changes by eradication therapy in pediatric patients. We have previously reported that expression of cancer-related genes such as regenerating islet-derived 3 alpha (REG3A) and Pim-2 oncogene (PIM2) is elevated along with H. pylori infection in pediatric gastric mucosa. In this study, we examined endoscopic findings and histological findings accompanying eradication therapy in children, and changes in the expression of cancer-related genes (REG3A, PIM2).
Method: The cases are sibling of a 10-year-old girl and a 11-year-old boy, both of which have chronic gastrointestinal symptoms, they were diagnosed H. pylori infection by the endoscopic examination, gastric mucosal tissue examination, and H. pylori culture test. Both urea breath tests after 12 weeks of the eradication therapy ware negative, so it was successful for the bacteria removal. We examined the results of cancer-related gene expression using gastric mucosal histological examination by endoscopically biopsies, microarray examination before and after eradication therapy.
Results: Endoscopic examination after the eradication showed improvement of nodular lesions in both cases, and histology also showed reducing in severity of Sydney classification. Regarding cancer-related genes, the expression of REG3A in the gastric body part of the sister and the gastric antral part of the elder brother was significantly decreased after eradication therapy.
Conclusion: Improvement of nodular changes and histological inflammation was confirmed by eradication of H. pylori. Furthermore, decreased expression of cancer-related genes associated with eradication therapy suggested that early H. pylori eradication therapy may lead to suppression of stomach cancer development.

PP-G-34

A RARE CASE OF PERSISTENT HYPOALBMINEMIA IN THE PAEDIATRIC POPULATION: A CASE SERIES

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Introduction: Menetrier's disease (MD) is a rare protein-losing enteropathy, affecting all age groups of patients. We reported 3 cases who diagnosed to have MD. Case series We illustrate a case series, involving 3 patients aged 5,6 and 7 years old respectively who presented with abdominal pain and vomiting, followed by generalised oedema. Blood investigations showed hypoalbuminemia without presence of urine protein. Upper endoscopy study revealed enlarged tortuous gastric rugae. 2 of the cases showed positive for CMV IgM. All their gastric biopsy urease test was negative for Helicobacter pylori. Histologically, the gastric glands showed elongated glands with corkscrew configuration and foveolar hyperplasia. They were treated conservatively and recovered well after 2-3 weeks after presentation. Discussion It usually present with non-specific abdominal symptoms associated with body oedema. The disease course varies between the adult population and paediatric population. In paediatric population, the disease is almost always transient and self-limiting within 2 to 4 weeks. But in the adult population, the disease is progressive. The pathogenesis of MD is not well understood, however, one third of the cases described an associated with cytomegalovirus (CMV) infection. Diagnosis is made by upper endoscopy study which revealed striking enlarged rugal folds of the stomach with stomach biopsy demonstrate foveolar hyperplasia with glandular atrophy.
Conclusion: MD is a rare cause of oedema and hypoalbuminaemia in children. However, it is important to recognize and diagnosed it to avoid unnecessary treatment as it is a self-limiting disease.

PP-G-35

PREDICTORS OF POUCHITIS AFTER ILEAL POUCH-ANAL ANASTOMOSIS FOR ULCERATIVE COLITIS IN PEDIATRIC PATIENTS

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Background & objectives: Pouchitis following colectomy and ileal pouch-anal anastomosis (IPAA) is one of the major factors that reduce postoperative quality of life in patients with ulcerative colitis. We aimed to determine predictive factors for the development of pouchitis after IPAA in pediatric population.
Methods: Retrospective chart review of all pediatric UC cases that underwent IPAA in our institution between 2000 to 2017 was performed. Pre-, intra- and postoperative potential predictors for pouchitis including various demographic and clinical variables were assessed. Multivariate analysis was preformed including the factors that p-value was under 0.01 in univariate analysis. Optimal cutoff value in the continuous variables was determined using ROC curve analysis.
Results: Fifty-four patients met the inclusion criteria. Among them, pouchitis occurred in 17 patients (31%). Higher preoperative cumulative steroid dose, higher percentage of neutrophils in white blood cell count just before IPAA were associated with the development of pouchitis in univariate analysis (p=0.02 and 0.048, respectively). Preoperative cumulative steroid dose more than 10,000 mg and 65% or more of neutrophils in white blood cell count just before IPAA were the independent predictors for pouchitis in multivariable analysis (p=0.0004 and 0.03, respectively). When both of these independent predictors were negative (n=17), no patient has developed pouchitis. Meanwhile, more than 40 % of patients who had either or both of positive independent predictors (n=37) have experienced pouchitis.
Conclusion: Higher preoperative cumulative steroid dose and higher percentage of neutrophils in white blood cell count just before IPAA might be the predictive factors for developing pouchitis in pediatric patients with UC.

PP-G-36

A BOY WITH DUODENOCOLIC FISTULA MIMICKING FUNCTIONAL GASTROINTESTINAL DISORDER

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Background: Duodenocolic fistula is a rare disorder defined as internal fistula between the duodenum and colon. Colon cancer and Crohn's disease are common causes of such a fistula, and vomiting and diarrhea are its main symptoms. We herein report a 14-year-old boy with duodenocolic fistula who had been treated as having functional gastrointestinal disorder (FGID).
Case: The boy had often had vomiting and diarrhea since infancy, but his symptoms gradually worsened around age of nine years of age. He had been diagnosed with FGID after visiting a local doctor. He was referred to our hospital because of a two-month history of exacerbation of persistent vomiting and diarrhea. Laboratory tests, fecal occult blood test, fecal bacterial culture, upper gastrointestinal contrast and enhanced abdominal computed tomography revealed no remarkable findings. Medication with mosapride citrate and traditional Chinese medicines prescribed for presumed diagnosis of FGID was ineffective. Eventually, esophagogastroduodenoscopy detected a duodenal fistula without any gastrointestinal erosions or ulcers, and a diagnosis of duodenocolic fistula was made by endoscopic fistulography. Subsequent colonoscopy showed a diverticulum in the ascending colon near the fistula. In addition, a C13 urea breath test for Helicobacter pylori infection was positive. The fistula was closed using three endoscopic clips after cauterizing the inner wall of the fistula by argon plasma coagulation, which improved patient's symptom. Discussion: One of the postulated pathogenesis of this duodenocolic fistula was perforated colonic diverticulitis, and another was perforated duodenal ulcer related to Helicobacter pylori infection. However, he has never presented with symptoms of duodenal perforation or colonic diverticulitis. Therefore, a congenital origin is suspected.
Conclusion: Duodenocolic fistula can present with symptoms and screening examination findings that mimic FGID.

PP-G-37

ASSOCIATION OF IL23R VARIANTS WITH CROHN'S DISEASE IN KOREAN CHILDREN

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Objectives: The interleukin 23 receptor gene (IL23R) is strongly associated with Crohn's disease (CD). It is unknown whether genetic variations in IL23R determine susceptibility for pediatric CD in Asian populations. Here, we investigated the association between IL23R variants and CD in Korean children.
Methods: Four single nucleotide polymorphisms (SNPs) of IL23R (rs76418789, rs1004819, rs7517847, and rs1495965) were genotyped in 141 children with CD and 150 controls using DNA direct sequencing. The risk allele and genotype frequencies were compared between patients and controls. The association between clinical phenotypes and genotypes of patients was analyzed.
Results: Two IL23R SNPs, rs76418789 and rs1495965, were significantly associated with CD in Korean pediatric patients as risk and defense loci, respectively. The odds ratio (OR) for rs76418789 and rs1495965 was 0.409 (95% confidence interval [CI], 0.177–0.944; p = 0.031) and 1.484 (95% CI, 1.070–2.059; p = 0.018), respectively. Patients with the homozygous G allele of rs1495965 showed higher CD risk than those with other genotypes (GG vs. AA: OR, 2.256; 95% CI, 1.136–4.478; p = 0.019; GG vs. GA+AA: OR, 2.000; 95% CI, 1.175–3.404; p = 0.010). Additionally, they were more likely to have relatively invasive disease behavior of stenosis and/or penetration than simple inflammation (OR, 2.297; 95% CI, 1.065–4.950; p = 0.032).
Conclusions: This is the first study reporting IL23R variants in Asian pediatric patients with CD. IL23R was significantly associated with Korean pediatric CD, and the rs1495965 may influence the clinical features of CD in Korean children.

PP-G-38

ANALYSIS OF THE GUT MICROBIOTA BY ADMINISTRATED PROBIOTICS IN A 5-FLUOROURACIL TREATED MOUSE MODEL

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Background: 5-Fluorouracil (5-FU) treatment was reported to affect the abundance of gut microbiotia and caused mucositis/diarrhea. Recently, probiotics affect gut microbiotia and improve diarrhea/mucositis induced by chemotherapy in the animal model. We hypothesis that probiotics is associated in reduced diarrhea/mucositis by altering gut microbiotia. Materials and
Methods: Male BALB/c mice (6 weeks of age, n=6 per group) received 5-FU (FU, 30 mg/kg/day) or saline(S) administration via intraperitoneal injection. Mice were fed with or without saline, Lactobacillus casei variety rhamnosus (Lcr, Antibiophilus□, 1×10^7cfu/mg) and Lactobacillus reuteri DSM 17938 (BG, BioGaia□, 1×10^7cfu/mg). Lactobacillus and 5-FU are simultaneously administrated to mice for 5 days. There were six groups (S+S, S+Lcr, S+BG, FU+S, FU+Lcr, FU+BG). After scarified, collected stool was treated by DNA extraction kit . Q-PCR analysis was performed in quadruplicate using the commercial kit . We have performed pyrosequencing of the V3 region of the 16S rRNA gene. Sequencing data was measured by bioinformatic analysis include alpha-diversity and beta-diversity.
Results: The abundance of received BG or Lcr groups (FU+Lcr, FU+BG) with FU treatment was reduced in compared to other groups. The subsequent principal component analysis exhibited that there was significant difference in bacterial community composition in each group except Lcr+FU group using the first two principal component scores of PC1 and PC2 (25.7% and 17.8% of explained variance, respectively). After multi-response permutation procedure statistical test, there is significant different in compared specificity in any two groups (S+S vs S+Lcr, S+S vs S+BG, S+S vs FU+S, FU+S vs FU+Lcr, FU+S vs FU+BG). Linear discriminant analysis coupled with effect size measurement was performed that the ovatus was enriched in FU+S group.
Conclusion: The gut microbiotia is different in each groups in beta diversity and statistical test. After FU, Lcr or BG treatment, the gut microbiota was affected significantly.

PP-G-39

A ONE-YEAR-OLD BOY WITH ACUTE HEMORRHAGIC GASTRIC ULCERS DUE TO TRANSIENT INFECTION OF HELICOBACTER PYLORI

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The rate of acute infection by Helicobacter pylori has decreased due to a reduced infection rate and improved environment. However, the rate of persistent infection from acute infection remains unclear. We herein report a patient with acute hemorrhagic gastric ulcers due to primary infection of H. pylori that resolved spontaneously.

Patient: A one-year-old boy without a family history of peptic ulcer or gastric cancer had a fever and frequent vomiting two days before admission. Although his fever decreased, he showed recurrent seizures and was admitted to our hospital. At admission, he had tarry stool. Esophagogastroduodenoscopy (EGD) revealed ulcers in the gastric antrum and duodenal bulb erosion. His stool became normal with proton pump inhibitor treatment, and his symptoms resolved. EGD performed two weeks later showed that the ulcers had become scars. A rapid urease test to detect H. pylori infection was negative from the acute phase. Culture and histopathological findings were both positive at the acute phase but became negative two weeks later. A serum antibody test was negative at two weeks after the onset but became positive six months later. Fecal antigen was negative at that time. The parents were negative for H. pylori infection on EGD. Given these results, this patient was considered to have acute hemorrhagic gastric ulcers due to primary transient H. pylori infection that was eliminated without treatment. The spontaneous clearance rate of H. pylori was reported at 4.74% per year for children 6-13 years of age; however, the rate for young children is unknown. The accumulation of more cases is required.

CONCLUSION: H. pylori-related examinations are warranted in cases of acute hemorrhagic gastric ulcers, and if positive, further investigations to distinguish primary or past infection as well as transient or persistent infection should be performed.

PP-G-40

ANALYSIS OF RISK FACTORS FOR ANEMIA IN KOREAN ADOLESCENTS

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Background and objectives: The aim of this study is to determine the prevalence and risk factors for anemia among adolescents in a large population.
Methods: We analyzed 6,801 subjects from Korea National Health and Nutrition Examination Survey III-V (2007-2015). Anemia was defined as hemoglobin <11.5 g/dL at 10-11 years of age; <12.0 g/dL at 12-14 years; 13.0 g/dL in males 15-18 years; <12.0 g/dL in females 15-18 years. Socioeconomic status (SES), nutrition and eating habit were analyzed to identify risk factors of anemia. SES was analyzed by comparing education level and family income by quartile. Nutritional and eating habits surveys were conducted through interviews conducted by trained dietitians. Total energy, fat, protein, carbohydrate, fiber, and serum vitamin D level were evaluated. Eating habit was defined as the number of meals per week for breakfast, lunch, dinner. Multivariable logistic regression analysis was used to determine odds ratios (ORs) and 95% confidence intervals (CI).
Results: The prevalence rate of anemia in adolescents was 3.0% (0.4 % for males and 5.9 % for females). The incidence of anemia in females were significantly higher than males (P<0.01). Adolescents with higher parental education and higher household incomes had lower risk of anemia (P <0.01 and P <0.01, respectively). In terms of nutrition, the risk of anemia was lower in adolescents receiving more protein (ORs: 0.49; CI: 0.26, 0.98) and vitamin D levels were lower in adolescents with anemia (P=0.02). In eating habit, the risk of anemia was lower in adolescents who had more number of breakfast per week (ORs: 0.28; CI: 0.08, 0.96).
Conclusion: Gender, education level, household income, protein intake, vitamin D concentration, and the number of breakfast in a week were associated with anemia in adolescents.

PP-G-41

LUPUS ENTERITIS, AN UNCOMMON INITIAL PRESENTATION OF SYSTEMIC LUPUS ERYTHEMATOSUS: A CASE SERIES.

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Title: Lupus enteritis, an uncommon initial presentation of systemic lupus erythematosus: a case series. Authors: Kam CC,1 Ng RT,1 Lee WS1 Affiliations: Department of Paediatrics1, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia. Introduction Lupus enteritis is a very rare and atypical initial presentation in systemic lupus erythematosus (SLE). We illustrated two patients who were referred to exclude inflammatory bowel disease but were subsequently diagnosed to have lupus enteritis. Case series CSP an 8-years-old girl presented with a four-month history of intermittent abdominal pain associated with vomiting, diarrhea and loss of weight of 8 kg. There was a history of non-specific skin rashes and joint pain. Upper endoscopy and colonoscopy were unremarkable. Capsule endoscopy showed small bowel erosions. She was initially treated as small bowel Crohn's disease and was started on exclusive enteral nutrition but did not show improvement. Further investigations revealed high antinuclear antibody (ANA; 1:320), positive anti-dsDNA and anti-RO antibody, and low complements. CT scan showed diffuse thickened small bowel wall with ascites. The second case, MZH, was an 11-year-old boy who presented with chronic weight loss of about 30kg over a year followed by a 6-week history of intermittent abdominal pain with vomiting and diarrhea. He has no other symptoms of SLE. Bloods investigations showed anaemia, leucopenia, low complements, high ESR and high ANA (1:1280). Stool calprotectin was negative. CT scan showed diffuse bowel thickening over small bowel and colon with target signs to suggest submucosal oedema. Endoscopy revealed edematous jejunum, terminal ileum and colon. Both patients have microscopic proteinuria and haematuria, suggestive of lupus nephritis. They were referred to paediatric rheumatologist and commenced on steroid.
Conclusion: It is important to recognise lupus enteritis in patient with chronic diarrhea as it is a serious complication of SLE, that can be life-threatening if not treated promptly.

PP-G-42

TRANSIENT ANTIBODY TO INFLIXIMAB IN PEDIATRIC INFLAMMATORY BOWEL DISEASE

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Background: The immune-mediated response of Infliximab(IFX) in inflammatory bowel disease can lead to the development of antibody to infliximab(ATI). The presence of ATI has been linked to lower IFX trough levels(IFX TL) and loss of response(LOR) to treatment. However, previous reports have shown that by dose intensification, transient ATIs may disappear and patients under LOR may regain response to IFX. We aimed to introduce our experience with transient ATIs.
Method: We performed a retrospective analysis of 132 pediatric IBD patients treated with IFX between December 2008 and March 2015. Patients were selected based on retrospective screening for ATIs detected on at least one time point during follow up. Using the same samples we measured IFX TLs by ELISA, and clinical responses to therapy and laboratory results were investigated.
Result: Ten out of 132 patients (7.5%) had developed ATIs 17.14 weeks after starting IFX. In 4/10 patients (50%), ATIs disappeared 3 weeks after individualized dose intensification treatment according to the discretion of the physician, whereas in 6/10 patients (60%), ATIs persisted. The duration from the detection of LOR to dose intensification was shorter in subjects whose ATIs disappeared compared to those whose ATIs persisted. (4.4 vs. 34.7 week) Patients with transient ATIs had lower ATI levels compared to patients with persisted ATIs (3+ vs. 4+). In patients with transient ATIs, IFX TL increased from 0 ug/ml when ATIs were first detected to 2.72 ug/ml when ATIs disappeared. The proportion of patients discontinuing IFX was significantly higher in subjects with persisted ATIs.
Conclusion: ATIs may be transient, and may disappear after dose intensification. Therefore, evaluation of IFX TL and ATIs is required when LOR is suspected. While LOR may be capable of overcoming by early dose intensification in patients with low titer ATIs, the presence of high ATIs may require switching to other biologics.

PP-G-43

PARENTAL CONCERN AND ASSOCIATED FACTORS OF FUNCTIONAL GASTROINTESTINAL SYMPTOMS IN INFANTS YOUNGER THAN 6 MONTHS OF AGE

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Background and Objective: Functional gastrointestinal symptoms (FGIS) are common in infancy. We evaluated the concerns of Thai parents and associated factors of FGIS among infants from two to six months of age. Material and

Method: Infants at two months of age were enrolled into either FGIS (case) group or no-symptom (control) group, depending on their symptoms (regurgitation, colic, constipation). Their parents were interviewed about the symptoms and associated factors using a questionnaire. Both groups of parents gave their concern score regarding symptoms (0-5, none to maximum). Parental concern score and infants' symptoms were reevaluated at four and six months of age.

Results: There were 54 infants in the case group and 62 in the control group. Infant regurgitation, colic, and constipation were found 81.5%, 16.7% and 9.3% respectively. Sex, age, current weight, birth weight, feeding, parental age, marital status, income and smoking, number of caretakers, and family history of FGIS were comparable between groups. The case group had higher percentage of being the first child of the family (odds ratio = 3.965, 95%CI =1.461 to 10.761). Infant colic was most concerned in both groups, whereas infant regurgitation was least concerned (mean concern score 4.32±0.92 vs 2.78±1.22 $p<0.001$). The case group had lower parental concern score than the control group for infant regurgitation (2.48±1.09 vs 3.03±1.28, $p=0.015$). In the subgroup of infant regurgitation (n=44), the concern score was lower (2.32±1.07 vs 3.03±1.28,$p=0.003$). After following until six months, all parents had lower concern score for all symptoms. Infant colic, regurgitation and constipation were resolved at three, five and five months of age respectively.

Conclusions: Thai parents coped well with infant regurgitation and had not much concern. Parental concern and FGIS gradually decreased toward six months of age. Being first child was the only factor associated with FGIS in this study.

PP-G-44

A NOVEL MUTATION OF INTERLEUKIN-10 RECEPTOR ASSOCIATED WITH VERY EARLY ONSET INFLAMMATORY BOWEL DISEASE: A CASE REPORT

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Background: Very early onset inflammatory bowel disease (VEO-IBD) is a rare gastrointestinal inflammatory disorder. Biallelic mutations in the interleukin-10 receptor genes (IL10RA and IL10RB) present with a particularly early onset IBD during infancy, producing a disease phenotype which is typically unresponsive to immunosuppressive drugs and requiring hematopoietic stem cell transplantation (HSCT) for curative treatment. Aims: To describe a novel case of VEO-IBD caused by a new mutation of IL10RA.
Methods: Case report.
Results: We report an 18-month-old boy, born to first cousin Kuwaiti parents with unremarkable family history. He initially presented with diarrhoea, failure to thrive and enteropathy aged 6 months responding to nutritional rehabilitation. This was felt to be a post-enteritis enteropathy. He re-presented with severe malnutrition, a severely excoriated perineum with perianal fistulae and fevers. Laboratory investigations documented anemia, hypoalbuminemia and elevated CRP. The infectious work-up including blood and stool culture, viral serology were negative. Colonoscopy showed inflammatory pseudopolyps up to transverse colon. A colonic fistula and two strictures were identified. Extensive series of immunology investigations for possible monogenic causes of IBD were unremarkable. Because of severe perianal disease and colonic stricture, an ileostomy was fashioned initially with an excellent clinical response to subsequent anti-TNF therapy and adequate nutritional rehabilitation. His Targeted Primary Immunodeficiency and Gastrointestinal Enrichment panel genetic screening revealed a homozygous tyrosine 167 to cysteine (p.Tyr167Cyst) mutation in IL10RA gene. Functional studies demonstrated a substantial functional defect in STAT3 phosphorylation in response to IL10 in monocytes. Lipopolysaccharide-driven cytokine response in peripheral blood mononuclear cells was not suppressed in response to exogenous IL10.
Conclusion: Homozygous Tyr167Cyst variant in the IL10RA gene is a novel disease-causing mutation. Its impact on clinical course and the necessity of HSCT is currently under assessment (especially in light of the responsiveness to immunosuppressants and potential complication of B lymphoma in IL10 receptor-deficient patients).

PP-G-45

HIGH ENDOSCOPIC RELAPSE RATE AND POOR MEDICATION ADHERENCE IN KOREAN CHILDREN WITH ULCERATIVE COLITIS

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Aims: We aimed this study to describe clinical characteristics, treatment response and outcome of pediatric ulcerative colitis (UC).
Methods: A single-center retrospective study of 49 pediatric UC patients treated over one-year between 2005 and 2016 was done. Data regarding patient demographics, medications, treatment response, and characteristics of patients with refractory UC were collected. Treatment was determined according to the disease activity and behavior to be strengthened when there was no response. Poor medication adherence is defined as medication skip more than 1 month or taking medicine less than 2/3 of dispensed prescription drugs.
Results: The male/female ratio was 27:22. The median age of the patients was 13.3 years. The median follow-up period was 3.9 years. The disease location at diagnosis was E1 in 7 (14.3%) of the patients, E2 in 17 (34.7%), E3 in 1 (2.0%), and E4 in 24 (49.0%). Twenty two patients (44.9%) showed an atypical distribution of lesions at initial colonoscopy: eight (16.3%) had appendiceal orifice inflammation; 14 (28.6%) had patchy/segmental skip lesions. Medications according to treatment duration were as follows: at 1st year, steroid+5-ASA (90%), 5-ASA (8%); at 2nd year, 5-ASA (74%), steroid (15%), anti-TNF (11%); at 3rd year, 5-ASA (71%) steroid (19%), anti-TNF and/or other drugs (10%). About half of the patients (49.0%) were low adherers. Endoscopic disease relapse rate was quite high (72.1%). There was a significant relationship between medication adherence and relapse rate (P=0.038). Incidence of refractory UC was 8.2%. Extensive colitis combined with an elevated ESR (or CRP), severe abdominal pain at diagnosis was strongly associated with refractory UC.
Conclusion: Disease relapse at the follow-up is high and medication adherence may be an important factor of relapse. Extensive colitis combined with an elevated acute phase reactant and severe abdominal pain at diagnosis might have an impact on the initial treatment strategy.

PP-G-46

FECAL MICROBIOTA ANALYSIS OF HEALTHY KOREAN NEWBORNS: PROFILES BY DELIVERY MODE AND FEEDING TYPE

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Background & objectives: Neonates are born sterile, but many parts of their bodies are colonized by various microorganisms thereafter. We investigated the effects of the delivery mode and feeding type on the dynamics of gut microbiota in healthy Korean newborns.
Methods: One hundred ninety-two healthy term neonates of birth weights which were adequate for gestational age were included in this study. Fecal specimens from newborns were collected at time points of 1 days, 3 days, 7 days, and 14 days after birth. Microbiological composition was examined by next-generation sequencing (NGS) of Illumina MiSeq® system. Comparative analysis was performed composition, alpha and beta diversity of newborns fecal microbiota at the same age across four time points from day 1 to day 14 of age. We also investigated the difference of microbiota composition according to delivery mode and feeding type at the genus levels.
Results: At phylum level, Proteobacteria species were decreased and Actinobacteria species were increased across four time points from day 1 to day 14 of age. At genus level, streptococcus and Escherichia/shigella species were decreased and Bifidobacterium species were increased across four time points from day 1 to day 14 of age. Shannon and Simpson index diversity of alpha diversity were both increased across four time points. The MDS plot of beta diversity at four time points showed a big change on the day 14 from the change on the day 3 and 7. According to delivery mode, cesarean-delivered newborns have higher levels of harmful bacteria, while vaginal-delivered newborns have higher levels of beneficial bacteria. We performed a cluster analysis by dividing by feeding type.
Conclusion: The results show that the diversity of gut microbiota according to days after birth and the impact of delivery mode and feeding type on the dynamics of gut microbiota profiles in Korean newborns.

PP-G-47

VARIANTS OF THE CFTR GENE IN JAPANESE PATIENTS WITH CHILDHOOD PANCREATITIS

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Background: It is well known that the PRSS1 variants, p.N29I and p.R112H, are genetic risk factor of pancreatitis. In addition to the SPINK1, CTRC and CPA1 genes, the CFTR gene is also known as one of the pancreatitis-susceptibility genes. While many variants of CFTR were reported in Caucasian, there are few data in Asian patients. The aim of our study is to reveal the relationship between CFTR variants and idiopathic pancreatitis in Japanese children.
Methods: Of 71 enrolled Japanese pediatric patients with idiopathic pancreatitis or familial cases, 28 patients with no pathogenic variants in PRSS1, SPINK1, CTRC and CPA1 were selected for initial CFTR analysis. The whole CFTR gene including promoter region, was sequenced in them using a Next-Generation Sequencer. Then, we investigated CFTR exons and splicing-junctions in the other 43 patients by Sanger sequencing. A splicing-affecting variant was confirmed its expression by RT-PCR in the nasal epithelial cells.
Result: Of 28 patients, 21(75.0%) had non-synonymous or splice-affecting variants in CFTR. Nine had double heterozygous non-synonymous variants. Four variants (p.I556V, p.L1156P, p.Q1352H, p.R1453W) were unique in Japanese. Two variants, p.R352Q and p.R1453W were highly frequent (p=0.0078 and 0.044, respectively) in the patients compared with one in Japanese controls. A splice-affecting variant, c.1210-12T(5) was identified in four patients. In one of the patients, the exon 10 was skipped in CFTR expression in the nasal epithelial cells. Of the rest 43 patients, 25 (58.2%) patients had effective variants in CFTR in addition to variants in other genes.
Conclusion: Non-synonymous variants, including unique in Japanese, and/or splice-affecting variants of CFTR, are frequently found in Japanese pediatric patients with pancreatitis. The variants are frequently found double heterozygous or in combination with other variants in pancreatitis associated genes, suggesting that those CFTR variants might associate with pancreatitis even if Japanese population.

PP-G-48

ESOPHAGEAL ACHALASIA IN A CHILD WITH NEUROFIBROMATOSIS TYPE 1

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Background and objective: Achalasia is a rare esophageal motility disorder which lower esophageal sphincter (LES) fails to relax. Neurofibromatosis type 1 (NF1) is an autosomal dominant disorder mainly involves skin and nervous systems. Gastrointestinal involvement in NF1 is often affect small bowel and colon, but very rarely esophagus. NF1 associated achalasia has been reported in five adults, but not in children. We hereby report the first case of esophageal achalasia in a child with NF1.
Method: Case report
Results: An 8-year-old girl presented with severe dysphagia for 3 months. She had progressive dysphagia to liquid and regurgitate of the ingested milk during sleep. Dysphagia to solid food was noted since age 1 with frequent vomiting of undigested food. She was then taking only liquid diet. She failed to gain weight and height. She developed seizure at 5 and 6 year of age with normal electroencephalogram and CT brain and were on valproate for 2 years. Her mother and older sister had NF1. Physical examination revealed multiple café-au-lait spots and axillary freckling, weight and height < 3th percentile. She was therefore diagnosed with NF1. A barium swallow study showed dilated esophagus with "bird's beak" sign. An esophagogastroduodenoscopy showed normal esophageal mucosa, tightly closed LES but allowed endoscopy passed through easily. A decreased peristalsis of esophagus, elevated resting LES pressure, and impaired relaxation of LES was observed on esophageal manometry. She was successfully treated with pneumatic dilation. Her nutritional state dramatically improved after 6-month follow up.
Conclusion: There might be an association between achalasia and NF1. Further study to elucidate exact mechanism is needed. Certainly, achalasia should be considered in children with NF1 or even positive family history of NF1.

PP-G-49

ENDOSCOPIC BALLOON DILATATION IN A CHILD WITH PYLORIC STRICTURE FROM CORROSIVE AGENT.

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The frequent: cause of corrosive injury of GI tract in children was acidic injury. Viscosity and specific gravity of corrosive acids are lower than liquid alkali. Acid has rapid transit through the esophagus thus the damage primarily occurs in the antrum and pyloric region of the stomach. Late sequelae includes gastric outlet obstruction, mainly in the prepyloric area. A 3-year-old male presented with three weeks of nausea, vomiting, abdominal distension and loss of appetite. These symptoms started acutely within 2 days after he accidental swallowed toilet cleanser (hydrochloric acid) . Upper GI study showed marked dilatation of gastric antrum and body, no contrast media filling in pylorus. From esophagogastroduodenoscopy showed some ulcers, erythema, erosions in the pylorus and pyloric stricture. We carefully passed CRE balloon through the small opening of the pylorus and confirmed the position by fluoroscopy and gradually inflated the balloon up to 15 mm in diameter. After dilatation, we injected Botox around the pyloric rim (6 units per kilograms, 4 quadrants). When we then passed the endoscope into the duodenum with manipulation, the area appeared good opening. He had dilatation in next two weeks after the first procedure. The endoscopy showed a significantly improved of pyloric opening. Intrapyloric botox injection improved gastroparesis.
Conclusion: Our patient presented with caustic agent ingestion cause gastric outlet obstruction which was amenable to successful nonsurgical management using pneumatic balloon dilatation combined with botulinum toxin injection. Pyloroplasty is the standard surgical treatment when the endoscopic procedures such as balloon dilatation, botulinum toxin injection or endoscopic surgical dissection are the alternative modalities.

PP-G-50

THE TRANSITION OF PEDIATRIC INFLAMMATORY BOWEL DISEASE.

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Background and Objectives：In recent years, the onset of pediatric inflammatory bowel disease(IBD) is increasing in Japan. There is an important problem includes the transition from the pediatrics to an adult internal medicine. Actually, a pediatrician often continues medical treatment after a child patient become an adult. But considering risk of the pregnancy and the cancer outbreak, it is thought that the medical treatment in the adult course is desirable.

Methods：This work is a retrospective observational study using medical record. We analyzed pediatric IBD diagnosed under 15 years old and had taken medical treatment more than one year between March 2002 and March 2014 at department of pediatrics, Juntendo University Faculty of Medicine in Japan. And all patients became over 15 years old at the same period.

Results：Total of 84 children were entered the study (ulcerative colitis (UC) : 57, Crohn's disease (CD) : 27). In UC patients, 14 cases (25%) were transitioned to adult internal medicine (median age of diagnosis : 12.5±1.8 years, girls : 57%). In CD cases, 7 cases (26%) were transitioned (median age of diagnosis : 13.2±0.8 years, girls : 57%). The number of patients who still have received medical treatment in our department, 38 cases in UC and 16 cases in CD.

Conclusion：Japanese Society for Pediatric Gastroenterology, Hepatology and Nutrition (JSPGHAN) started working group for supporting transition in 2015. Japan pediatric society also make the manual of transition in 2017. In this study, there were some patients who can transfer to adult internal medicine. It is very important for us to make some manual for smooth transition in children with IBD.

PP-G-51

THE CHANGE OF GUT MICROBIOTA AND HUMORAL IMMUNITY IN SMALL BOWEL TRANSPLANT PATIENTS

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Background and objectives: Probiotics have been found beneficial to human health. The role of these microorganisms among intestine transplant patients is intriguing because bacteria reside in the transplanted organ per se and hosts' immune functions are inevitably compromised. The aim of this study was to investigate the changes of gut microbiota and humoral immune repertoires in small bowel transplant (SBT) patients.
Methods: The SBT patients without obvious sepsis, weaning from parenteral nutrition (PN) and normal oral intake were enrolled in this study. These SBT patients received oral probiotics (Clostridium butyricum MIYAIRI 588, 1.5 ×109 CFU/day) for 1 month. Fecal and blood samples were collected at before, 1 week and 1 month after oral probiotics therapy. Next-generation sequencing targeting 16S ribosomal sequences from fecal materials was used to evaluate gut microbiota and humoral immune repertoires, respectively. We used linear mixed model to compare the changes of microbiota before and after probiotics treatment.
Results: 18 samples were obtained from 6 SBT recipients before and after probiotics treatment. These SBT patients had no obvious sepsis and no rejection during this period. Analysis based on the family level, SBT patients before probiotics treatment had a higher proportion of Enterobacteriaceae (mean proportion 63.57%). After probiotics treatment, Bacteroidaceae and Veillonellaceae increased from 1% to 19% and 6% to 12%, respectively. Enterobacteriaceae and Lactobacillaceae decreased from 50% to 30% and 22% to 15%, respectively ($p < 0.05$). Corresponding changes in humoral immune repertoires were located in IgA but not in IgG. The diversities of IgA repertoires decreased with probiotic intake.
Conclusion: The administration of probiotics could be effective means of changing the compositions of the microbial community and thereby substantially affect humoral immunity in SBT patient. IgA repertoires would be used to monitor microbe dynamics in SBT patient.

PP-G-52

ANTI-CAGA IGA ANTIBODY POSITIVITY PREDICTS MORE PRECISELY ACTIVE MUCOSAL INFLAMMATION THAN ANTI-CAGA IGG ANTIBODY POSITIVITY IN CHILDREN

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Background & objectives: Presence of Anti-CagA antibody positivity is well-correlated with a high anti-H. pylori IgG and IgA antibody titers. We investigate the correlation between the Anti-CagA IgG and IgA antibody positivity in serum and the degree of mucosal inflammation in children.
Methods: In total, 606 children (0-14 years) were enrolled. Subjects were stratified as 0-4 years (n=155), 5-9 year (n=336), and 10-14 years (n=116) and subjected to the histopathology, and Western blot using whole-cell lysates of H. pylori strain 51. Anti-CagA IgG and IgA antibody positivity was decided by Western blot. The histopathological results were interpreted according to the updated Sydney System.
Results: There are no differences in age and sex distributions among the study populations. Anti-CagA IgG positive children show high rate of mononuclear cell infiltrations over moderate degree (0-4 year: 84.3%, 5-9 year: 58.6%, 10-15yr 79.5%, P=0.001), neutrophil infiltrations (1-4 year: 62.5%, 5-9 year: 50%, 10-15yr 65.3%, P=0.001), and presence of H. pylori (0-4 year: 78.1%, 5-9 year: 55.4%, 10-15yr 73.4%, P=0.001) in gastric mucosa. Anti-CagA IgA positive children show high rate of mononuclear cell infiltrations over moderate degree (0-4 year: 88.8%, 5-9 year: 82.7%, 10-15yr 81.2% P=0.001), neutrophil infiltrations (0-4 year: 88.8%, 5-9 year: 68.9%, 10-15yr 65.7% P=0.001), and presence of H. pylori (0-4 year: 77.7%, 5-9 year: 68.9%, 10-15yr 68.7% P=0.001) in gastric mucosa
Conclusions: Anti-CagA IgG and Anti-CagA IgA positivity were highly correlated with high grade mononuclear infiltration, and presence of neutrophil infiltration and H. pylori in gastric mucosa regardless of age. Anti-CagA IgA positivity shows higher positive predictive value in predicting mucosal inflammation than anti-CagA IgG positivity.

PP-G-53

ESOPHAGEAL SENTINEL POLYP IN A CHILD

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Background & Objectives: Most solitary gastrointestinal (GI) polyps in children are either inflammatory or hamartomatous. Sentinel polyp is very rarely reported in Korean children.
Methods: We recently came across a case with sentinel polyp in the distal esophagus, which is unusual pathologic types in children. These mucosal lesions were diagnosed incidentally during elective endoscopic examinations for GI symptoms.
Results & Conclusion: Most polyps do not cause significant symptoms, so the diagnosis might be delayed, especially in children, in whom GI endoscopy is not commonly performed for screening purpose as in the adults. General awareness about the need and importance of periodic GI endoscopic examination is necessary, and long-term follow-up of these children will be needed.

PP-G-54

BMPR1A VARIANT AS A CANDIDATE GENE PREDISPOSED TO JUVENILE POLYPOSIS SYNDROME ASSOCIATED CONGENITAL HEART DEFECTS OF FAMILIAL AGGREGATION

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Background: Juvenile polyposis syndrome (JPS) is an autosomal dominant disorder characterized by the occurrence of multiple juvenile polyps in the gastrointestinal tract. Predisposition to JPS in a patient with a coexisting heart defect was attributed to genetic aberrations such as SMAD4 or BMPR1A mutations.
Methods: Our patient is an 11-year-old boy, he is a known case of double-outlet right ventricle and pulmonary atresia corrected by Rastelli operation. His mother had a ventricular septal defect (VSD) that closed spontaneously, and his younger sister had a patch-closure surgery for VSD, whereas his younger brother was scheduled for atrial septal defect surgery. He was admitted to the hospital with bloody stool and found to have severe anemia with Hb of 4g/dl. Meanwhile, colonoscopy revealed multiple polyps in the colon and rectum, along with a small single polyp in the ileum disclosed by small bowel capsule endoscopy. Pathological evaluation of the resected polyps showed features of hamartoma, hence JPS diagnosis was made. Genetic study was planned to correlate the heart defect with JPS.
Results: BMPR1A germline gene variant was detected in our index case. The subsequent surveillances revealed >30 polyps in the large intestine. Similar BMPR1A-variant mutation was detected in his mother as well as his siblings. His younger sister had gastric small polyps, and a rectal juvenile polyp while his younger brother had a rectal juvenile polyp. The siblings were scheduled for the endoscopic surveillance as JPS.
Conclusion: We here reported a case of BMPR1A-variant mutation predisposed to JPS associated congenital heart defects of familial aggregation. Since JPS carries a high risk of colorectal or stomach cancer, recognition of patient with JPS along with genetic evaluation is important for the index case and family member at risk, to decide the management protocol.

PP-G-55

AN ALBINISM PEDIATRIC PATIENT ASSOCIATED WITH IDIOPATHIC COLONIC VARICES TREATMENT WITH PROPRANOLOL

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Back ground and Objectives: We reported a case of a 12-year-old male patient who was a patient of albinism was diagnosed idiopathic colon varices when he was 7 years old presented bloody stool and anemia. We used propranolol to treat the disease on an albinism with idiopathic colonic varices. Propranolol has recently become a successful first-line therapy and dramatic effective treatment of infantile hemangiomas. It's mechanism to treatment for hemangioma was related to apoptosis and inhibit angiogenesis. Our objective was to evaluate the clinical effect of propranolol on idiopathic colonic varices.

Method: The physical examination of this patient showed typical appearance of albinism without pale conjunctiva, no hepatosplenomegaly, no abdominal superficial vein engorgement, and no spider angiomatous. The laboratory data showed: Stool ob. 4+, RBC : 4.42x10 6/ul, Hb:9.3 gm/dl, MCV:64.4 fl, Hct: 28.5% MCH:21.0pg, MCHC:32.6 g/dl, Iron: 19ug/dl, Transferrin:417.2 mg/dl, TIBC:596.60, Ferritin: 1.9 ng/ml, PT:11.0 sec, and APTT:29.4 sec. The colonic fibroscopic finding showed many vermiform big vessels were noted were noted since anal verge from 15cm to 50cm area. Who received esophagogastroduodenoscopy, Meckel's diverticulum scan, abdominal MRI and angiography of superior mesenteric artery and inferior mesenteric artery. The Doppler abdominal sonography was performed on portal vein no evidence of portal hypertension. Idiopathic colonic varices were diagnosed.

Result: The patient received propranolol treatment since he was diagnosed. The bloody stool no longer happened after 2 years of medication care. Followed-up colonoscopy annually revealed no progression of colonic varices over the sigmoid area for 5 years.

Conclusion: In general, difficult to treat idiopathic colonic varices on pediatric patient. We report a very rare clinical presentation, an albinism pediatric patient associated with idiopathic colonic varices treatment with propranolol and get good result. Pediatric patient if got the idiopathic colonic varices presented long time bloody stool may try to use propranolol.

PP-G-56

USE OF ALARM SYMPTOMS TO DISCRIMINATE ABDOMINAL PAIN-RELATED TO ORGANIC GI DISEASES FROM FUNCTIONAL GASTROINTESTINAL DISORDERS

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Introduction: Recurrent abdominal pain (RAP) in children is one of the most common problem and usually attributable to functional gastrointestinal disorders (FGIDs) rather than organic disease. Alarm symptoms help to discriminate organic from functional abdominal pain further investigation might be helpful. The aims of the study were to determine the role of alarm symptoms for this discrimination in Thammasat University hospital between 2010-2016.
Methods: The medical records of 70 patients with RAP were retrospectively reviewed. Clinical diagnoses of FGIDs were based on Rome III criteria. . Information was collected demographic data, clinical characteristics (alarm symptoms), laboratory tests, esophagogastroduodenoscopy (EGD) results and radiography. Descriptive statistical analysis was performed.
Result: A total of 70 patients were included in the study. Patients' mean age was 9 years (range: 2-15 years; mean ± SD: 9 ± 2.67 years), and the majority were female (n= 43, 61.43%). FGIDs (61.43%) were common etiologies of recurrent abdominal pain more than organic GI diseases (38.57%). The alarm symptoms of FGIDs and organic GI diseases were found in 58.14% and 74%, respectively. The most common of alarm symptoms in organic causes were nocturnal pain (51.85%), followed by weight loss (40.74%) and GI blood loss (37%). Significant alarm symptoms to discriminate between FGIDs and organic GI diseases were weight loss, rectal blood loss, Hb < 7g/dl and positive of stool occult blood. ($p < 0.05$).
Conclusion: Specific alarm features including unintentional weight loss, rectal blood loss, anemia and positive of stool occult blood may help to stratify patients with a higher risk of organic diseases.
Keyword: alarm symptoms, functional gastrointestinal disorders, Rome criteria

PP-G-57

ENTERIC DUPLICATION CYST WITH TORSION

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Background: We presented a 5-month-old male with decreased appetite, bilious vomiting, and abdominal distension for 1 day. On physical examination, there were abdominal distension with hypoactive bowel sounds.
Methods: The plain abdomen X-ray revealed distended gaseous bowel loops, ileus. Abdomen ultrasonography identified a hypoechogenicity mass (5.99 cm × 3.87cm) with an inner layer of echogenic mucosa and an outer wall of hypoechoic muscle. According to the clinical presentation and image finding, the enteric duplication cyst with bowel obstruction was suspected, and surgical finding showed a duplication cyst with torsion. The patient received resection of cystic lesion with an end to end anastomosis, and drainage of intra-abdominal abscess was performed. The patient's symptoms got improved after operation.
Conclusion: Enteric duplication cysts are uncommon congenital anomalies, usually found in mesenteric side of gastrointestinal tract. The cyst wall contains all normal bowel layers: mucosa, submucosa, and muscularis, therefore, abdominal sonography revealed a cystic mass with echogenic inner lining and a hypoechoic rim, which is specific for diagnosis. The presence of these two layers is useful to exclude other cystic masses such as mesenteric or omental cyst, choledochal cyst, ovarian cyst, and pancreatic pseudocyst, which lack a mucosal lining. The patient presented with an abdominal distention/mass, and vomiting when obstruction of the adjacent intestinal lumen occurred. The cyst may contribute to the leading point of the intussusception, gastrointestinal bleeding, or even small bowel volvulus. Conclusion: In our case, this cyst cause torsion resulting in bowel obstruction, which detected by abdominal sonography preioperativelly. Complete excision of the cyst with preservation of the viscus from which it is arising is the treatment of choice.

PP-G-58

ANAPLASTIC LARGE CELL LYMPHOMA OF THE DUODENUM IN A TEENAGE GIRL

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Background: Small bowel is an uncommon site of gastrointestinal (GI) tract neoplasm, whereas GI anaplastic large cell lymphoma (ALCL) is even rarer in children. Patients may present with non-specific complaints such as fever, anemia, weight loss, abdominal pain, vomiting, alternating bowel habit, or even severe symptoms such as GI bleeding, bowel perforation, and intestinal obstruction. Case presentation: The patient presented with fatigue and intermittent abdominal pain for 2 months. After admission, she developed severe epigastric pain and the serum lipase was elevated. Abdominal ultrasonography revealed mild parenchymatous liver disease with prominent visualized portions of pancreas. Two days after supportive treatment, she again developed pain with non bilious vomiting. Computed tomography (CT) revealed circumferential soft tissue density along wall of the second and third part of duodenum with proximal dilatation suspected intramural duodenal hematoma (with a differential diagnosis of neoplasm) causing partial gut obstruction. After failed expectant management for three weeks, the follow-up CT showed no significant change of soft tissue density, so neoplasm was increasingly suspected as compared to intramural hematoma. She was sent for esophagogastroduodenoscopy which revealed mass at the second part of duodenum occluded 80% of the lumen without ulceration or exudates. The histopathological finding was consistent with ALCL (ALK positive staining). Bone marrow aspiration and CT of the chest showed no evidence of metastasis. After the third course of chemotherapy, CT scan of the whole abdomen revealed complete resolution of the mass within four months. Repeated endoscopy revealed complete luminal patency of duodenum with normal histology and normal CT scan of the chest and positron emission tomography scan. She remained well without recurrence of symptoms after 7 weeks from the completion of chemotherapy. **Conclusion:** Herein, we report this extremely rare tumor involving proximal duodenum causing intestinal obstruction in a teenage girl.

PP-G-59

FECAL MICROBIOTA TRANSPLANTATION AND EARLY MICROBIAL CHANGES IN PEDIATRIC ULCERATIVE COLITIS PATIENTS

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Background & Objectives: Dysbiosis of intestinal microbiota is partially contributing to the pathogenesis of ulcerative colitis (UC), and there are many studies about manupulating intestinal microbiota, i.e., fecal microbiota transplantation (FMT). However, the factors affecting the successful outcome of FMT have not yet been identified. We hereby report case series of UC patients who received FMT with the clinical and microbial assessment.
Methods: Two patients who were diagnosed with UC were selected for the study. One patient was 12-year-old male with steroid dependant UC, and he was steroid dependant despite the biologics and topical steroid treatment. The other patient was 15-year-old female with steroid dependant UC who was considered to go on biologic therapy. FMT was performed colonoscopically twice with one month interval, and total of 200 mL of fecal suspension was injected each time. Fecal microbiota of the donor and recipient were analyzed right before FMT, and the recipient was follow up with his laboratory data, disease activity, and microbial change after FMT.
Results: Almost identical results were observed. First FMT did not show clinical or microbial improvement. Patient 1 was put on steroid again, and he received his second FMT with systemic steroid. Patient 2 was put on short course of steroid, then biologics was started. At first FMT, the composition of microbiota in both patients showed dysbiosis with low diversity, dominant proteobacteria, and no bacteriodetes. Infused donor bacteroidetes seemed to dissapear immediately. At second FMT with immunosuppressant, the composition was still dysbiotic although they were clinically improved. However, proteobacteria only accounted for less than 10% and firmicutes seemed to be dominant. This time, donor microbiota survived better, and the recipient showed the similar pattern as the donor.
Conclusion: This case suggests that engraftment and outcome of FMT is influenced from microbial composition in both the donor and the recipient.

PP-G-60

JUVENILE POLYPS: A CASE SERIES OF 30 PEDIATRIC PATIENTS

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Objectives: Juvenile polyp is the most common cause of rectal bleeding in children. We reviewed 30 children who underwent colonoscopy and polypectomy.
Methods: We retrospectively reviewed 30 pediatric patients with the diagnosis of juvenile polyps between April 2005 and March 2018.
Results: The mean age of the patients was 3.3 (1.9-14) years, and the mean duration of the disease upon presentation was 8 (1-30) months. Out of the total 30 cases, 28 patients had hematochezia, 25 patients had a solitary polyp, 3 patients had 2-5 polyps and 2 patients had > 5 polyps. All patients in our series underwent total colonoscopy down to the cecum. Among the total 25 cases with solitary polyps; 6 were in the rectum, 9 in the sigmoid colon, 7 in the descending colon and 3 in the transverse colon. Polyps were different in their sizes and locations, in 13 patients they were ≥ 2 cm, and in 12 cases were ≤ 2 cm, and of note, 5 of the 6 cases (83.3%) with rectal polyp had the polyp size of < 2 cm. Polypectomy were successfully performed in all patients without complication. From those patients who found to have 2-5 polyps, one case had family history of juvenile polyposis syndrome (JPS) associated with BMPR1A mutation and thus was followed accordingly. Of the 3 cases who had ≥ 5 polyps, 2 patients performed gastroscopy and capsule endoscopy, and one of them was found to have ≥ 100 polyps in small and large intestine.
Conclusion: Most polyps were solitary in type and developed in sigmoid colon or rectum. However, in 40% of cases, polyps were located above transverse colon and necessitated total colonoscopy. As JPS carries a high risk of malignancy, patient with JPS needs further evaluation and regular follow-up.

PP-G-61

SURVEY ON MANAGEMENT OF ACUTE GASTROENTERITIS IN CHILDREN WITH THE KOREAN SOCIETY OF PEDIATRIC GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION

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Background: No national survey on management of Acute gastroenteritis (AGE) with Korean pediatricians. Therefore, we conducted the online survey to investigate the managements AGE and compare the managements between pediatric gastroenterologists (PG) and general pediatricians (GP).
Methods: Questionnaire concerning the type of hospital (primary, secondary and tertiary hospital), the indication of admission, prescription of antiemetics, antacids, antidiarrheal agents and antibiotics, and recommendation of dietary change was sent to the pediatricians who are the member of The Korean Society of Pediatric Gastroenterology, Hepatology, and Nutrition from June 02 to June 04, 2018.
Results: A total of 141 pediatricians (28.2%) answered the survey among 500 pediatricians. Among 141 pediatricians, 39.0% (n=55) were PG and most of them (98.2%) were working in tertiary hospital. The most common indication of hospitalization was severe dehydration (98.8%) and followed by the persistent vomiting and lethargy. The moderate to severe dehydration was managed with intravenous rehydration (80.6%). Antiemetics were prescribed in 87.3% of PG and 96.6% of GP ($P>0.05$). Antacids were prescribed for the cases with abdominal pain and vomiting by 5.6% of PG and 8.1% of GP. The most common anti-diarrheal agent was probiotics in 89.1% of PG and 100% of GP ($P<0.05$). Smectite was more prescribed by GP (64.0%) than PG (14.6%) ($P<0.05$). The antibiotics were prescribed in less than 10%. The change of diet was more frequently recommended by GP (59.3%) than PG (27.3%) ($P<0.05$). The stool exams for detecting the cause of AGE were performed mainlyin hospitalized children by both PG and GP.
Conclusion: This survey of the management of pediatric AGE showed that the indication of admission and rehydration were similar in GP and PG. Drug prescription for diarrhea and diet change recommendation were more frequent in GP than PG.

PP-G-62

VALIDITY AND RELIABILITY OF THE THAI VERSION OF THE ROME IV QUESTIONNAIRES FOR PEDIATRIC FUNCTIONAL GASTROINTESTINAL DISORDERS

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Validity and Reliability: of the Thai Version of the Rome IV Questionnaires for Pediatric Functional Gastrointestinal Disorders S. Siajunboriboon, MD, T. Ngoenmak, MD, P. Tanpowpong, MD MPH, M. Sarawit, PhD, C. Lertudomphonwanit, MD, and S. Treepongkaruna, MD Background: The Rome IV questionnaires are widely used as a screening tool for diagnosis of pediatric functional gastrointestinal disorders (FGIDs) and have been translated into many languages. However, the questionnaires have not been translated into Thai. Objectives: To produce the Thai version of the Rome IV questionnaires (child and adolescent) and assess their validity and reliability.
Material and methods: The Rome IV questionnaires (child and adolescent), which consist of self-report and parent-report parts, were translated into Thai and back translated according to the Rome translation guideline. Subsequently, validity was tested by comparison between the original English version and the back-translated version using Index of Item-objective Congruence (IOC). The self-report questionnaire was tested by 50 pediatric patients, aged 10-18 years, at Faculty of Medicine, Ramathibodi Hospital and the parent-report questionnaire was tested by 50 parents. Finally, reliability was evaluated using Cronbach's alpha coefficient and test-retest procedure.
Results: The IOC was 0.87 for parent-report and 0.91 for self-report questionnaires, which both indicated high validity. The Cronbach's alpha coefficients of the Thai version of the Rome IV questionnaires had excellent reliability of 0.94 for parent-report and 0.96 for self-report questionnaires. In addition, the test-retest analyses were 0.98 for self-report and 0.97 for parent-report questionnaires.
Conclusion: The Rome IV questionnaire (child and adolescent), Thai version, was produced with good validity and reliability and can be used for research in FGIDs in Thai children.

PP-G-63

GASTROINTESTINAL MANIFESTATIONS AND CLINICAL OUTCOME OF HENOCH-SCHÖNLEIN PURPURA IN PEDIATRIC PATIENTS IN KING CHULALONGKORN MEMORIAL HOSPITAL

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Background: Henoch-Schönlein purpura (HSP) is the most common cause of vasculitis in children. The gastrointestinal manifestations may vary from mild abdominal pain to life-threatening condition, such as massive intestinal bleeding or perforation. Objective: To determine the gastrointestinal manifestations and clinical outcome of Henoch-Schönlein purpura in paediatric patients
Methods: A retrospective study of children diagnosed with HSP based on the presence of palpable purpura, was performed in King Chulalongkorn Memorial Hospital from 1 January 2007 to 31 September 2017. The clinical characteristics, treatment and clinical outcome were collect from medical record. The associations between factor and severity of abdominal pain were analyzed by qi-square, independent t-test and univariate logistic regression analysis.
Result: A total of 61 patients enrolled in this study with the mean age of 8± 3.7 years, and the male to female ratio was 1.1:1. Development of joint and renal involvement were observed in 22 (36.1%) and 19 (31.1%) patients, respectively. Gastrointestinal manifestations were presented in 55 patients (90 %), the onset of GI symptom occurred before, after and at the same time with purpura, were found in 11(20%), 25 (46%) and 19(33%) patients, respectively. The most common cause of hospitalization was intestinal bleeding (26 patients; 42%) followed by severe abdominal pain (23 patients; 38%). Relapse was found in 11 patients (18 %). Prognosis of HSP patients remained good, but there was a case of death from massive gastrointestinal bleeding. The neutrophil-lymphocyte ratio (NLR) and C-reactive protein (CRP) were significantly higher in patient with severe abdominal pain when compare to those who had mild symptom (7.8 vs 4.2 and 12.5 vs 4.6mg/L, respectively; $P<0.05$).
Conclusion: Most HSP patients have a good clinical outcome. The NLR and CRP are associated with the severity of abdominal pain in HSP patients.

PP-G-64

NATIONWIDE POPULATION-BASED EPIDEMIOLOGIC STUDY ON CHILDHOOD INTUSSUSCEPTION IN SOUTH KOREA

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Background & Objectives: Intussusception is a medical emergency requiring rapid diagnosis and treatment and mainly occurs in infancy and early childhood. This is the first nationwide population-based study conducted to investigate the epidemiology, treatment, disease outcomes, and hospital costs of childhood intussusception in South Korea.
Methods: From the Korean universal health insurance database, the data on all pediatric patients aged 18 years or less diagnosed with intussusception during the period from January 2007 to December 2017 were extracted and analyzed statistically.
Results: A total of 29,823 cases were detected over an 11-year period. The incidence rate was 27.72/100,000 person-year. Intussusception were more frequent in male than in female (boys : girls = 1.65 : 1). The majority (95.6%) of intussusception developed in children younger than 4 years of age and 83.1% of cases were under 2 years of age. The recurrence of intussusception was observed in 3,169 subjects (10.6%), and twice or more recurrences were noted in 20.5% of recurred cases. Treatment with only air/barium reduction was successful in 89.3%. Surgery after barium/air reduction failure was conducted in 4.0%, whereas emergent surgery without air/barium reduction was done in 6.7%. A total of 3,179 patients underwent 3,455 operations including 736 laparoscopic surgeries. Mean age at the time of surgery was 2.6±3.1 years; 2.1±2.1 years for surgery after air/barium reduction failure and 2.8±3.6 years for surgery without air/barium reduction. Mean length of hospitalization was 3.2 days and mean hospital costs were 675,730 KRW (= 614.3 USD).
Conclusion: Most cases of intussusception occurred in young children aged 2 years or less with male predominance, and about 10% showed recurrence once or more. Although air/barium reduction was successful in most cases, some patients still required surgical treatment. Our study provided more accurate epidemiologic data on intussusception in South Korea over an 11-year period.

PP-G-65

ABDOMINAL PAIN: AN OVERLOOKED SYMPTOMS OF TESTICULAR TORSION- 10 YEARS EXPERIENCE OF DITMANSON MEDICAL FOUNDATION CHIA-YI CHRISTIAN HOSPITAL

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Background: Clinical symptoms of testicular torsion include scrotal pain, swelling and redness, nausea and vomiting, thus testicular torsion maybe underdiagnosed in patient who initially presented with abdominal pain. Limited research had been discussed that abdominal pain as first presentation in patient with testicular torsion.
Methods: Patients who were diagnosed with testicular torsions and underwent operation at Ditmanson Medical Foundation Chia-Yi Christian Hospital during recent 10 years their medical records were restrospectively reviewed about presenting symptoms, physical examinations,, treatment and outcomes.
Result: 18 patients' (mean age 13.00 (12.00-15.00) years) medical records were reviewed. All of them are adolescent except one 5-year-old boy and one 3-year-old boy. We separated the 18 patients into two groups by operation methods. Mean time from symptoms presented to operation in orchiectomy group was 67.75 ± 30.19 hours while in detorsion with orchiopexy group was 6.10 ± 3.82 hours ($p < 0.001$). In all 18 patients, 10 patients (55.56%) underwent detorsion with orchiopexy with good prognosis noted at follow-up examination. 5 patients (62.5%) in 8 patients received orchiectomy group who initially presented with abdominal pain without genitourinary symptom. Only 1 patient (10%) in 10 patients received orchiopexy group who initially presented with abdominal pain without genitourinary symptom. 6 patients (33.3%) in all 18 patients presented abdominal pain as first symptom, all of them did not have genitourinary physical examination at first. One of them had genitourinary physical examination 1 hour later and had prompt diagnosis and underwent detorsion with orchiopexy. In 6 patient with initial symptoms as abdominal pain who did not have genitourinary physical examinations at first, 5 of them(83.3%) underwent orchiectomy.
Conclusions: Early diagnosis and treatment for testicular torsion may result in better prognosis. Lack of genitourinary physical examination may be a risk factor for delay diagnosis. A thorough genitourinary examination should always be preformed on a boy with abdominal pain.

PP-G-66

WHAT IS THE FIRST BIOLOGICS OF CHOICE IN PEDIACTIC CROHN'S DZ? : A SYSTEMATIC REVIEW

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Back ground & objectives: There are two anti-TNF alpha agent available in pediatric Crohn's disease, currently., Inflixmab(INF) and adalimumab(ADA). But there is no confirmed superiority between these two agent, the aim of the study was to systematically assess the published evidence to compare the efficacy of two biologics

Methods: MEDLINE, EMBASE, the Cochrane Library, systematically searched up to May 2018 for randomised controlled trials and observational studies on the efficacy on efficacy (primary remission (PR) and Loss of response (LOR)) of two biologics for Crohn's treatment in children and adolescents. Screening, eligibility check of the identified studies were done by three authors independently, and reach consensus by discussion.

Results: Initially 408 studied were identified though systematic & manual searching(Pubmed=357, EMbase=19, Cochrane=2, manual searching=30), however no randomised controlled trials, that directly compare two agents was found, and only 2 cohort studies were available. According these two studied PR of IFX were 51/109(46.8%) and 27/39(69.2%) respectively and ADA were 10/28(35.7%) and 26/29(90%). LOR comparison was available only one study-9/27(33.3%) in IFX and 5/26(19.2%) in ADA.

Conclusion: Because of low-quality evidence, mainly on case series, were available. We failed to conclude the clinical question. high-quality evidence on these subject is needed. .

PP-G-67

PATIENTS' CHARACTERISTICS AND ANESTHETIC MANAGEMENT OF PEDIATRIC GASTROINTESTINAL ENDOSCOPIC PROCEDURES

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Background and objectives: Pediatric gastrointestinal endoscopy (GIE) is a procedure for diagnosis and treatment of gastrointestinal tract abnormalities. It could be performed without sedation, with intravenous sedation or with general anesthesia. The techniques by which a child is anesthetized remain controversial. This study is aimed to report and evaluate the patients' characteristics as well as the choices and techniques, drug use and complications of anesthesia for GIE procedures in the pediatric patients in Siriraj Hospital.
Methods: We undertook a retrospective review of anesthesia or sedation service records of pediatric patients who underwent GIE procedures. All procedures were performed by staff endoscopists, and all anesthesias were administered by anesthetic personnel supervised by a staff anesthesiologist in an endoscopy unit outside the operating room.
Results: There were 203 GIE procedures. Of these, 162 GIE procedures were anesthetized by using non-general anesthesia technique including intravenous sedation and topical anesthesia, and 41 GIE procedures were anesthetized by using general anesthesia with tracheal tube. Mean age was 6.7±3.9 years. The majority of them were classified in ASA physical status III. Mean duration of procedure was 31.1±17.3 minutes. Interestingly, all antegrade (oral) intubation procedures were utilized by using general anesthesia with tracheal tube. The main anesthetic agents used were propofol, fentanyl was and midazolam. Mean dose of propofol was 3.6±2.6 mg/kg, of fentanyl was 1.0±1.3 mcg/kg and mean dose of midazolam was 0.06±0.03 mg/kg. Overall complication rate was 14.8%. Hypotension was the most common complication.
Conclusion: Anesthesia for GIE procedures in pediatric patients by trained anesthetic personnel with appropriate monitoring is relatively safe and effective. General anesthesia with tracheal tube is commonly used in the antegrade (oral) intubation procedures. Although cardiovascular-related complication, including hypotension, in this aged group is common, all complications were usually transient, mild, and easily treated, with no sequelae.

PP-G-68

IMPAIRED GASTRIC MOTILITY AMONG CHILDREN WITH ABDOMINAL PAIN PREDOMINANT FUNCTIONAL GASTROINTESTINAL DISORDERS (AP-FGIDs)

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Background & objectives: Gastric motor dysfunctions have been suggested in the pathophysiology of abdominal pain predominant functional gastrointestinal disorders (AP-FGIDs) such as functional dyspepsia and irritable bowel syndrome. However little is known regarding abnormal gastric empting and impaired antral motility among children with AP-FGIDs. Therefore we aimed to compare gastric motility between children with AP-FGIDs and control.
Method: Twenty five children (11 [44%] males, 7-12 years, mean 9.6 years, SD 1.6 years) fulfilling Rome III criteria for AP-FGIDs were recruited for this study. None had clinical or laboratory evidence of organic disorders. Twenty five healthy children were selected as controls (14 [56%] males, 7-12 years, mean 10 years, SD 1.3 years). Liquid gastric emptying rate (GER) and antral motility parameters were assessed using a previously validated ultrasound method.
Results: Average GER (31.6% in patients vs. 60.08% in controls, $p<0.0001$), amplitude of antral contractions (40.98% vs. 69.15%, $p<0.0001$), frequency of contractions per 3 min (8.7 vs. 9.4, $p=0.01$) and antral motility index (3.58 vs. 6.54, $p<0.0001$) were significantly lower in patients with AP-FGIDs compared to controls. Fasting antral area was higher in patients (3.7 vs. 2.3, $P=0.003$).
Conclusions: GER and antral motility parameters were significantly impaired in patients with AP-FGIDs. These findings highlight the possible role of gastrointestinal motility abnormalities in the pathophysiology of childhood AP-FGIDs.

PP-N-01

COMPARISON OF CRYING AND FUSSING PATTERNS DOCUMENTED BY AUTOMATED WEARABLE VERSUS PARENTAL DIARIES

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Background: Crying and fussing of infants as a sign of discomfort are of relevant concern to parents and pediatricians. To this point, no method for automated and objective quantification of crying and fussing has been validated. Objectives: The aim of the study was to compare infant crying and fussing quantified automatically by the LENA (Language ENvironment Analysis) system with manually entered parental diaries.
Methods: The LENA system comprises a small digital recorder that captures the natural sound environment of the child. Uploaded data is automatically analyzed by machine learning based algorithms. A pilot study of 12 term infants below 15 weeks of age was conducted. Parents recorded crying and fussing with electronic diaries in parallel to LENA recordings for 14 full days.
Results: The automated machine-based learning algorithms of the LENA system identified episodes of crying and fussing and generated high temporal resolution data. For example, in one day the LENA system detected 42 episodes whereas parents reported 7 episodes of crying and fussing. Over the study period of 2 weeks, 943 hours and 193 episodes of crying and fussing were reported by parents compared to 527 hours and 301 episodes detected by the LENA system. In addition, differences in daily reporting patterns between parents and the automated system were found.
Conclusion: In the given example, automated detection of crying and fussing shows higher number of episodes and lower duration compared to parent reported outcomes. This may yield to some extent insights into parental perception of crying and fussing. Further research is required to elucidate this. However, objective and automated analysis of crying and fussing patterns could be a relevant asset for parental reassurance in clinical practice, and to evaluate the efficacy of interventions in clinical studies.

PP-N-02

EFFICACY AND SAFETY OF SUCCUS ENTERICUS REINFUSION INTO THE DISTAL SMALL BOWEL OF EXTREMELY OR VERY LOW BIRTH WEIGHT INFANTS WITH ENTEROSTOMY

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Background and objectives: In the extremely low birth weight (ELBW) or very low birth weight (VLBW) infants with enterostomy, nutrition management without utilizing the distal small bowel leads to underweight and liver failure. To avoid these conditions, we collect succus entericus pooled in pouches and reinfuse them into the distal small bowel using a soft catheter every 3 h. The efficacy and safety of this procedure were investigated.
Methods: The medical records of infants reinfused with succus entericus into the distal small bowel were retrospectively reviewed from December 2006 to April 2018. A total of 6 male and 3 female infants were included in this study. 6 cases were ELBW and 3 were VLBW infants, with the median birth weight of 918 (range 502-1,206) g and median day-old of enterostomy formation of 4 (range 2-6) days old. Patients' primary diseases were meconium ileus (5 cases), focal intestinal perforation (3 cases), and internal hernia (1 case). 8 patients had ileostomy, and 1 had jejunostomy. In 2 cases, their succus entericus were cultured sequentially and changes of bacterial flora were investigated.
Results: The median postoperative day of starting enteral feeding was 4 (2-6), and median postoperative day of starting reinfusion was 22 (9-84). 8 of 9 cases had weight gains before the reinfusion, with an average of 8.9 g per day. In contrast, all cases had weight gains after the reinfusion, with an average of 18.0 g per day. No cases had complications (such as enteritis and ileus) attributed to reinfusion. In 2 cases with cultured succus entericus, no pathogenic bacteria such as methicillin-resistant Staphylococcus aureus and Pseudomonas aeruginosa were found.
Conclusion: No pathogenic bacteria were found in the succus entericus pooled in pouches. Reinfusion into the distal small bowel was effective for weight gains and safety without complications.

PP-N-03

SPHINGOMYELIN IN BRAIN AND COGNITIVE DEVELOPMENT – PRELIMINARY DATA

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Background and objectives: Sphingomyelin (SM) structurally and functionally supports brain myelination, a process closely associated with cognitive maturation. The presence of SM in breast milk suggests a role in infant nutrition, however, methods to quantify SM in a milk matrix have only recently been developed. Moreover, little is known about its contribution to healthy brain and cognitive development. Here we first investigated the link between early life dietary SM, later cognitive development and myelination in an exploratory observational study of neurotypical children and then characterized how SM impact myelination mechanism of action.
Methods: SM levels were quantified in infant formula fed during the first 3 months of life and associated with myelin content (brain MRI) as well as cognitive development (Mullen Scales of Early Learning). Potential mechanisms of action were also investigated.
Results: Higher levels of SM in infant formulas were significantly associated with a higher rate of change in verbal development in the first 2 years of life ($r=0.65$, $P<0.001$), higher levels of myelin content at 12-24 months in different brain regions, overall later onset and more prolonged rates of myelination in different areas of the brain. Our mechanistic data showed SM treatment to result in significantly increased proliferation ($P<0.05$), maturation ($P<0.05$) and differentiation ($P<0.05$) of oligodendrocyte precursor cells, as well as increased axon myelination ($P<0.05$).
Conclusion: Our preliminary findings indicate a potential impact of dietary SM on cognitive development in healthy children, potentially by affecting oligodendrocytes and increasing axon myelination. Randomized controlled trials are needed to substantiate efficacy for cognitive benefits together with studies on bioavailability and brain uptake.

PP-N-04

NUTRITION AND HEALTH CHALLENGES FOR INFANTS AND CHILDREN IN THAILAND

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Background and objectives: Thailand has been a role model for effective community- based nutrition programs. Protein-energy malnutrition and micronutrient deficiencies in children have dramatically reduced. However, stunting rates have been stagnant during the last 2 decades while obesity prevalence has risen. Using a dedicated structured review methodology (NutriPlanet), we assessed current nutrition and health situation in Thai 0-6-year-old children.
Methods: Data search and analysis mainly used PubMed library covering 1996 till 2016 and was completed with additional records from local journals, non-indexed nationwide reports and newest information becoming available during the execution of the project (June 2016-March 2017). The project included 3 half-day workshop meetings to discuss findings and align on conclusions.
Results: The 2016 MICS survey suggests a major improvement in under-five stunting compared to the 2012 survey (from 16.3 to 10.5%). However, also considering the results from the 2006 report (11.9%), it is more plausible that the much debated 2012 survey falls out of line in this respect and that under-five stunting has remained persistently stable. Substantially lower total energy intake compared to recommendation was reported in a recent dietary intake survey, but the authors already questioned the validity of their finding because of potential methodological flaws. From several surveys a consistent finding was an unexpectedly high protein intake (200%Thai DRI/300% WHO Safe level of intake) amongst young children in both rural and urban settings. This may be a contributor to obesity risk. Concern about high intakes of total and added sugar have been voiced, but the available information is inconsistent. Feeding problems may occur in 25% of young children of which highly selective food intake (picky eating) was reported to be the major concern by parents.
Conclusions: Thailand still needs to take the final step towards reducing stunting, while rising overweight prevalence has become the new concern.

PP-N-05

THE RELATIONSHIP BETWEEN CHILDREN'S EATING BEHAVIOR AND DIETARY INTAKE IN OBESE THAI CHILDREN

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Background: Obesity is a major threat to public health in developed and developing countries. Inappropriate eating behavior and dietary intakes contribute to the current epidemic of obese childhood. Objective: To study the association between eating behavior, , BMI and dietary intake in obese Thai children.
Methods: A cross-sectional study in obese Thai children aged 7-15 years was conducted from October 2017 to April 2018. Eating behavior was assessed by the Children's Eating Behavior Questionnaire (CEBQ), indicating their child's eating style for four 'food approach' and four 'food avoidant' sub-scales. Obesity was defined as BMI above 2SD according to WHO reference. Dietary fiber intake was assessed by 24-hour dietary recall. Spearman correlation coefficients were used to assess the association between study variables.
Results: Forty three obese Thai children participated in the study; 27 (63%) were male. Median [IQR] of age and BMI z-score were 10 [3] years and 3.02 [0.97], respectively. Mean total energy intake was 1826.9 ± 658.80 kcal/day. The median [IQR] of fiber intake was 2.3[2.63] g/1000 kcal. Enjoyment of food (EF) was the highest subscale. In addition, food approach scales tended to be positively related to BMI z-scores. Dietary fiber intake showed a weak negative correlation with food avoidant subscales.
Conclusion: A link between eating behavior scores and degree of obesity as well as dietary intake in obese Thai children could not be clearly demonstrated in this study. However, further study in a larger obese population might allow for planning of behavior modification program in obesity intervention..
Acknowledgements This study was supported by the Ratchadapiseksompotch Fund (RA 60/122) and the Pediatric Nutrition STAR, Faculty of Medicine, Chulalongkorn University, Thailand; NSTDA Research Fund (Grant no. FDA-CO-2561-5614-TH), Ministry of Science and Technology, Thailand.
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PP-N-06

HIGHER DAILY IRON INTAKE FROM IRON FORTIFIED COMPLEMENTARY FOOD COMPARED TO HOME-BASED COMPLEMENTARY FOOD IN 9-12 MONTH-OLD BABIES

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Background & Objectives: Iron deficiency, is still a major micronutrient deficiency in developing countries, including Indonesia. Iron deficiency and iron-deficiency anemia (IDA) in infants can affect their future's quality of life. The peak IDA incidence was noted among infants aged 9–12 months. The causes of the problems are many with the leading cause is inadequacy of iron-rich food intakes. The global accepted recommendation for infant feeding practice is to ensure good iron status through breastfeeding for at least 4 to 6 months and iron-rich complementary food (CF) consumption afterwards. The limited choices of food and the limited amount of consumed food could make fortification of CF in this period a challenging problem.
Methods: A cross-sectional study was conducted on July 2017-January 2018 in Posyandu in Tanah Abang and Jatinegara district, Jakarta. Dietary iron intake was obtained using a 3-day food record method and analyzed with NutriSurvey® program. Subjects also underwent anthropometry measurement.
Results: A total of 82 babies aged 9-12 months were studied. The daily total iron, heme iron, and non-heme iron intake were 5.2; 1.3; and 0.27 mg/day, respectively. Contributions of iron-fortified formula, iron-fortified infant cereals, home-based CF and breastmilk for daily iron intake were 6.5; 2.0;1.3; and 0.2 mg/day. The combination of iron-fortified formula and CF gave the highest iron intake with the value of 10,2 mg/day. In the group with the combination of breastmilk and CF, iron-fortified cereal contributed more iron intake when compared to home-based CF, with mean daily iron intake value of 5.3 mg/day compared to 3.2 mg/day.
Conclusion: Daily iron intake of 9-12 month-old babies is still low especially the heme iron. Iron-fortified formula and iron-fortified infant cereals gave the highest daily iron intake values. Iron-fortified infant cereals contribute more iron intake values compared with home-based CF.

PP-N-07

IRON PROFILE OF 9-12 MONTH-OLD BABIES: CORRELATION WITH NUTRITIONAL STATUS, ENHANCERS AND INHIBITORS OF IRON ABSORPTION IN DAILY DIETARY INTAKE

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Background: Iron deficiency anemia in 9-12 month-old babies could affect their quality of life. World Health Organization recommends complementary food to be given to babies at exactly 6 months old of age, unfortunately the quality of food is often inadequate. Intake of iron containing food, enhancer and inhibitor of iron absorption affects iron body level. Study about iron profile and its correlation with enhancers and inhibitors of iron absorption in baby's daily dietary intake is still infrequent in Indonesia. Objective: To measure the prevalence of iron deficiency and IDA, daily iron, enhancers (vitamin C and A) and inhibitors (calcium, zinc, phytate) intake, and their correlation with iron status, and to know the correlation of nutritional status and adequacy of daily iron intake with iron status in 9-12 month-old babies.
Methods: A cross-sectional study was conducted in Posyandu in Tanah Abang and Jatinegara district on July 2017-January 2018. Dietary iron intake, enhancer, and inhibitor of iron absorption were obtained using food record method and analyzed with NutriSurvey® program. Subjects underwent anthropometry measurement. Complete blood count, ESR, and ferritin serum were examined.
Results: A total of 82 babies were studied. Prevalence of iron deficiency and IDA were 12,2% and 26,8%. There were no evidence of relationship between adequacy of daily iron intake (p=0,064) and undernourished condition (p=0,444) with iron deficiency status. There were statistically significant differences in total iron (p=0,002), heme iron (p=0,017), calcium (p=0,006), and zinc (p=0,042) daily intakes between iron deficiency group and non-iron deficiency group.
Conclusion: The prevalence of iron deficiency and IDA in 9-12 month-old infants is still high. There were no evidence of relationship between adequacy of daily iron intake nor undernourished condition with iron status. There were statistically significant difference in total and heme iron, calcium, and zinc daily intakes between iron deficiency and non-iron deficiency group.

PP-N-08

UNDERSTANDING MALNUTRITION IN ASMAT, PAPUA, INDONESIA: AN OBSERVATION SUPPORTED WITH CROSS-SECTIONAL STUDY

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Background & objective: Between November 2017–February 2018, officials in Asmat, located in Papua, Indonesia, stated that 632 children contracted measles, 220 had severe acute malnutrition (SAM), and 59 died due to either measles, SAM, or both. This study aims to present our observation during measles outbreak in the region.
Methods: We performed cross-sectional study on nutritional status of children in Kaye Village, located ±250 m from the district hospital in Asmat, Papua, Indonesia. We measured weight, height, and arm circumference and determined nutritional status using growth chart from WHO (<5 years-old) or CDC (>5 years-old). We also conducted interview with local community, healthcare professionals, and non-governmental organization to understand local infant feeding practice.
Results: We evaluated 102 children aged 4 months–12 years. Around 14.5% children had moderate to severe malnutrition, including 2 children with SAM. Height data from 92 children showed 26,4% children are stunted, while 63,7% had normal stature. During our interview, we found that breast milk are given 4-5 times per day and not given when the mother goes to work (women are the main breadwinner). Formulas are given to one third children, in spite of difficulty to obtain clean water. Infants are given solid food as early as 2 months-old in the form of complementary food made from sago.
Conclusions: Prevalence of malnutrition in this village in Asmat is lower than national data probably due to its proximity to the district hospital. However, we also identified inappropriate infant feeding practice. More studies are needed to evaluate the relationship between the malnutrition and feeding practice in Asmat. Acknowledgements: We would like to acknowledge the contribution of the Indonesian Ministry of Health flying healthcare team phase III, Dompet Dhuafa health team, and the local government of Asmat district in Papua Province, Indonesia.

PP-N-09

CHOLINE -RELATED METABOLITES INFLUENCED BY FEEDING PATTERNS IN PRETERM AND TERM INFANTS

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Background & objectives: This study was performed to examine the choline status on term and preterm infants using urinary metabolome analysis.
Methods: Samples were collected from 19 term and 20 preterm infants between 15 days and 1 month, respectively. The infants were separated into four groups: the term-breast group (TB, n = 13), the term-formula group (TF, n = 6), the preterm-breast (PB, n = 11), and the preterm-mixed group (PM, n = 9). Urinary metabolome analysis was performed using capillary electrophoresis–time-of-flight mass spectrometry (CE–TOF/MS). We also performed metabolome analysis of the infant formulas.
Results: Urinary excretion of choline metabolites (choline, N,N-dimethylglycine, sarcosine, and betaine) was significantly higher in TB than TF infants ($p < 0.05$). Choline, betaine, and sarcosine excretion was not significantly different between the PB and TB infants. Choline and N,N-dimethylglycine excretion was significantly higher in PM than PB infants. Choline metabolites excretion was also significantly higher in PM than TF infants. Choline and betaine levels were significantly higher in the preterm than term formula used in this study.
Conclusions: The type of feeding in early infancy affects choline metabolism. Metabolome analysis is useful for assessing choline metabolism to modify the contents of infant formulas also in preterm infants.

PP-N-10

CORRELATIONS BETWEEN FEEDING TYPE AND BLOOD IONIZED MAGNESIUM LEVELS IN JAPANESE PRETERM INFANTS

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Background & objectives: Although magnesium (Mg) plays extremely important roles in many biological functions, few studies have investigated the normal ionized Mg (iMg) level in preterm infants. Therefore, we examined the influence of feeding type on serum Mg and iMg levels during hospitalization in the neonatal intensive care unit.
Methods: We included 115 preterm infants born between gestational weeks 32 and 35. Blood samples were collected from preterm infants at day1 of age and at discharge. Infants were separated into two groups: breast milk (BM) dominant group (n = 30) receiving ≥70% of Mg intake from BM and mixed-fed (MF) group (n = 85) receiving ≥30% of Mg intake from preterm formula. Blood levels of Mg, iMg, Ca, and iCa at day1 of age and at discharge were compared between the groups.
Results: The median gestational age and birth weight were 34.6 weeks and 2,048g, respectively. No differences in Serum Mg levels and blood iMg levels at day1 of age were observed between the two groups. Median serum Mg levels and blood iMg levels at discharge were significantly lower ($p < 0.05$) in the BM group than in the MF group; 2.10 (interquartile range 1.98-2.20) vs. 2.20 (2.10-2.40) and 0.46 (0.41-0.51) vs. 0.52 (0.47-0.57) mmol/L, respectively. However, there were no differences in serum Ca and iCa levels between the two groups. By stepwise multiple regression analysis, the percentage of BM intake was a significant independent predictor of Mg and iMg level.
Conclusion: The feeding type influenced serum Mg and blood iMg levels in preterm infants during time in the NICU. Further studies are needed to investigate the influence of Mg on growth and the optimal range of blood Mg levels to adjust the Mg content in infant formula.

PP-N-11

HANDGRIP STRENGTH AMONG KOREAN ADOLESCENTS WITH METABOLIC SYNDROME IN 2014-2015

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Background & Objective: The prevalence of metabolic syndrome is increasing worldwide in adolescents. Metabolic syndrome is a systemic disease that is likely to be associated with other diseases. Studies have shown a relationship between sarcopenia and metabolic syndrome. Handgrip strength is known as a simple tool to measure sarcopenia. Therefore, we aimed to investigate the relationship between handgrip strength and metabolic syndrome and each metabolic syndrome features in adolescents.
Methods: Data were obtained from 1,050 adolescents (574 boys; 476 girls; age 10-18 years) who participated in the Korea National Health and Nutrition Examination Survey. We used the International Diabetes Federation metabolic syndrome guideline and National Cholesterol Education Program Adult Treatment Panel III guideline for children to define metabolic syndrome. The highest handgrip strength for both hands was recorded. Handgrip strength was also divided by the participants' own weight (handgrip-to-weight ratio).
Results: Adolescents with metabolic syndrome defined by each guideline have higher handgrip strength ($P<0.05$). When handgrip strength was divided with participants' own body weight (handgrip-to-weight ratio), values were decreased in participants with metabolic syndrome ($P<0.05$).
Conclusions: This study shows that handgrip strength is associated with metabolic syndrome in adolescents. This is the first study to compare handgrip strength and metabolic syndrome in adolescents. Given that handgrip strength is associated with metabolic syndrome in adolescents, it can be a diagnostic modality to easily identify the patients' current state in the clinic.

PP-N-12

THE ENERGY AND NUTRIENT CONTRIBUTION OF GROWING UP MILK IN 12-36 MONTHS OLD CHILDREN IN CHINA AND MEXICO

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Background and objectives: Consumption of growing up milk (GUM) is associated with reduced risk of inadequacies of iron and vitamin D, nutrients that are frequently lacking in the diets of young children. The objective of this study is to investigate the influence of local food culture and age on GUM consumption among toddlers in China and Mexico.
Methods: Secondary data analyses were conducted using data from China Maternal and Infant Nutrition and Growth (MING 2012) and the Mexican National Health and Nutrition Survey (ENSANUT 2012). The percent consuming, energy and nutrient contributions of GUM were calculated based on 24-hour recall data. In total, 965 (China) and 1094 (Mexico) children between 12-36 months old were included in the study.
Results: In China, the prevalence of GUM consumption was 75% and 56% among 12-23.9 and 24-36 months old children respectively. GUM was a major food source of energy, providing 21% and 11% of daily energy intakes and contributing 10-50% and 5-30% of the daily nutrient intakes in 12-23.9 and 24-36 months old children respectively. In contrast, the prevalence of GUM consumption in Mexico was 23% in 12-23.9 month olds and 6% in 24-36 months old children. GUM provided 7% and 1% of the daily energy intake, and contributed only 5-10% and 1-4% of the total daily nutrient intakes in the two age groups above, respectively.
Conclusion: GUM consumption and its contribution to energy and nutrient intakes in toddlers declined along with the age, and was influenced by local food habits. GUM was a major food source of energy and nutrients for 12-36 months old children in China, but played limited nutritional role in Mexico due to the low consumption. Further studies are need to investigate whether increasing GUM consumption could reduce the risk of inadequacies of key nutrients in toddlers in these countries.

PP-N-13

GASTRIC DIGESTION CHARACTERISTICS OF FORMULA MADE FROM GOAT AND COW MILK

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Background and objectives: Heat treatment of milk influences protein structure and hydrolysis in the stomach (Ye, 2016). Infant formula manufacture involves multiple heat steps and modification of the whey protein content. This study determined the characteristics of gastric digestion of formula made with different milk sources and proportion of whey.
Methods: Commercially available cow and goat milk infant formula powders were reconstituted to 3.5% protein. Both whey-dominant (60:40) and casein-dominant (20:80) formulation were included. The formulas were individually mixed with Simulated Gastric Fluid (SGF) +/- pepsin and fed into an infant Human Gastric Simulator (HGS). Samples remaining in HGS, representing stomach contents, and digesta reaching the small intestine were collected over 20 – 240 minutes.
Results: The pH of the formulations decreased uniformly over time, reaching ~pH3 by 4 h. In the absence of pepsin, aggregates began to form in all samples at pH<5.3. Both goat milk formulations aggregated immediately upon exposure to pepsin, while aggregation was slower in formulas from cow milk. However, none of the formulas formed a protein clot similar to whole milk. Casein-dominant formula from goat or cow milk had less dry weight matter remaining in the HGS, compared to whey-dominant formula. SDS-PAGE confirmed rapid digestion of caseins in the goat milk samples while more intact casein remained in the cow formula. The digesta entering the intestine mainly contained intact whey proteins and casein peptides.
Conclusion: Infant formulas (both 60:40 and 20:80 whey:casein ratio) do not form a protein clot typical of whole milk during digestion in the HGS. Rather, pepsin acts on the formula proteins to form aggregates, with the time of aggregation varying with milk source and proportion of whey. Casein was hydrolysed mainly in the stomach, with faster hydrolysis of goat milk casein. In contrast, whey proteins remained intact when entering the intestine.

PP-N-14

IMPACT OF PREMATURITY ON PARENTAL PERCEPTION OF CHILDHOOD FEEDING BEHAVIOURS

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Background and objectives: Childhood feeding problems are common; prematurity is thought to increase this. We aim to describe differences in parental perceptions of childhood feeding behaviours in children born term and preterm.
Methods: An anonymised survey including validated questionnaire (Behavioral Pediatrics Feeding Assessment (BPFA) was conducted in 200 children (100 term, 100 preterm) aged between 12 and 84 months at their routine outpatient visit.
Results: Of the children born term and pre-term, 44% and 52% were boys respectively. The median gestation of the preterm born children was 27 weeks; most required tube feeding in the initial newborn period. Similar proportion of parents in the term (26.3%) and preterm (33%) group expressed concerns about their child's feeding, p=0.42; the biggest concern was inadequate solid intake in the term group, weight gain in the preterm group. Prematurity was not associated with a higher likelihood of having feeding difficulties defined objectively on the BPFA; 48.4% term, 42% preterm (p = 0.70). None of the parents in the preterm group met the cut-off for viewing their child's negative feeding behaviour as problems, compared to 16.5% in term group (p = 0.591). Specific mealtime behaviours (BPFA) that the parents in term group were more likely to find problematic compared to those in preterm group included: getting up from table during meal (24.1% vs 8%), not eating vegetables (13.2% vs 5%), tantrums (13.3% vs 7%), spitting (17.9% vs 8%), requesting food immediately after meal (5.2% vs 1%), negotiating what to eat (12.8% vs 4%). They were also more likely to use threats to get their child to eat (10.5% vs 3.1%), and to get angry with their child (10.5% vs 3%). None were statistically significant.
Conclusion: Although the prevalence of feeding problems were similar in children born preterm and term, parents in the preterm group perceived these behaviours differently.

PP-N-15

GOAT MILK FORMULA WITHOUT ADDED WHEY

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Background: Traditionally, formulas are made with skim and whey protein powders from cow milk to optimize amino acids and digestibility. Goat milk has similar macro nutrients, but differing physical characteristics to cow milk. We examined how these differences may impact the behavior of cow and goat milk formulas prepared with or without additional whey.
Methods: Whey protein concentrate was added to cow or goat milk to 20-60% of total protein and compared to commercial formulas with similar range in whey. Curd strength was measured by rheology, infant gastric digestion by in vitro methods and heat damage of proteins by ELISA of N□-carboxymethyllysine (CML).
Results: Curd strength was 3 x softer in goat than cow milk with 20% whey. Adding whey to 60% reduced the curd strength 5 fold in cow, but <2 fold in goat milk. Median CML concentrations were 2-3 times higher in formulas with 60% versus 20% whey. Published data show that goat milk formula with 20% whey has an amino acid profile1 and bioavailability2 comparable to cow milk formula with 60% whey. Goat milk formula with 20% whey delivers normal growth and protein nutrition for newborn infants3. Casein from goat milk is digested more effectively than cow milk4.
Conclusion: The available data shows it is not as necessary to add whey to goat milk formula to optimize amino acids and digestibility as for cow milk. While whey reduced curd strength of cow milk it had minimal impact on goat milk. In contrast, whey increased CML in formula, with unknown biological consequences. 1 Rutherfurd et al, Int J Food Sci Nutr 59 (2008) 679-690 2 Rutherfurd et al, J Dairy Sci 89 (2006) 2408–2413 3 Zhou et al, 2014 Brit J Nutr 111 (2014) 1641–1651 4 Hodgkinson et al, Food Chem 245 (2018) 275–281

PP-N-16

GOAT AND COW MILK PRODUCE DIFFERENT FEEDING RESPONSES AND APPETITE-RELATED NEURAL GENE EXPRESSION IN LABORATORY ANIMAL MODELS.

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Background and objectives: Growth of infants fed formula made from goat or cow milk was comparable in a randomised clinical trial, but there were significantly (P<0.02) more infants using alternative formula or non-formula foods in the first 4 months in cow formula-fed group compared to the goat group (Zhou et al, 2014 BJN 111, 1641–1651). A possible explanation for this outcome was a greater preference for the goat over cow formula. The goal of the current studies was to assess, by using laboratory animal models, whether the two milks could invoke different neural processes controlling reward-driven feeding mechanisms.

Methods: Male mice and rats were subjected to various short-term (between 2 and 24 h of exposure) milk availability regimes, in which isocaloric goat's (GSM) or cow's skim milk (CSM) was given in choice and non-choice scenarios. GSM- or CSM-enriched isocaloric chow pellets were used as solid-food controls. Relative expression of appetite-related genes was quantified in key brain regions involved in eating for energy (hypothalamus and brainstem) and reward (nucleus accumbens).

Results: Both mice and rats showed enhanced consumption of GSM-derived diets in non-choice regimes as well as a greater GSM preference in choice scenarios. Exposure to GSM over 24 h produced a significant increase in expression of multiple feeding-related genes in the nucleus accumbens while producing limited effects in the hypothalamus and brainstem.

Conclusion: Although goat and cow milk have very similar macro-nutrient composition, they induce very different feeding-related responses in laboratory animals. The apparent preferential selection for GSM compared to CSM is accompanied by a greater magnitude of changes in gene expression in the brain reward circuitry after GSM consumption.

PP-N-17

OUR EXPERIENCE WITH COMISS QUESTIONNAIRE IN GP

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Background and Objectives: CoMiSS - questionnaire is a simple tool that can be used for detecting infants with potential risk of cow´s milk protein allergy (CMPA). Scoring the gravity of atopic dermatitis, colic behavior, type of stools, regurgitation and respiratory symptoms may help to recognize risky patients. It is suggested, that the score of 12 points presents high probability of CMPA. To diagnose CMPA the infant should undergo elimination/challenge test (ECT) with cow´s milk protein (CMP).
Methods: We used CoMiSS in a population-based cohort study of infants born from 6/2015 to 5/2017. Questionnaires were completed by parent during regular preventive visitations in pediatrician´s GP at 6 weeks, 3, 4, 6, 8, 10 and 12 months of infant´s age. We obtained 826 completed questionnaires from 118 infants (62 males, 55 females), 7 per person. None of tested infants had proven CMPA before entering the study. The endpoint was to find out whether the recommended level of 12 points is sensitive enough to define candidates for ECT.
Results: Obtained scores were 0 to 20. The ECT was performed in 38 patients (32,48 %). All of them finished the ECT, 21 patients (17,95%) had positive rection to CMP. In these patients the maximum CoMiSS-score was 20, minimum was 6. In infants, who did not undergo the ECT test (80 patients) the CoMiSS-score was 0-10. The difference between at least 8 points in group of positive ECT and group without suspicion to CMPA was statistically important ($P<0,05$).
Conclusion: In our study were 21 infants (17,95 %) out of 118 who had positive ECT to CMP. Only 2 patients with proven CMPA exceeded the level of 12 points before starting ECT. There is probably a group of patients who suffer from CMPA, but present CoMiSS-score lower than suggested 12 points and more. Further observation using CoMiSS is needed.

PP-N-18

NUTRITIONAL STATUS AND MICRONUTRIENTS DEFICIENCIES IN NON-ORGANIC FAILURE TO THRIVE PATIENTS

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Background and objectives: The lack of caloric intake is one of the most important causes of non-organic failure to thrive (NOFTT), and it is thought to lead to multiple micro-nutrient deficiencies. However, there are few studies about NOFTT and micronutrients. The aim of this study was to evaluate micronutrient status in children with NOFTT.
Methods: Retrospective cohort study was done in 147 children with NOFTT, and 69 children as normal control group at Severance Hospital from January 2006 to July 2016. Children with underlying diseases were excluded. Data including weight for age, height for age, BMI, and biochemical parameters indicating the nutritional and micronutrients were reviewed via electronic medical records. The variables were evaluated with SPSS ver. 22
Results: There were significant differences between the NOFTT group(weight percentile <3p) and normal control group(weight percentile >10p) in weight for age (1.3p vs 28.9p) and BMI for age (1.8p vs 26.0p). There were no statistically significant differences between the two groups in comparing laboratory studies indicating nutritional and micronutrient status except inorganic phosphate which also remained within the normal range in both groups. NOFTT group was then further categorized into two groups; severe NOFTT group (weight percentile < 1p) and moderate FTT group (1p < weight percentile < 3p), and we have compared severe FTT group and normal control group. There were no statistically significant differences among them either.
Conclusions: Most of the NOFTT children showed normal values in micronutrients and other laboratory studies. However, some children showed deficiencies in micronutrients. Therefore, deficiency of the elements should not be overlooked even in NOFTT groups as well as the patient groups within normal growth curve. Close monitoring and additional evaluations might be needed.

PP-N-19

KNOWLEDGE, ATTITUDE, AND PRACTICE OF SCURVY AMONG CARE-GIVERS AT QUEEN SIRIKIT NATIONAL INSTITUTE OF CHILD HEALTH

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Background: Scurvy is a disease caused by ascorbic acid (vitamin C) deficiency. Nowadays, although scurvy tends to become a forgotten disease in developed country, repeated cases still occur. 172 pediatric patients were diagnosed as scurvy at Queen Sirikit National Institute of Child Health (QSNICH), during 2006-2016. The potential associated factors might be the lack of knowledge in scurvy or people do not concern this illness. There was no previous study demonstrated about knowledge, attitude and practice of scurvy in Thailand. Objective: To evaluate the knowledge, attitude, and practice of scurvy among care-givers of under 6 year-children

Methods: A cross-sectional descriptive study using self-administered questionnaires was conducted. Data was collected from the care-givers of under 6 year-patients at QSNICH, between 1 October to 31 December 2017.

Results: Two hundred and ninety four care-givers were enrolled, 158 (53.7%) inpatients and 136 (46.3%) outpatients. The mean age was 31 months, with male to female ratio of 1.4: 1. One hundred and forty patients (47.6%) had underlying diseases. The majorities of the patients were a first child in the family and had normal development. Seventy five percent of care-givers were mothers. The care-givers' average knowledge score was 10.3 (total scores 20), classified as low level. Average attitude score was 6.5 (total scores 10), classified as high level, and average practice score was 3.4 (total scores 5), classified as moderate level. Factor associated with level of knowledge and attitude level was parents' education, while factor associated with the practice level was the presence of underlying diseases of patients.

Conclusion: The most care-givers' knowledge of vitamin C and scurvy was low but the attitude and practice were acceptable.

PP-N-20

HOSPITAL CHARGE IN OBESE PATIENTS ADMITTED AT QUEEN SIRIKIT NATIONAL INSTITUTE OF CHILD HEALTH

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Introduction: Obesity is one of major public health problems worldwide. Childhood obesity may result in serious medical problems in adults. Some of these patients need further investigations and treatment in hospital by multidisciplinary team. Therefore the health care cost of obesity related- illnesses have been increasing.
Objective: To evaluate the hospital charge in obese pediatric patients who were admitted at Queen Sirikit National Institute of Child Health
Methods: A retrospective study was performed in obese patients admitted at Queen Sirikit National Institute of Child Health between 2007 -2012. Demographic data, clinical data and hospital charge were collected and analyzed.
Results: Two hundred and seventy one cases were enrolled, 163 (60%) were boys and 108 (40%) were girls. Among all patients; 174 cases (64%) were obese and 97 cases (36%) were morbid obese. The mean ± SD of the percentage of weight for height was 195.1 ± 35.8. Sixty five percent of patients were insured by universal coverage program. The total hospital charge ranged from 7,266 - 20,762 Baht. The median of total hospital charge in obese patients was 12,480 Baht; 16,160 and 11,454 Baht in the morbid obesity and obesity group respectively. The total hospital charge was statistical significantly higher in patients with morbid obesity (p–value < 0.001). The surgical and anesthetic charges were the highest charge followed by medical equipment charge and the service charge. The hospital charges; of almost aspects in the morbid obesity group, were higher than the obesity group statistical significantly.
Conclusion: The total hospital charge of the morbid obesity group was higher than the obesity group, especially surgery and anesthetic charges.

PP-N-21

DIETARY INTAKE AMONG SUBSET OF CHILDREN AGED 2 – 3 YEARS IN JAKARTA, INDONESIA

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Background and Objective: Children's dietary intake is important to understand the nutrient adequacy as well as their eating habit. There are limited data on the dietary intake of Indonesian children especially in those at the age of 2 years and older.
Methods: The dietary intake data was part of the baseline data of an intervention study on the effect of a Young Child Formula (YCF)-containing fiber in 103 children aged 2 – 3 year in Jakarta. Data was collected using a 24 hour food recall completed by the parents or caregivers.
Results: Of the study participants (n=103), 91% had an inadequate fiber intake (< 90% of the Indonesian Recommended Dietary Intake (RDI), 85% had an excess protein intake (>110% of the RDI), 21% children had an excess energy intake, and 47% had excess of fat intake (Table 1). Fat is the main contributor of energy intake seemed to be derived from (39 En%). The percentage contribution of energy from total carbohydrate to total energy intake was 48% while the recommended level of a balance diet is between 55 – 75 En%.
Conclusion: Limited data based on 24-h food recall indicates an imbalance of dietary intakes among children age 2-3 years in Jakarta. Consumption of protein and fat was relevantly higher than the RDI, while consumption of fiber was lower. Further study with more robust dietary tools is needed. KEY WORDS: fiber intake, energy intake, children age 2 – 3 years old.

PP-N-22

STOOL PATTERN AMONG SUBSET OF CHILDREN AGED 2 – 3 YEARS IN JAKARTA, INDONESIA

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Background and Objective: The estimated prevalence of constipation among children 1-4 years old is around 3% worldwide. However, there is limited data on the incidence of children having hard and infrequent stools which could be an early sign of constipation.
Methods: The data was retrieved from the screening (314 subjects) and baseline (103 subjects) visits of an ongoing intervention study among children age 2 – 3 years old in Jakarta. Stool patterns (consistency and frequency) were collected in a 3-day diary using Bristol Stool Scale (BSS). Stool consistency was determined based on the average type of stool consistency during the data collection period, while stool frequency was calculated as an average frequency. Inclusion to the intervention study was based on using the modified Rome III criterion to identify children at risk for defecation problems (consistency of stool #1 and #2 in the BSS or having defecation less than once every day within 3 days).
Results: One hundred three out of 314 children who were screened (33%) had defecation problems as follows: eighty percent (n=83) had stool consistency of 1 and 2 based on BSS and 62% (n=65) had frequency of defecation less than once in 3 days (Table 1). There was a weak correlation between stool consistency and frequency (Spearman's correlation coefficient = -0.292, p=0.003).
Conclusion: In this study population, one out of three children had a defecation problem which was signified by having hard and infrequent stools. KEY WORDS: incidence of defecation problem, stool consistency, stool frequency, children 2-3 years of age. Conflict of Interest: AF. LM and TL are full-time employees of Danone Early Life Nutrition.

PP-N-23

PEDIATRICIAN-NURSE INTERRATER AGREEMENT OF STRONGKIDS NUTRITIONAL SCREENING TOOL IN CIPTO MANGUNKUSUMO HOSPITAL, INDONESIA

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Background and objectives: Decreased nutritional status has an adverse impact on morbidity during hospitalization and length of hospital stay. A nutritional screening tool is needed to identify population who possess high risk of hospital malnutrition. The STRONGkids is a validated nutritional screening tool for hospitalized children consisted of four questions which is simple to use. However, the two first questions need clinical assessment by pediatrician thus it needs a reliability study to be applied by nurses who do the screening in daily practice.
Methods: Surgical and medical pediatric inpatients aged between 1 month and 18 years in Cipto Mangunkusumo Hospital were independently assessed during 48 hours of admission by a nurse and a pediatric resident who had been given a short training using STRONGkids questionnaire.
Results: Forty three patients were assessed by both a nurse and a pediatric resident. When assessed by a pediatric resident, 5; 25; and 13 patients were classified as low risk (score 0), medium risk (score 1-3), and high risk (score 4-5), respectively. The nurses classified 5; 20; and 18 patients as low, medium, and high risk. Overall agreement of physician and nurse based on risk category was 79.1%. The four questions were assessed individually, and the rate of disagreement between the assessors for question 1 to 4 was 14.0%; 16.3%; 23.3%, and 16.3%, respectively. The greatest disagreement was seen with question 3, which covers nutritional intake or losses. In contrast, the lowest rates of disagreements were seen with Question 1, which asks for a subjective assessment of nutritional state. The questionnaire could be completed in less than 1 minute by 81.4% physicians and 67.4% nurses.
Conclusions: STRONGkids showed good agreement between physician and nurse thus it was suitable and feasible to be applied by the nursing staff to screen for children at risk of malnutrition.

PP-N-24

VALIDITY OF STRONGKIDS NUTRITIONAL SCREENING TOOL FOR PEDIATRIC IN-PATIENTS AT SIRIRAJ HOSPITAL, THAILAND

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Background and Objectives: Malnutrition in hospitalized pediatric patients is associated with increased risks of medical complications including mortality, prolonged hospital stay, and finally, increased cost of hospitalization. Nutrition screening is beneficial to identify patients nutritionally at risk of malnutrition. The objective is to test validity of the STRONGkids nutritional screening tool to anthropometric measurement, which is a nutritional assessment in Siriraj Hospital, the university-based tertiary referral center in Thailand.
Methods: A prospective cohort study was conducted in 132 pediatric patients ranging from 1 month to 18 years old who were admitted to the pediatric wards for at least 24 hours by using the STRONGkids screening tool. On admission, weight and height (or length) were assessed; percentage of weight-for-age, percentage of height-for-age and percentage of weight-for-height were calculated. Abnormally low values of weight-for-height and height-for-age were indicated acute (wasting) or chronic (stunted) malnutrition, respectively. The clinical information and hospital length of stay (LOS) were also recorded.
Results: A total of 132 subjects, 76.5% had underlying diseases that were mainly respiratory and oncologic diseases. The STRONGkids scores significantly correlated with all nutritional status ($p<0.001$). The sensitivity, specificity, negative predictive value, and positive predictive value to predict acute malnutrition were 91.9%, 37.3%, 88.6%, and 46.4%, respectively. The sensitivity, specificity, negative predictive value, and positive predictive value to predict a chronic malnutrition were 90.5%, 34.4%, 88.6% and 39.2%, respectively. Positive likelihood ratio and negative likelihood ratio for detecting acute malnutrition and chronic malnutrition were 1.5, 0.2 and 1.4, 0.3 respectively. The STRONGkids scores were not significantly correlated to LOS.
Conclusion: The STRONGkids screening tool is easy and rapid for early detection of malnutrition.
Acknowledgments: This study was supported by grants from Society of Parenteral and Enteral Nutrition of Thailand. The authors thank Jessie M. Hulst for permission to translate STRONGkids to Thai language and use in this study.

PP-N-25

RE-SCORING METHOD OF SUBJECTIVE GLOBAL NUTRITION ASSESSMENT (SGNA) DETERMINING PEDIATRIC MALNUTRITION CLASSIFICATION IN INDONESIA'S TERTIARY LEVEL HOSPITAL (EDIT)

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Background & Objectives: Subjective Global Nutrition Assessment (SGNA) has been introduced and used as a validated tool detecting malnutrition status in hospitalized pediatrics. SGNA consists of eight teen subjective questions from medical history and physical examination assessments with three result condition categories of malnutrition status; normal, moderate and severe malnutrition. Current SGNA classification needs to be modified in a more objective method assessing malnutrition status in this population. Therefore, aim of study was designing modified SGNA re-scoring method with RD's assessment as gold standard.

Methods: A cross-sectional study was completed in a tertiary level pediatric ward in Indonesia. Critically illness pediatrics were excluded. RDs performed nutritional assessment and malnutrition status both in manual and using SGNA. Normal, moderate and severe category was scored as zero, one and two. All score was calculated and classified for mild, mild-moderate, moderate, moderate-severe and severe malnutrition in a designed range.

Results: There were 300 hospitalized pediatrics satisfy inclusion criteria during a month study period with compositions of 59% boys and 41% girls. Majority of subject were toddler and teenager (40% and 25.3%) who were admitted for infection, non-infection and surgery (24.7%, 54.3% and 21%). Subjects' nutritional status were 41% wasted and 42% stunted while SGNA identified them as moderate and severe malnutrition (60.7% and 13%). Re-scoring method distinguished 37% of subjects were normal, 30.7% mild, 18.7% moderate, 12.6% moderate-severe and 1% severe malnutrition. Correlation between SGNA re-scoring method and RD's assessment in determining malnutrition status was significant (P = 0.00).

Conclusion: The re-scoring method of SGNA convinced statistically to determine and differentiate type of category for pediatric malnutrition. The validation of re-scoring method is proved relatively to be as good as RDs' assessment in an objective manner. The authors of this document confirm there is no conflict of interests.

PP-N-26

HOSPITAL MALNUTRITION AND EVALUATION OF PEDIATRIC NUTRITION CARE IN PEDIATRIC DEPARTMENT, DR. HASAN SADIKIN HOSPITAL, BANDUNG, FEBRUARY – MARCH 2016

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Background and Objectives: Malnutrition during hospitalization delays the recovery of children with acute or chronic illnesses. The pediatric nutrition care (PNC) can improve nutritional support and reduce the prevalence of hospital malnutrition. This study was done to find evidence of hospital malnutrition and to evaluate the nutrition care in pediatric ward of Dr. Hasan Sadikin Hospital, Bandung.
Methods: We evaluated malnutrition by comparing body weight change between the first day of admission and at hospital discharge to the length of hospitalization. Screening for malnutrition risk was done using modified Pediatric Yorkhill Malnutrition Screening (mPYMS) tools and said to be high risk if score ≥2. The PNC process was evaluated by a focused group discussion with PNC-associated pediatric ward personnel.
Results: In the two months period from February – March 2016, 760 patients were admitted to the pediatric ward, of which 111 (14.6%) were included in the study. An mPYMS score of ≥2 was found in 69 (62.2%) of the patients. During hospitalization, body weight decreased in 23 (20.7%) patients, 10 (9.0%) of whom were defined as hospital malnutrition. Among these, seven (70.0%) had an mPYMS score ≥2. PNC was performed in patients with an mPYMS score ≥2 by dietitians who also provided a standardized nutrition care process following American Dietetic Association recommendation. However, a dedicated multidisciplinary PNC team was absent and the Nutrition and Metabolic Disease division was consulted only in a few cases. Performing consistent monitoring and evaluation of PNC was also found to be difficult.
Conclusion: Hospital malnutrition may be prevalent among pediatric patients in Dr. Hasan Sadikin Hospital, Bandung. Improving PNC services may reduce this prevalence.

PP-N-27

A THEOBROMINE-CONTAINING DIET STIMULATES CENTRAL CREB/BDNF PATHWAYS AND MOTOR LEARNING IN YOUNG MICE

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Background and Objective: Consumption of chocolate with a high cacao (Theobroma cacao) concentration has become popular around the world because cacao contains many flavonoids. In addition, cacao contains theobromine, which is a caffeine derivative. Theobromine is the primary methylxanthine found in Theobroma cacao products. Theobromine works as a phosphodiesterase (PDE) inhibitor to increase intracellular cAMP, which activates the cAMP-response element-binding protein (CREB). CREB activation induces brain-derived neurotrophic factor (BDNF), which supports neuronal functions such as learning and memory. In the present study, we examined whether orally administered theobromine can upregulate CREB/BDNF pathways and promote learning behavior in young mice.
Methods: The mice were divided into two groups: control mice fed a normal diet and theobromine (TB) mice fed a diet supplemented with 0.05% of theobromine for 30 days. We measured the levels of theobromine, phosphorylated CREB (p-CREB), and BDNF in the brain. Moreover, we analyzed the performance of the mice on a three-lever motor learning task. All animal experiments were performed in accordance with the guidelines of the animal welfare committee of Kanazawa University.
Results: Body weight did not differ between TB mice and CN mice. Theobromine was detected in both the plasma and brain in TB mice but not in CN mice. We found that the levels of p-CREB and BDNF were higher in TB mice than in control mice and that TB mice performed better on the motor learning task than control mice.
Conclusion: These results strongly suggest that orally administered theobromine can upregulate CREB/BDNF pathways and promote motor learning in young mice. Acknowledgments This study was supported in part by Grants-in-Aid for Science and Culture of Japan (25282021, 16K01449, and 17H01963).

PP-N-28

EFFICACY ORAL GLUTAMINE TO PREVENT ORAL MUCOSITIS AND REDUCE HOSPITAL COSTS DURING CHEMOTHERAPY IN CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA

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BACKGROUND : Mouth sores and or difficulty swallowing are common in oral mucositis (OM) as side effect of methotrexate (MTX) -chemotherapy in children with acute lymphoblastic leukemia. Hospitalization are common because patients lose the ability to take anything by mouth due to severe pain and must have alimentation support during this periode and increase costs of treatment. Glutamine is a dispensable amino acid that can reduce and prevent the incidence and severity of oral mucositis
OBJECTIVES : To investigate the use of glutamine administered by orally during methotrexate (MTX) chemotherapy to prevent oral mucositis and reduce hospital costs in children with acute lymphoblastic leukemia
METHODS: Twenty-four children received oral glutamine (400 mg/kg body weight per day) and twenty four received placebo on days of chemotherapy administration and for at least 14 additional days. Oral mucositis was graded daily at each day of treatment till completion of therapy. The study groups were compared for the oral mucositis development using the WHO scale.
RESULTS: Oral mucositis occurred in 4,35 % of the experimental group and 62,5% in the control group. The use of glutamine was directly associated with prevention of oral mucositis than placebo: odds ratio (OR) 0,026 and confidence interval (95%CI) 0,003-0,228. The duration of length hospital stay was lower in the glutamine group than in the placebo group (8 vs 12 days), p = 0,005). The severity of oral pain also was reduced significantly when glutamine was provided with chemotherapy (the amount of days mucositis was 5 days less with glutamine compared with placebo; p=0,002). Hospital cost per day for experimental group were 40 USD per day while control group 48 USD per day.
CONCLUSION: There was significant difference in the prevention of OM by oral glutamine vs placebo. The hospital cost for glutamine supplementation was lower than control group

PP-L-01

ALANINE AMINOTRANSFERASE CUTOFF VALUES AND PREVLAENCE OF NONALCOHOLIC FATTY LIVER DISEASE IN TAIWANESE CHILDREN

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Background and objectives: Alanine aminotransferase (ALT) is the most common and cost effective screening test for asymptomatic liver disease, especially nonalcoholic fatty liver disease (NAFLD). There is a lack of data on the upper limit of normal (ULN) level of serum ALT among metabolically healthy children in Taiwan. The aim of this study is to define the ULN of ALT using Nutrition and Health Survey in Taiwan (NAHSIT), 2010-2012 and estimate the population prevalence of NAFLD in Taiwan using new ALT cutoff values.
Methods: Data were obtained from 2895 school children (1442 boys, 1453 girls) aged 6 to 18 years from NAHSIT conducted in 2010 through 2012. We excluded those participants with ALT > 90 U/L and any of the following metabolic risk factors: elevated triglyceride, low high-density lipoprotein cholesterol or impaired fasting glucose. We estimate the population prevalence of NAFLD, as defined by overweight (BMI ≥85th percentile) plus elevated ALT, using the new ALT cutoff values.
Results: The ULN of ALT defined as the 95th percentile in healthy weight, metabolically normal NAHSIT pediatric participants were 22 U/L for boys and 17 U/L for girls. By using new ULN, elevated ALT levels were prevalent in 13.7% of boys and 9.1% of girls of all NAHSIT participant. The prevalence of NALD was 10.4% in boys and 5.2% in girls, increasing to 32.3% in overweight boys and 20.1% in overweight girls. In contrast, using 40 U/L as the threshold for elevated ALT, the prevalence of NAFLD was 11.6% in overweight boys and 3.8% in overweight girls.
Conclusion: The ULN of serum ALT level when considering metabolic risk factors in Taiwanese children were 22 U/L in boys and 17 U/L in girls. It is recommendable to lower the current ALT threshold for better detection of overweight individuals at risk for NAFLD.

PP-L-02

A CASE OF GLYCOGEN STORAGE DISEASE TYPE IV WITH LAFORA BODY IN HEPATOCYTE

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Background: In metabolic liver diseases, abnormalities, specific accumulation in hepatocytes may lead a trigger of diagnosis. We experienced a child with chronic liver dysfunction, who was definitely diagnosed of glycogen storage disease type IV with the Lafora bodies in the hepatocytes. Case: A 3-year-old boy was referred to our hospital because of chronic liver dysfunction. He was born at 37 weeks gestational age from non-consanguineous parents with birth weight 3,274 g. There was no abnormality of New Born Screening. His motor and growth development was normal, but speech development was delayed. He has no jaundice or hepatomegaly. His blood examination was AST 309 U / L, ALT 263 U / L, GGT 117 U / L, CK 131 U / L, T. Bil 0.2 mg / dl.
Methods: Hepatic needle biopsy and comprehensive genome analysis by Next Generation Sequencer were performed.
Results: In liver histology, ground-glass like intracellular inclusion bodies were observed by HE staining, which is PAS positive, diastase resistant. In electron microscopic findings, there are amylopectin-like depositions in hepatocytes. Glycogen storage disease type IV was genetically diagnosed by Initiative on Rare and Undiagnosed Diseases (IRUD) in Pediatrics Research Project.
Conclusion: Glycogen storage disease type IV is thought to be a disease with various progonosis. In children of chronic liver dysfunction with unknown causes, glycogen storage disease type IV should be ruled out by liver biopsy. Acknowledgements; Drs. Tomoko Uehara and Kenjiro Kosaki, Keio University Clinical Genetics Center

PP-L-03

HEPATITIS B VIRAL INFECTION IN CHILDREN: OUR 40-YEAR EXPERIENCE IN JAPAN

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Background: Hepatitis B e antigen (HBeAg) seroconversion is an important event in patients with hepatitis B virus (HBV) infection. This study aimed to clarify the outcome of long-term follow up of HBV infection and factors affecting HBeAg seroconversion in Japan.
Methods: We retrospectively reviewed the medical records. Patients who were first examined at our institution between 1975 and 2014 who were <20 years of age at the time of this initial visit, and who were positive for hepatitis B surface antigen. Sex, age at diagnosis, HBV genotype, maximum serum ALT level, transmission routes were evaluated. Results: A total of 222 children with HBV infection were enrolled. We registered HBV carrier since 1975, and after 1986 registered not only HBV carrier but also the children with transient HBV infection.
Results: M/F=119/103, first visit to last is 0.1-20 years (4.8), clinical features are those acute hepatitis in 6 (Gianotti 1), fulminant hepatitis in one, chronic hepatitis in 150, inactive carrier in 62, hepatocellular carcinoma in 3 (M/F=1/2). Genotype C HBV (GTC) dominant in 81% and route of HBV infection is dominant in mother to infant transmission.
Conclusion: A higher serum ALT was a predictor for HBeAg seroconversion. Antiviral treatment could accelerate HBe seroconversion.

PP-L-04

HEREDITARY PANCREATITIS IN CHILDREN

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Introduction & objectives: Chronic pancreatitis in children is frequently caused by genetic mutations or by congenital anomalies of pancreaticobiliary system. Mutations in PRSS1,SPINK1, CFTR and CTRC can contribute to hereditary pancreatitis. The aim of study was to share our experience about different causes of hereditary pancreatitis, associated risk factors and outcome.
Methodology: This was a retrospective analysis of children diagnosed as chronic pancreatitis in whom genetic mutation was confirmed and conducted at the Gastroenterology unit, the Children's hospital, Lahore. Demographic, clinical presentation, other risk factors, family history, diagnostic modalities, genetic mutation and outcome were recorded. SPSS version 23 was used for statistical analysis.
Results: There were total of 45 children with the diagnosis of chronic pancreatitis and 15 (33.3%) were identified as hereditary pancreatitis based on their mutation positivity. There were 9 (60%) females with mean age of 9.9 years (range 3-15 years). The most common mutation was CFTR in 40% followed by PRSS1 and SPINK1 in33.3% and 26.6%. Recurrent abdominal pain, failure to thrive and exocrine/endocrine complications were the presenting features. CFTR and SPINK1 mutations had added risk factors/ co-morbidities in the form of hyertriglyceridemia, familial positivity and abdominal trauma while PRSS1 presented without any risk factors. Pain management, pancreatic enzymes, insulin and antihyperlipidemic were the main treatment modalities but relentless pain episodes led to cholecystectomy in one and Puestow procedure in three children without any mortality.
Conclusion: Hereditary pancreatitis is not an uncommon cause of chronic pancreatitis in children. Added risk factors or modifiers are required with CFTR and SPINK1 mutations but PRSS1 does not. Micromanagement with pain killers, dietary modifications and exocrine/endocrine support keeps good quality of life but surgical intervention definitely needed if medical measures fail. Key words: Hereditary pancreatitis, Chronic pancreatitis, Children

PP-L-05

PEDIATRIC CAROLI'S DISEASE: CLINICAL PRESENTATION, MANAGEMENT AND OUTCOME

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Background & Objectives: Caroli disease and Caroli syndrome are two disorders of ductal plate (DP) malformation characterized by dilatation of the intrahepatic bile ducts inherited in an autosomal recessive manner. Symptomatic caroli's disease/syndrome present with recurrent cholangitis or portal hypertension. Radiological modalities are main diagnostic tools and include ultrasound and CT/ MR scans of liver. Management rests on provision of antibiotic cover and endoscopic variceal band ligation or shunt surgery for portal hypertension. We aimed to study the spectrum of caroli's disease/ syndrome in terms of clinical presentation, management and outcome.

Patients & methods: This was a retrospective review of patients, diagnosed as caroli's disease/ syndrome at the Hepatology unit of Children's hospital Lahore over 4 years. Data included demography, clinical presentation, diagnostic tools and outcome. SPSS (version 22.0; SPSS Inc, Chicago, Illinois, USA) was used for analysis.

Results: Seventeen patients were identified as caroli's disease (8, 46.7%) and syndrome (9, 53.3%) over the study period. There were 13 males with mean±SD6.54±4.18 years. Recurrent cholangitis (6/7, 85%) and portal hypertension (8/9, 87.5%) were the main presentation in caroli disease and syndrome respectively. Renal involvement was evident in 7/17 (33.3%) patients mostly in caroli syndrome (4/5, 80%). MRI abdomen was the main diagnostic tool in addition to liver biopsy in caroli syndrome. Majority of children were managed with antibiotics, successive sessions of band ligation and maintenance dose of beta-blockers. Three children required surgical intervention in the form of lobectomy (caroli disease) and two had partial splenectomy and shunt surgery (caroli syndrome).

Conclusion: Caroli syndrome is more common than Caroli disease. Children with caroli syndrome present with portal hypertension while caroli disease with recurrent cholangitis. Renal manifestations are commonly associated with caroli syndrome. Both conditions progress to end stage liver disease or renal failure as they grow older.

PP-L-06

EFFECTS OF SEASONAL AND TEMPERATURE VARIATIONS ON VARICEAL BLEEDING IN KOREAN CHILDREN

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Background and objectives: Variceal bleeding is an urgent situation which can cause mortality, and many factors contribute to the increased risk of bleeding. One of the associated factors is seasonal variation which is studied in many countries, but the results are still controversial. We assessed the effect of temperature and precipitation on variceal hemorrhage.
Methods: Sixty patients who visited to our institution for variceal hemorrhage due to biliary atresia from January 2003 to December 2017 were included in the study. Including re-bleeding, total of 182 variceal bleeding cases were analyzed. The cases were divided into four groups; group 1, spring (March, April, May); group 2, summer (June, July, August); group 3, autumn (September, October, November); and group 4, winter (December, January, February). Moreover, each bleeding cases were analyzed according to the following; maximum and minimum temperature, average temperature, daytime difference, precipitation, relative humidity, and the differences of the previous day and the averages of 7 days before bleeding with the time of bleeding to find the relationship.
Results: Among the seasonal groups, group 4 (winter) showed frequent occurrence, which was not statistically significant (P=0.719). In Poisson regression result, when the maximum temperature, the difference between the maximum temperature and that of the previous day, and the difference between the minimum temperature and that of the average for one week prior to the bleeding increased in 5 degrees Celsius, the expected bleeding risk increased 0.1048, 0.2422, and 0.2964 fold in log count, respectively (P value = 0.0015, <0.0001, and <0.0001, in that order).
Conclusion: In our study, the temperature difference rather than the weather itself can affect the risk of bleeding. Knowing the risk factors can be important to be prepared for the bleeding so that there can be better prognosis.

PP-L-07

MOLECULAR DIAGNOSIS OF GLYCOGEN STORAGE DISEASE TYPE VI AND IX USING GSD GENE PANEL

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Background and objectives: Glycogen storage disease (GSD) is an inherited metabolic disease caused by the deficiency of various enzymes that is related with glycogenolysis and gluconeogenesis. GSD VI and IX are uncommon types. The aim of this study is to clarify the clinical features and mutation analysis of GSD type VI and IX in Korea.
Methods: GSD gene panel was performed in 7 GSD patients whose types were unknown at Seoul National University Hospital. GSD gene panel using hybridization capture-based next-generation sequencing contained AGL, G6PC, GBE1, GYS2, PHKA2, PHKB, PHKG2, PYGL, SLC2A2, and SLC37A4. The mean duration of follow up period was 5.5 years.
Results: Two children were diagnosed with GSD VI and three children were IXa. All children presented with hepatomegaly and serum ALT elevation (mean 285.8 IU/L, range 106 – 602). Among them, positive family history was found in one patient, hypoglycemia in 1, hyperuricemia in 3, hyperlipidemia in 5, hyperlactacidemia in 3, developmental delay in 1, failure to thrive in 2, and septal fibrosis on liver biopsy in 1. ALT level tended to decrease with age (mean 51.4 IU/L, range 25 – 88 IU/L). Compound heterozygous mutations of PYGL gene were identified in GSD VI; 3 novel mutations (p.Arg816Ter, p.Tyr158His, p.Arg67AlafsTer34(c.198delG)), and one known mutation (p.Arg576Gln). Novel hemizygous PHKA2 gene mutations were identified in GSD IXa; p.Asp757Ter, p.Gly1210Arg, and c.918+1G>A.
Conclusion: GSD gene panel is a very useful diagnostic tool to confirm GSD type VI and IX. Liver enzymes in children with GSD VI and IX tended to improve with age.

PP-L-08

PROFILES OF NEONATAL CHOLESTASIS IN BANGLADESHI CHILDREN

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Background and Objectives: -Neonatal cholestasis is a group of hepatobiliary disorders occurring within the first three months of life. Early detection of cholestatic jaundice in early infancy is very important for better outcome. The final outcome is dependent on early diagnosis and timely management. Objective of this study is to re-evaluation of clinical and laboratory profiles of neonatal cholestasis in Bangladeshi children.
Methods:- It is a cross sectional observational study conducted in the department of Pediatric Gastroenterology and Nutrition, Bangabandhu Sheikh Mujib Medical University Hospital during the period of July 2015 to December 2017. 100 infants with neonatal cholestasis developing before three months of age and persisting for more than two weeks were the cases.
Results:- Total of 100 infants were evaluated. Among them, male were 57%. Mean age at presentation was 62 days. Among the patients thirty four percent was biliary atresia(BA), 22% idiopathic neonatal hepatitis(INH), 15% TORCH infection, 8% choledochal cyst, 8% metabolic liver disease, 6% sepsis, 5% hypothyroidism, 1% PFIC and 1% alagille syndrome. In BA male female ratio is 1: 1.11. Hepatomegaly is present in all cases of BA and INH (Table- 1). Prothrombin time is 21±6.9 second in INH, 18±2.5second in BA and 17±3.2 second in TORCH infection. Serum gamma glutamyl transpeptidase level is highest in BA (453±139.5 unit/ litre) than other cholestatic condition.
Conclusion:- Cholestatic jaundice in infancy is not uncommon in Bangladesh. Biliary atresia, idiopathic neonatal hepatitis and TORCH infection were the common causes of cholestatic jaundice in infancy. In spite of early development of disease, most of the cases presented late. Early and proper diagnosis of neonatal cholestasis is crucial for proper management because some causes are treatable and early intervention in the form of Kasai portoenterostomy in biliary atresia improves the prognosis. So there is an urgent need to create greater awareness about neonatal cholestasis syndrome in our country to avoid delayed referral to reduce the infant mortality.

PP-L-09

SUCCESSFUL TREATMENT OF NEONATAL HEMOCHROMATOSIS WITH EXCHANGE TRANSFUSION AND INTRAVENOUS IMMUNOGLOBULIN

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Background: Neonatal hemochromatosis (NH) is a rare disorder and clinically defined as severe neonatal hepatic disease in associated with extrahepatic siderosis. NH has a significant mortality and morbidity risk and is the most common cause of acute liver failure in neonates. Some neonates are stillborn, and most others die within the first weeks or months of life. The recurrence rate in families is nearly 80%. The exact prevalence of NH in Thai is unknown. In the past, little numbers of patient have been diagnosed.
Objective: To present the successful treatment of neonatal hemochromatosis in a Thai with exchange transfusion and intravenous immunoglobulin and to review the English language literature.
Method: A 14-day old male neonate who is a second child in a Thai family and born to mother without a previous history of NH. He developed severe liver failure since birth.
Result: Diagnosis of NH in our case rests upon demonstrating extrahepatic siderosis via positive iron staining (Prussian blue) of minor salivary glands in buccal mucosa and lip and by magnetic resonance imaging (MRI). Additionally, serum ferritin levels and alpha-fetoprotein are high and liver biopsy proves severe hepatocyte injury with iron accumulation. The patient successfully treated with exchange transfusion and three doses of intravenous immunoglobulin.
Conclusion: The diagnosis of NH requires diagnosing extrahepatic siderosis (EHS) by tissue analysis or MRI. Early treatment with exchange transfusion and intravenous immunoglobulin can prevent the need for liver transplantation and serious morbidity and mortality. Acknowledgments The authors would like to thank the team of nurses for nursing care at Naresuan University Hospital.

PP-L-10

CONGENITAL HEPATIC FIBROSIS WITH AUTOSOMAL RECESSIVE POLYCYSTIC KIDNEY DISEASE: A CASE REPORT

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Background: Congenital hepatic fibrosis with autosomal recessive polycystic kidney disease (CHF/ARPKD) is an inherited hepatorenal fibrocystic disease. It is characterized by derangement in the remodeling of the ductal plate or ductal plate malformation (DPM), which cause persistence of the embryonic configuration of intrahepatic bile ducts and progressive cystic degeneration of the kidney. Clinical manifestations depend on the clinical type of CHF and severity of renal involvement.
Objective: To report a case of a 6-year old boy presented with portal hypertensive CHF/ARPKD Case presentation: A 6-year-old boy was referred to our institute with hematemesis. Family history revealed that his 15-year-old sister suffered from chronic kidney disease caused by ARPKD. Initially, he presented with tachycardia, mild pallor, hepatomegaly, firm consistency and prominent left lobe, and splenomegaly. Esophagogastroduodenoscopy revealed gastro-esophageal varices (GOV2) with red spot. Sclerotherapy was performed. Further investigation revealed that liver enzymes were normal. A complete blood count found neither thrombocytopenia nor neutropenia. Urea and creatinine levels were within normal ranges. Abdominal ultrasonography revealed hepatomegaly, left lobe hypertrophy with increased periportal echogenicity and reversal of portal flow, and splenomegaly but neither intra nor extra-hepatic bile duct dilatation. Renal ultrasonography detected multiple cystic lesions, and loss of normal corticomedullary junction. These finding were highly suggestive of portal hypertensive CHF/ ARPKD. A liver biopsy was performed and microscopic examination revealed communicating bile duct ectasia in fibrotic background compatible with DPM. The patient underwent of endoscopic management consisting of 6 sessions until the varices were eradicated. He had no upper gastrointestinal hemorrhage, ascending cholangitis, or renal insufficiency over a 1 year follow-up period.
Conclusions: CHF/ ARPKD is a rare autosomal recessive disorder, of which portal hypertensive type is the most common clinical manifestation. Even if liver and renal function are preserved, steps should be taken to detect and manage the sequelae of the disease such portal hypertension, ascending cholangitis, and renal insufficiency.

PP-L-11

NON-ENDOSCOPIC PREDICTORS OF ESOPHAGEAL VARICES IN CHILDREN WITH CHRONIC LIVER DISEASE AND THEIR UTILITY IN RESOURCE CONSTRAINTS COUNTRIES.

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Background/Aim: Although current adult guidelines recommend endoscopy in all chronic liver disease (CLD) patients to identify esophageal varices, selective endoscopy in patients who are at higher risk of having varices may be cost effective in a resource constraints country. The aim of this prospective study was to identify non-endoscopic parameters that may predict the presence of varices, especially high risk esophageal varices in children with CLD.

Patients and methods: From January 2016 through March 2018, consecutive 84 children with CLD without a history of variceal bleeding were included. Esophagogastroduodenoscopy was done in all cases to detect and to grade esophageal varices [small (<6mm) and large varices (≥6mm)]. Disease severity was assessed by Child-Pugh score. Both univariate and multivariate logistic regression analysis were done by using SPSS version 22 to identify factors associated with esophageal varices.

Results: The mean age of 84 children was 9.7±3.2 years (male 44). The etiology includes Wilson disease (65.5%), autoimmune hepatitis (7.1%), chronic hepatitis B (6 %), biliary atresia (6%) and cryptogenic (11.9 %). Half of the children (51.2%) had Child C cirrhosis. Esophageal varices were present in 60 (71.4%) children and 33 (55%) of them had large varices. On univariate analysis, low platelet count (<100,000/mm3) and splenomegaly were found to be associated with the presence of esophageal varices (p= 0.006 and 0.001 respectively) and large varices (p=0.03 and 0.01 respectively). On multivariate analysis, both low platelet count and splenomegaly were independent predictors for the presence of esophageal varices (OR; 11.21, 95% CI, 1.2-96.9 and OR; 11.39, 95% CI, 3.19- 40.59, respectively).

Conclusions: Splenomegaly and low platelet count independently predict the presence of any grade of esophageal varices and can be used as screening test to select children for endoscopy. This strategy may help in relieving medical, social and economic cost in resource constraints countries.

PP-L-12

A CASE OF DEVELOPING SYSTEMIC LUPUS ERYTHEMATOSUS DURING TREATMENT OF DE NOVO AUTOIMMUNE HEPATITIS AFTER LIVER TRANSPLANTATION

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Introduction: De novo autoimmune hepatitis (AIH) has previously been reported, but systemic lupus erythematosus (SLE) after liver transplantation has not been reported.
Case: A 15-year-old girl was diagnosed with biliary atresia at the age of 2 months and underwent hepatic portal jejunostomy. At the age of 11 years, she developed hepatopulmonary syndrome and underwent living-donor liver transplantation. After liver transplantation, she received immunosuppressive therapy with tacrolimus, prednisolone, azathioprine, and so on. However, her adherence to medication was poor, as she repeatedly had liver injury due to rejection after liver transplantation. At 14 years 4 months, we suspected de novo AIH on the basis of her elevated IgG and nuclear antibody levels. At the age of 15 years, she presented depilation, papules on both cheeks and oral cavity, and finger joint swelling. Laboratory test results showed further elevation of IgG and nuclear antibody levels, and hypocomplementemia. Joint ultrasonographic examination revealed increased blood flow and synovial thickening in multiple joints. On the basis of the above-mentioned findings, she was diagnosed as having SLE and underwent evaluation for each organ.
Discussion: Risk factors of de novo AIH, including the period after liver transplantation, the number of rejected episodes, the presence of autoantibodies, and the age of the recipient (11–15 years), have been reported. SLE patients develop liver dysfunction for various reasons, which may complicate AIH. In this case, immunosuppression may have been triggered, possibly resulting in SLE.
CONCLUSION: De novo AIH has diagnostic features similar to those of SLE; thus, careful observation of the onset of SLE is needed for patients receiving immunosuppressive therapy for de novo AIH.

PP-L-13

STUDY OF ASCITIC FLUID IN CHILDREN WITH CHRONIC LIVER DISEASE IN DIFFERENT VARIANTS OF PERITONITIS

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Background: Chronic liver disease (CLD) is not uncommon in Bangladesh. Ascites is common feature of CLD patients. Spontaneous bacterial peritonitis is a frequent complication of ascites in children with CLD. The aim of this study is to see the variants of ascitic fluid infection in children with chronic liver disease

Method: This cross sectional study was conducted from January 2016 through July 2017. During this period consecutive 30 children of CLD with ascites were included. Sample was collected purposively who was fulfill inclusion criteria. History was obtained directly from the parents, which include jaundice, abdominal pain, fever, diarrhea, family history of liver diseases or other relevant medical histories. Investigations were done for diagnosis of chronic liver disease & identify the cause. Statistical analysis was done using Statistical Package for Social Science 20.0 (SPSS; Chicago, Illinois) for Windows XP.

Result: After ascitic fluid study, all patients were divided into two groups: Group I included five patients (16.67%) with culture negative neutrocytic ascites (CNNA) in which the neutrophil count ≥ 250/mm3 and culture was negative indicate infected group. Group II, twenty five (83.33%) patients in which the neutrophil count < 250/mm3 and negative culture indicate non infected group. None of our patients had spontaneous bacterial peritonitis (SBP) or bacterascites. Presence of fever, history of abdominal. pain and tenderness significantly higher in CNNA group ($p<0.05$). Ascitic fluid LDH or ascitic fluid total protein was not significant difference between two groups but ascitic serum LDH ratio ≥ O.5 was significantly higher in CNNA group.

Conclusions: Culture negative neutrocytic ascites (CNNA) was the only variety of ascitic fluid infection in this study. Ascitic fluid study is essential to identify infection. Culture of ascitic fluid is not always diagnostic of infection. Ascitic serum LDH ratio ≥ 0.5 add to the diagnostic accuracy.

PP-L-14

VALUE OF URINARY COPPER ESTIMATION BEFORE & AFTER PENICILLAMINE CHALLENGE IN THE DIAGNOSIS OF WILSON'S DISEASE IN CHILDREN

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Background: Wilson's disease (WD) is one of the most common metabolic liver disease encountered in children. There is no single diagnostic test that can exclude or confirm the disease with certainty. Penicillamine challenge has proved itself to be a useful diagnostic test in the detection of WD. The aim of this study was to observe the reliability of Penicillamine challenge test, in the diagnosis of WD.
Method: This cross sectional study was carried out on 139 children presented with liver disease after three years of age. Along with other physical findings and laboratory investigations, 24 hrs urinary copper excretion was estimated before and after Penicillamine challenge. Study results were analyzed statistically. Seventy patients who fulfilled the inclusion and exclusion criteria of WD were considered as cases (Group-I) and sixty nine patients were considered as non-Wilsonian CLD and was labeled as control (Group-II). Among the control group, 26 patients were found to be HBsAg positive, 1 had hepatitis-C virus infection, 6 had autoimmune hepatitis and the remaining 36 patients were Cryptogenic CLD.
Result: The (mean ± SD) age of WD patients was 9.2± 2.7 years (M:F; 1.3:1). Most common presentation was jaundice (70%). Serum ceruloplasmin level was found significantly lower in WD patients in comparison to non- Wilsonian liver disease group ($p<0.001$). Baseline urinary copper excretion of WD patients differed significantly from controls ($p <0.001$). Post penicillamine urinary copper excretion was significantly greater in WD patients than controls ($p<0.001$). Post penicillamine urinary copper above 1600 µg/24hr observed in 70% of WD patients whereas not a single patient reached the value in control group.
Conclusion: Twenty four hours urinary copper excretion after Penicillamine challenge was found to be a valuable test in the diagnosis of WD.

PP-L-15

OMEGA-3 POLYUNSATURATED FATTY ACIDS IMPROVES CHOLESTASIS IN CHOLESTATIC LIVER DISEASES IN CHILDREN

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It has been known that lipid emulsions with a lower ratio of omega-6-to-omega-3 polyunsaturated fatty acids (FAs) appear to improve bile flow. We present 3 cases of children with 3 different cholestatic liver diseases in which omega-3 polyunsaturated fatty acids improved cholestasis from clinical and biochemical perspectives.

Case 1. An 8-week-old male infant with cholestasis and acholic stool was diagnosed non-syndromic intrahepatic interlobular bile duct paucity by open-wedge liver biopsy. Initially he was treated with usual supportive medical therapy, including ursodeoxycholic acid. However, the clinical status and laboratory tests did not improve. Omega (ω)-3 polyunsaturated fatty acids (initially intravenous administration and oral administration later), were started and his liver function, including aminotransferase level and bilirubin levels normalized, and the ivory stool color turned green.

Case 2. A 5-week-old female infant was admitted for evaluation of jaundice and acholic stool. Diagnostic tests, including ultrasound sonography, magnetic resonance cholangiopancreatography, and a hepatobiliary scan, were not conclusive. Although the diagnosis was unclear, the clinical and laboratory findings improved gradually on administration of lipid emulsion containing omega-3 polyunsaturated fatty acids for 3 weeks. However, a liver biopsy was suggestive of biliary atresia. This finding forced us to perform intraoperative cholangiography, which revealed a patent common bile duct with impacted thick bile. We performed normal saline irrigation and the symptom was improved, the final diagnosis was inspissated bile syndrome. Case 3. A 6-week-old female infant was diagnosed biliary atresia, and Kasai operation was performed. Temporarily, acholic stool became normal and biochemical parameters improved. However, after 1 month, stool became acholic again and biochemical parameters got worse, despite ordinary supportive cares, including, urodeoxycholic acid. After starting oral omega-3 polyunsaturated fatty acids (85 days after operation), stool became normal color and jaundice disappeared. Biochemical parameters got improved as well including bilirubin, aminotransferase, and gamma-glutamyltransferase. However, Ascites developed at 9 months after surgery.

PP-L-16

BILE PLUG SYNDROME MIMICKING CHOLEDOCHAL CYST

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Background and objectives : Choledochal cyst is not rare and a surgical condition. Sonogram or MR cholangiogram is a crucial role for diagnosis. However, bile plug syndrome (inspissated bile syndrome) is rare and can be cause of biliary ductal obstruction or dilatation mimicking choledochal cyst.
Methods : A two week old baby, born at 35 weeks of gestation by Cesarean section for fetal distress. Cephal hematoma and subacute subdural hemorrhage were seen in brain MRI. She was transfused with packed red cells for low hemoglobin levels and administered ursodeoxycholic acid for high bilirubin levels. Abdominal ultrasonogram presented common bile duct dilatation about 8 mm sized with sludge. Choledochal cyst, type I (Todani classification) with sludge was presumed by MR cholangiogram.
Results : She could not undergo surgical management due to her brain empyema. After 3 weeks, her liver function tests were normalized. And ultrasonogram of biliary duct showed normal.
Conclusion : Bile plug syndrome is a rare and occurred by bile sludge due to hemolysis, sepsis or prolonged parenteral nutrition. It is usually characterized both intra and extra hepatic duct dilatation. But, like this case, the radiologic finding may be showed only common bile duct dilatation without intra hepatic duct dilatation.

PP-L-17

CLINICAL AND GENETIC FEATURES OF NEONATAL DUBIN JOHNSON SYNDROME IN KOREA

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Background and objectives: Dubin Johnson syndrome (DJS) presents with cholestasis and is rarely diagnosed in the neonatal period. DJS is an autosomal recessive disorder that produces conjugated hyperbilirubinemia. The excretion mechanism of conjugated bilirubin is disturbed by abnormality of the adenosine triphosphate-binding cassette subfamily C member 2 (ABCC2). The aim of this study is to clarify the clinical and genetic features of neonatal DJS in Korea.
Method: From May 2013 to April 2018, 266 infants with neonatal cholestasis at Seoul National University Hospital were enrolled. Three infants were diagnosed with DJS. Clinical and genetic findings concerning ABCC2 were examined.
Results: All infants diagnosed with DJS were born as a full term and no infants showed failure to thrive. The mean duration from birth to hospital visit was 44.7 days and follow up period was 26 months on average. Two patients had acholic stool and all three had an increased serum direct bilirubin (mean 7.2 mg/dL, range 5.9 - 9.4 mg/dL) as well as increased ratio of direct bilirubin / total bilirubin (mean 66.2 %, range 36.1-84.0 %). The levels of aspartate transaminase (AST) and alanine transaminase (ALT) were normal (mean 43 and 19 IU/L, range 25-60 and 17-21 IU/L, respectively) and γ-glutamyltransferase was normal or elevated (mean 128 IU/L, range 45-209 IU/L). Hepatobiliary scan showed delayed bile flow in all infants. Homozygous or compound heterozygous pathogenic variants of ABCC2 were identified in all patients, representing 5 distinct pathogenic variants (c.2439+2T>C, p.Arg768Trp, p.Arg100Ter, p.Arg1310Ter, and p.Tyr119SfsTer34). In two children, cholestasis disappeared 5 to 10 months after birth.
Conclusion: If the AST and ALT are in the normal range in infants with neonatal cholestasis, genetic testing of DJS should be considered.

PP-L-18

NATURAL COURSE OF BACTERIAL SEPSIS-INDUCED CHOLESTASIS IN NEONATES: A RETROSPECTIVE LONGITUDINAL STUDY

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Background and objectives: Sepsis-induced cholestasis (SIC) is common in neonates, which has been reported in 25-35% of neonates with septicemia. To date, there has been no study to investigate the factors that influence the clinical course of sepsis-induced neonatal cholestasis. Consequently, we investigate the prevalence, clinical course and the factors that are associated with prolonged cholestasis of SIC in neonates with gram-negative bacteremia (GNB).
Methods: We retrospectively reviewed the data from the neonatal GNB data-based of Songklanagarind Hospital between January 2001 and December 2016. SIC was defined as cholestatic jaundice that developed by 2 weeks after a positive-bacterial hemoculture was reported in a neonate with clinical sepsis. Demographic data, clinical characteristic, baseline and subsequent liver function tests, and factors that might be associated with a prolonged cholestasis were collected.
Results: Seventy (23.6 %) of 296 neonates with proven GNB by a positive hemoculture met the definition of SIC. Of 70 neonates with SIC, 42 (63.6 %) were premature infants. The medians (IQR) value of serum total bilirubin, direct bilirubin and ALT at the onset of SIC were 4.5 (3,8.7) mg/dL, 3.1 (1.6,5.5) mg/dL, and 36 (10,78.5) IU/L, respectively. Median (IQR) of time to recovery from cholestasis and abnormal ALT were 55 (37,113) and 57 days (38,113), respectively. During the 3-months of follow-up, 15%, 36%, 49% of neonates with SIC recovered from cholestatic jaundice by 1, 2 and 3 months, respectively. Multivariate analysis showed that sepsis without shock was significantly associated with a favorable prognosis. Factor significantly associated with recovery from cholestasis by 1 and 2 months was full term gestation (odds ratio [OR] 6.48, p=0.027) and high Apgar scores at 1 min (OR 1.26, p=0.037), respectively.
Conclusion: A one-fourth of neonate with bacterial sepsis will develop SIC and only 15% of the affected neonates recovered from cholestasis by 1 months. Full term gestation, a high Apgar scores, and sepsis without shock were significantly associated with a shorter time to recovery from cholestasis.

PP-L-19

POST-TRANSPLANT LYMPHOPROLIFERATIVE DISORDER IN FIVE PEDIATRIC LIVER TRANSPLANTATION RECIPIENTS

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Liver transplantation is a curative treatment in children with end-stage liver disease and acute liver failure. Post-transplant lymphoproliferative disorder (PTLD) is a rare but potentially life-threatening condition, which shows a higher prevalence in children than in adults. From 129 children who underwent liver transplantation, we reported five cases with biopsy-proven PTLD at a single teaching hospital with regards to the clinical presentation and treatment outcome. Four patients had shared clinical presentations including fever, lymphadenopathy, and splenomegaly. They were diagnosed with PTLD > 1 year after transplantation and were given prolonged and intensive immunosuppression due to the management of acute cellular rejection or severe food allergy. Another patient presented with upper gastrointestinal bleeding from gastric mass during an early post-transplantation period. Notably, hypoalbuminemia was noted in all five patients. Similar to previous studies, both Epstein-Barr virus (EBV) serology mismatch between the donor and recipient with high EBV viral load were noted in all except one case, whom the recipient's EBV serology was unknown before transplantation but the viral load was high at the time of PTLD diagnosis. At least one episode of cytomegalovirus reactivation was observed in 3/5 patients prior to the PTLD diagnosis. The histopathology revealed polymorphic PTLD in two patients, monomorphic PTLD in two patients and Burkitt lymphoma in one patient. The treatment included immunosuppression withdrawal, chemotherapy, and/or rituximab. At the time of this report, one patient died of multiorgan dysfunction before initiation of the appropriate therapy for PTLD, one remained in complete remission, and three patients either underwent therapy or evaluation for disease cure. Physicians should be aware of PTLD in pediatric liver transplantation recipients who undergo prolonged and intensive use of immunosuppression with elevated EBV viral load especially in conjunction with EBV serology mismatch. Commonly shared manifestations in our patients include fever, lymphadenopathy, splenomegaly, and hypoalbuminemia.

PP-L-20

GLYCOGENIC HEPATOPATHY: AN UNDERDIAGNOSED CAUSE OF HEPATOMEGALY

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Glycogenic hepatopathy is a rare cause of hepatomegaly. It is usually found in uncontrolled type 1 diabetes mellitus (DM). Despite it can be reversible but it is still over look. We report a 12-year-old girl with a 2-year-history of poorly controlled type 1 DM presented with hepatomegaly and elevated liver enzyme. She had been treated with insulin injection but her compliance was poor. She had multiple episodes of diabetic ketoacidosis and her hemoglobin A1c ranged from 10-14%. Her liver function test showed aspartate aminotransferase (AST) 1,048, alanine aminotransferase (ALT) 750 U/L, with normal bilirubin, alkaline phosphatase and synthetic function. She was investigated for the cause of hepatitis including viral hepatitis, autoimmune hepatitis and Wilson disease which showed negative results. Liver biopsy showed enlarged hepatocytes with glandular to clear cytoplasm and strongly positive of diastase labile Periodic acid–Schiff stain. After the treatment with intensive insulin injection and ursodeoxycholic acid for 1 week, the AST and ALT had decreased to 59 and 190 U/L, respectively. Subsequently, the transaminase had returned to normal after 2 weeks of the treatment. Therefore, she was diagnosed as glycogenic hepatopathy. Despite of complete recovery from transaminitis, she still had hepatomegaly. In spite of the fact that glycogenic hepatopathy is a common benign complication of poorly controlled DM, it is still underdiagnosed. Early diagnosis and subsequent treatment for achieving good glycemic control will lead to complete resolution.

PP-L-21

ETIOLOGY OF CHOLESTATIC JAUNDICE DURING INFANCY IN THAMMASAT UNIVERSITY HOSPITAL

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Background: Cholestasis during infancy is a challenging condition regarding diverse etiologies. Currently, several modalities and laboratory methods for diagnosis have been proposed and investigated. Objective: The purpose of this study was to determine the etiologies and clinical profiles of cholestatic jaundice during infancy in Thammasat University hospital.
Methods: The medical records of all infants with cholestatic jaundice between January 2012 and January 2017 were reviewed retrospectively. Demographic characteristics, investigations, causes of cholestasis and outcomes were collected.
Results: We enrolled 122 infants (74 boys) in our study. Mean age at presentation of infants with non-biliary atresia and biliary atresia were 46.6 and 80.6 days. Parenteral nutritional associated liver disease (PNALD) combined with sepsis (29.5%) was the most common etiology of cholestatic jaundice. This disease occurred mainly in preterm infants (69.2%) which was cholestasis related to feeding tolerance and prolonged use of parenteral nutrition. The next two followed by idiopathic neonatal hepatitis (17.2%) and septicemia (13.1%). Sixteen infants (13.1%) had biliary tract abnormalities, including biliary atresia (14 infants) and choledochal cyst (2 infants). For infants with biliary atresia (11.5%), mean age of jaundice at first notice of jaundice was 47.1 days but age at presentation was 80.6 days. Although acholic stool was found in almost all of infants with biliary atresia, some infants with non-biliary atresia(21%) presented with acholic stool. No significant difference in laboratory testing was determined between two groups with respect to serum aspartate aminotransaminase (AST), alanine aminotransaminase (ALT), total bilirubin, direct bilirubin and coagulation values.
Conclusion: PNALD combined with sepsis was the most common etiology of cholestatic jaundice, particularly preterm infants and long-term exposure to parenteral nutrition. Identification of the possible disorders of cholestatic jaundice is crucial for successful management and better outcome. Keyword: cholestatic jaundice, parenteral nutritional associated liver disease, biliary atresia, idiopathic neonatal hepatitis, etiology

PP-L-22

PREVALENCE AND LONG-TERM OUTCOME OF DE NOVO HEPATITIS B INFECTION IN PEDIATRIC LIVER TRANSPLANT RECIPIENTS

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Background and Objectives: De novo hepatitis B infection (DHB) in HBsAg-negative liver transplant (LT) recipient of anti-HBc-positive donor still occur even with appropriate prophylactic strategy. We aim to study the prevalence and long-term outcome of DHB in pediatric LT recipients.
Methods: Medical records of pediatric LT recipients at Ramathibodi Hospital between 2001-2017 were reviewed with regards to demographics, liver chemistries and histopathology, hepatitis B-related serology of donor and recipient, prophylaxis, and treatment for DHB. Patients who survived < 12 months after LT were excluded.
Results: A total of 112 LT recipients were included with the median age at LT of 1.5 years (IQR 1.1, 2.5). We found 6 cases (5.4%) with DHB at the median time of 5.9 years post LT (IQR 4.2, 8.9)-two cases received allograft from anti-HBc-positive donors, three with unknown donor's serology, and one with anti-HBc-negative donor. Overall, twelve cases (10.7%) received anti-HBc-positive allografts; 3 of them did not receive prophylaxis. The rates of DHB in patients received anti-HBc-positive allografts with and without prophylaxis were 0% (0/9) and 66.7% (2/3) (P=0.045), respectively. At DHB diagnosis, mean serum ALT was 56±10 U/L, and 2/6 children had liver fibrosis stage 2. Lamivudine was given in 5/6 children and entecavir in one. Patients who did not response to lamivudine were treated with additional adefovir or tenofovir. At the median follow up time of 5.8 years after DHB diagnosis, 33.3% (2/6) achieved HBsAg loss, 50% (3/6) had viral suppression (HBV DNA < log2) and 16.7% (1/6) still has high viral load after 6 months of treatment. There was no HBV-related mortality; however, one patient progressed to biopsy-proven early cirrhosis.
Conclusion: Rate of DHB can be decreased with the use of prophylactic treatment in recipients who received anti-HBc-positive allografts. Pediatric LT recipients with DHB have good response to antiviral medication, however, allograft fibrosis should be monitored.

PP-L-23

TWO CHILDREN WITH SEVERE JAUNDICE THAT COULD AVOID LIVER FAILURE BY STEROID PULSE THERAPY

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Liver dysfunction accompanied with jaundice is often severe, and liver failure may occur. Therefore it is important to conduct appropriate treatment at an adequate time. Recently we had two male patients at the age of 2 years and 14 years respectively, who showed unexplained severe jaundice and hepatopathy. Both of these cases had no fever, prior infection nor medication taking. They had no families with liver disease and no history of traveling abroad. Their clinical symptom was only jaundice, but they showed high levels of liver transaminase and apparent abnormal coagulation tests. Blood tests Hepatitis virus markers including HAV, HBV, HCV, HEV, CMV, EBV, HSV were negative. Anti-nuclear antibody was not detected, and serum levels of ceruloplasmin and Cu were normal. In case1, ultrasound guided needle liver biopsy was performed at the second day of hospitalization. On the other hand, case2 suffered from a large quantity of abdominal dropsy, percutaneous needle biopsy was contraindicated. Therefore he received needle liver biopsy using laparoscopy at the 4th day. In both patients, histological analysis showed moderate inflammation of portal region, but no specific findings were detected. Because Immunohistochemical staining for adipophilin were positive in the marginal region of hepatocytes, mitochondrial respiratory chain enzyme assay of the liver tissue are processing. Genetic analysis for congenital cholestasis diseases are also under commission. Their blood examination levels got worsened and steroid pulse therapies were started at the 3rd and 4th day, respectively. Their levels of liver transaminases and coagulation tests were dramatically improved. In patients with severe hepatopathy, it can be expected to prevent liver failure by appropriately performing steroid pulse therapy. However, administering steroids may modify the liver histology, thus it is important to perform histological examination before steroid therapy if possible. If the patient shows consciousness disturbance, liver adjunctive therapy must be started immediately.

PP-L-24

ETIOLOGY OF HEPATIC CHOLESTASIS IN CHILDREN – A SIGLE CENTER STUDY

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Background: Differential diagnosis of cholestasis in children is diverse. The most common cause is biliary atresia (BA), but various causes are comprised.
Methods: Diagnosis and clinical cause were retrospectively analyzed in 30 children with cholestasis in our hospital for recent 3 years from 2015 to 2017.
Results: BA was the most common disease and diagnosed in 10 cases. Three of which received living liver transplantation. These three infants underwent Kasai portoenterostomy at the age of 36 days, 128 days, and138 days, respectively. Congenital biliary dilatation was the second major etiology and diagnosed in 5 cases. Alagille syndrome and neonatal intrahepatic cholestasis caused by citrin deficiency (NICCD) was found in each one case. There were some children who had underlying diseases including 21 trisomy (3 cases), Noonan syndrome, chromosome 18q- syndrome, and very low birth weight infant. Five patients were diagnosed as idiopathic cholestasis. Discussion: 30% of BA children were performed liver transplantation. Two of these patients were received Kasai's operation after age of 120 days. In Japan, stool color scale had been used to notice BA in early age, but there were still some cases with delayed diagnosis. A relatively large number of cases had underlying diseases such as chromosomal abnormalities and very low birth weight. All these patients showed improvement of cholestasis in several months. It was suggested that delayed development of the interlobular bile ducts cause cholestasis in these patients. It seems that there was many proportion of symptomatic cholestasis patients because our center was a large perinatal medical center. Cholestasis in children due to immaturity of biliary system is considered to be important distinction.
Conclusion: Various diseases were caused cholestasis in children. Efforts to diagnose BA at an early age must be continued. Cholestasis due to immaturity of interlobular bile ducts is important discrimination in infants.

PP-L-25

AN UNUSUAL PRESENTATION OF PEDIATRIC ACUTE MYELOID LEUKEMIA (AML) WITH CHOLESTASIS JAUNDICE

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Background and objective: Obstructive jaundice is an uncommon presenting feature in pediatric acute myeloid leukemia (AML). It can occur as a result of leukemic infiltration or myeloid sarcomas (solid tumor of myeloid cells) compressing any part of biliary tract. Here we report a rare case of an infant with AML presenting as obstructive jaundice and pancreatic mass.
Method: Case report
Result: An 11-month-old female infant presented with jaundice, fever, and hepatomegaly. The initial laboratories revealed total bilirubin 8.8 mg/dl, direct bilirubin 6.9 mg/dl, aspartate aminotransferase 431 U/L, alanine transaminase 331 U/L and alkaline phosphatase of 2,160 U/L. She was diagnosed with choledochal duct cyst and ascending cholangitis from ultrasonography. She was treated with antibiotics for a week but her clinical was not improved. Further investigation with an abdominal CT scan was done and identified a pancreatic mass measured 3.3 x 3.4 x 3.5 cm at the head of pancreas suggesting pancreatic tumor. While waiting for a surgery for the tissue biopsy, her leukocyte count increased from 20,300 to 58,400/mm3. Examination of a peripheral blood smear revealed showed a large number of blast cells suggesting acute leukemia. Bone marrow biopsy results were compatible with AML (M2). The patient then received chemotherapy with Cytarabine (ARA-C) and Idarubicin (IDA). To relieve jaundice, a percutaneous transhepatic biliary drainage was performed. After a month of therapy, the pancreatic mass size was decreased to 1.8 x 2.8 x 2.1 cm. and her liver functions were gradually decreased to normal range.
Conclusion: An obstructive jaundice causing by myeloid sarcoma is very rare and may misdiagnosed as other tumors. Essentially, a precise diagnosis could avoid unnecessary investigations and lead to a good outcome. Hence, hematologic malignancies should be considered as part of differential diagnosis of a child with obstructive jaundice.

PP-L-26

ETIOLOGY, COMPLICATIONS AND OUTCOME IN PEDIATRIC ACUTE PANCREATITIS

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Background & Objectives: Acute pancreatitis (AP) in children is not an uncommon condition. It certainly has different etiological factors than adults and understanding the nature of causative condition is important in reference to management. AP in children mostly is mild but few children develop severe pancreatitis increasing the morbidity and mortality. NASPGHAN recently published classification of AP based on systemic inflammatory response syndrome and organ dysfunction in children. In this study, we aimed to study the etiology, severity and outcome for acute pancreatitis in children.
Methodology: This was a prospective cross sectional analysis of children admitted to Gastroenterology division of Children's hospital, Lahore, Pakistan from Jan 2017-Jan 2018. INSPPIRE criterion for acute pancreatitis was adopted for induction and all those who had chronic or recurrent pancreatitis were excluded from the study. The data entered for analysis included etiology, complications and outcome in addition to demographic record. Data was analyzed by SPSS version 23.
Results: There were total of 39 patients who fulfilled the inclusion criteria as adopted from INSPPIRE. Twenty (51.2%) were females with mean±SD age of 7.97±3.5 years (range 2-16 years). The most common etiology determined was idiopathic (28.2%) followed by metabolic (20.5%), hepatobiliary (15.3%), (12.8%), infectious (12.8%), trauma (10.2%) and drugs (7.6%). Twenty-four (61.5%) children had mild whereas moderately severe AP and severe AP were seen in 9 (23.0%) and 6 (15.3%) respectively. Complications happened in 38.4% children and were pseudocyst, multiorgan dysfunction and hemorrhagic ascites in 9 (23%), 3 (7.6%), 3 (7.6%) children respectively. Thirty-six (92.3%) children recovered completely and 3 (7.6%) expired due to multi-organ dysfunction.
Conclusion: Acute pancreatitis is not uncommon and incidence is on the rise probably due to heightened awareness among the physicians and available consensus criteria. Hepatobiliary causes are not uncommon in children as previously considered and earlier recognition and timely management deem necessary to avoid morbidity and mortality in these children.

PP-L-27

HEPATOCELLULAR CARCINOMA AND ACUTE-ON-CHRONIC LIVER FAILURE IN AN INFANT WITH NICCD

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Background and objectives: Neonatal intrahepatic cholestasis caused by citrin deficiency (NICCD, MIM #605814) is an autosomal recessive disorder characterized by neonatal onset cholestatic hepatitis associated with multiple amino acidemia, which is spontaneously resolved in most patients. The occurrence of Hepatocellular carcinoma (HCC) in infant younger than 1 year old is extremely rare. We report a case of NICCD with acute-on-chronic liver failure and incidental HCC, which underwent liver transplantation.

Case: A 7-month old boy, previously healthy, was referred to a tertiary hospital for the evaluation of 2-week jaundice and coagulopathy unresponsive to vitamin K injection and FFP transfusion. He was born at age of GA 37weeks with 2675 g via caesarean section with normal new born screening tests for PKU, CAH, MSUD, Galactosemia, Hypothyroidism, and Homocystinuria. He only had a history of 2 days of phototherapy for neonatal breast feeding jaundice at birth. On his physical exam, he showed hepatomegaly and splenomegaly. Laboratory studies demonstrated elevated level of serum citrulline, methionine, tyrosine, threonine-to-serine ratio, and AFP with fat soluble vitamins deficiency and cholestatic coagulopathy. Liver ultrasonography and biopsy showed hepatic fibrosis, consistent with chronic liver disease and biliary cirrhosis, respectively. Diagnostic exome sequencing identified a known homozygote mutation (c.1177+1G>A) in the SLC25A13 gene. Despite the absence of encephalopathy, severe coagulopathy, hyperammonia, and hypoglycemia were hardly managed, and finally underwent liver transplantation. On an explant liver, a small HCC lesion was idetnified, but no evidence of metastasis was noted on the metastasis work-up.

Conclusions: We report a first case of HCC in an NICCD infant presented with acute-on-chronic liver failure.

PP-L-28

SUBTLE MANIFESTATION OF PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS TYPE 3: CASE REPORT

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Background: ABCB4 deficiency is related to progressive familial intrahepatic cholestasis (PFIC) type 3 phenotype. Onset is during infancy to adolescence. It progress slower than other type thus may delay diagnosis due to subtle clinical presentation. Delayed diagnosis may lead to cirrhosis within 1st decade.
Case: a 5 y.o boy with hepatosplenomegaly was referred to our hospital after thalassemia and liver tuberculosis are excluded. Hepatosplenomegaly condition was first recognized at age one, without pruritus, jaundice, ascites or portal hypertension signs, until nowdays. Physical examination showed liver and spleen enlargement. Patient has normal stature and good nutritional status. He had no anemia, normal leukocyte count, and mild thrombocytopenia (117.000-150.000/µl). His liver function increase 4-5 fold of Alanine transaminases, GGT 586 U/L, Alkali phospatase 556 U/L, and mild persistent cholestasis. Ultrasound showed normal liver and spleen parenchyme. No liver biopsy was performed. We think about hepatic related syndrome or storage disease and run for enzyme and genetic test from clinical exome sequencing. Beta-glucosidase enzyme activity for Gaucher disease was normal. Genetic test showed two heterozygous variant in trans configuration in the ABCB4 gene. Patient is treated with ursodeoxycolate and vitamin E daily. Discussion: PFIC type 3 have a spectrum of clinical manifestation, from subtle manifestation into prominent cirrhosis. Our patient had hepatosplenomegaly since infancy and later experience thrombocytopenia and poor liver function test. Lack of symptoms and less progression, caused PFIC is hard to recognize, thus lead delayed diagnosis.
Conclusion: PFIC type 3 should be suspected in persistent mild cholestasis with high GGT and high level transaminases. Genetic testing may help confirming PFIC if liver biopsy is unfeasible.

PP-L-29

RATIO OF ASPARTATE AMINOTRANSFERASE TO ALANINE AMINOTRANSFERASE AND ALKALINE PHOSPHATASE TO TOTAL BILIRUBIN IN WILSONIAN ACUTE LIVER FAILURE IN CHILDREN

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Background and objective: Acute liver failure(ALF) due to Wilson disease(WD) is invariably fatal. Therefore, rapid diagnosis of WD is needed to start immediate management. The aim of study to determine the role of AST/ALT ratio and ALP/TB ratio for diagnosis of Wilsonian acute liver failure(WALF).

Methods: Total 60 children of acute liver failure, 40 were WALF and non-Wilsonian acute liver failure (non-WALF) were 20 included this study. Serum ALT, AST, alkaline phosphatase and total bilirubin were done in same blood sample. We have seen sensitivity and specificity of AST/ALT ratio and ALP/TB ratio in diagnosis of WALF and compared clinical, hematological and biochemical parameters of children with WALF and non-WALF.

Results: Consanguinity (32.5%) and K-F ring (72.5%) were more common in WALF than non-WALF(p=0.000). Mean hemoglobin, median ALT, median alkaline phosphatase, mean ceruloplasmin were lower in children with WALF compared to non- WALF group (p value 0.000). Median AST/ALT ratio was higher in WALF compared with non WALF (p value 0.000). The sensitivity, specificity, positive predictive value(PPV), negative predictive value(NPV) and diagnostic accuracy of AST to ALT ratio were 70 %, 95 %, 96.5 %, 61.3 % and 78.3% respectively. The area under ROC curve with 95% confidence interval for AST/ALT ratio was 0.896(0.805 -0.988). But with ≥1.85 as a cut-off value, AST/ALT ratio produced a maximum sensitivity of 77.5% and a specificity of 95 %. The sensitivity, specificity, PPV, NPV and diagnostic accuracy of ALP/TB ratio <4 was 32.5%, 100%, 100%, 42.5% and 55% respectively. The area under ROC curve with 95% confidence interval for ALP/TB ratio was 0.555(0.411 -0.699).

Conclusion: From the presented study, it may be concluded that AST /ALT ratio may be an important screening test for early diagnosis of Wilsonian acute liver failure. Positive ALP/TB ratio is strongly suggestive WALF though sensitivity was low.

PP-L-30

A PROGNOSTIC SCORE WITH SERIAL LABORATORY VALUES IN PEDIATRIC ACUTE LIVER FAILURE

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Background & objectives: Pediatric acute liver failure (PALF) is a life-threatening disorder and determining the outcome of PALF remains challenging. The aim of this study was to develop new prognostic score in PALF.
Methods: Retrospective data of PALF patients from 2004 to 2017 were collected . Patients with ischemic liver disease (n=16) and who underwent Liver transplantation (n=23), and subject who died on the day or following day at diagnosis (n=2) were excluded. Remaining 42 patients were divided into spontaneous recovery (Group 1) and death (Group 2). Daily morning laboratory records were obtained for up to 7 days after diagnosis of ALF; (1) total bilirubin (TB) (mg/dL), international normalized ratio for prothrombin time (INR) at enrollment (2) peak TB, peak INR, peak ammonia (mmol/L) (3) a) the difference between the peak TB and TB at enrollment (i.e., ⊿peak TB), b) the difference between the peak INR and INR at enrollment (i.e., ⊿peak INR), c) the maximum change in serial TB (i.e., ⊿serial TB), d) the maximum change in serial INR level (i.e., ⊿ serial INR) The new score was developed by multivariable logistic regression model using laboratory variables showing a $p < 0.05$ on ROC analysis.
Results: Forty-two patients were divided to Group 1 (n=21) and Group 2 (n=21). Univariate analysis revealed that peak TB, ⊿peak TB, ⊿serial TB, peak INR, ⊿peak INR, ⊿ serial INR, and peak ammonia were significantly different between groups. Mutivariate logistic regression was conducted to predict death (Group 2) and new score were developed. PALF-Delta score (PALF-Ds) = [0.232 *⊿peak TB (mg/dL)] + [2.267*⊿serial INR] + [0.01* peak ammonia (mmol/L)] - 4.514. PALF-Ds showed excellent accuracy of AUC 0.922 ($p < 0.0001$) and the best cut-off was 0.36 (95% CI 0.795-0.981).
Conclusion: Our PALF-Delta score accurately predicted the death in PALF.

PP-L-31

USEFULNESS OF SERUM MAC-2 BINDING PROTEIN GLYCOSYLATION ISOMER IN CHILDREN WITH PRIMARY SCLEROSING CHOLANGITIS

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Background: Mac-2 Binding Protein Glycosylation Isomer (M2BPGi) is a novel serum marker of hepatic fibrosis in adults with chronic hepatitis C. However, it remains unclear whether serum WFA+-M2BP levels are associated with the progression of liver histology in primary sclerosing cholangitis (PSC) .
Methods: Twenty-eight children and adolescence with pediatric onset-PSC (M/F = 20/8, median age at diagnosis: 9 years) were enrolled in this study. The relation between serum M2BPGi levels and clinical characteristics was retrospectively evaluated. Moreover, receiver operating characteristic (ROC) analysis was performed to determine whether serum M2BPGi levels could be a reliable marker to identify PSC patients with advanced liver histology. We compared M2BPGi levels changes from baseline at the end of follow up.
Results: According to Ludwig classification of liver histological stage, twenty-eight patients were classified into the 4 stages. M2BPGi, and AST to platelet ratio index (APRI) correlated significantly with liver histological stage. Moreover, M2BPGi showed a significant positive correlation ($p<0.05$) with autoimmune hepatitis overlap, AST, ALT, GGT, total bilirubin, IgG, and APRI . ROC analysis was performed to distinguish the patients with advanced stage (stage 3 and 4) from those with the early stage (stage 0, 1 and 2). M2BPGi yielded the highest area under the ROC curve value (0.898) among 4 surrogate makers (APRI: 0.850, Fib-4 index: 0.806, AST/ALT ratio: 0.802). Moreover, M2BPGi yielded the highest sensitivity, specificity, positive predict value and negative predict value among the four markers. In patients with early-stage disease, there were no differences of M2BPGi values between baseline and end of follow up. On the other hand, M2BPGi levels were elevated at the end of follow up in patients with advanced-stage disease ($p=0.03$) .
Conclusion: Serum M2BPGi levels are useful to identify patients with advanced liver histology in pediatric PSC.

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