Organized by:

The Hong Kong Paediatric Society

Hong Kong College of Paediatricians

Hong Kong Paediatric Nurses Association

Hong Kong College of Paediatric Nursing

Joint Annual Scientific Meeting 2019

28th September, 2019 (Saturday)

Venue: 1/F, Tower A, Auditorium,
Hong Kong Children's Hospital

Joint Annual Scientific Meeting 2019

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Joint Annual Scientific Meeting 2019

Welcome Message from the Chairman of the Organizing Committee

It is absolute delight to continue the collaboration of all four professional bodies in Paediatrics and Child Health for the third year running in organizing this joint annual scientific meeting. With resultant entry of over ninety scientific abstracts, we have no shortage of high quality scientific papers covering a vast array of stimulating topics. But in addition we have been most awestruck this year with several unprecedented privileges.

First, in her maiden year the Hong Kong Children's Hospital supports us cordially by providing us new and prestigious conference facilities to host this scientific meeting. It is a venue undeniably fitting and conducive to promoting Paediatrics and child health, thanks to the kind facilitation by Dr TL Lee and his management team.

Second, we are truly honored to have our new Hospital Authority Chief Executive Dr Tony Ko delivering the congress keynote lecture. It is with great anticipation we await Dr Ko's sharing of his vision of regional service development in Paediatrics during his term of office ahead, so that our professional bodies may join him in seizing opportunities and overcoming challenges together for the betterment of what we do.

Third, celebrating our new venue and prestigious keynote session on this special day, may we also look forward to this convention of many friends and stakeholders in the field, all participants and guests alike.

I am most grateful to all members of the Organizing Committee, both colleges and both societies as well as our supporting sponsor for putting together this meeting so heartily and tirelessly. And finally may I thank all of you for your participation and wish you all a fruitful day of sharing.

Dr. CHAO Sih Yin, Nicholas

President,
The Hong Kong Paediatric Society

Joint Annual Scientific Meeting 2019

Organizing Committee

Chairpersons:	Dr. CHAO Sih Yin, Nicholas
	Dr. TSE Wing Yee, Winnie
	Ms. LEE Wai Yee, Susanna
	Ms. TSE Ching Han, Connie
Convenor:	Dr. CHAN Ching Ching, Kate
	Dr. Patrick IP
Committee Members:	Dr. Wilson CHAN
	Dr. CHAN Chi Ngong, Lawrence
	Dr. HUI Wun Fung, Alvin
	Ms. LAU Sau Yee, Eunice
	Ms. LEE Wan Ming
	Ms. Gloria LUK
	Dr. MA Ping Yuen, Terence
	Ms. TANG Sze Kit
	Dr. WONG Hiu Lei, Lilian

Joint Annual Scientific Meeting 2019

Adjudicators

Oral Presentation (Paediatric Research)

Prof. CHAN Chi Fung, Godfrey
Prof. CHEUNG Yiu Fai
Prof. HON Kam Lun, Ellis
Prof. LEUNG Ting Fan

Oral Presentation (Child Health Research)

Dr. CHAO Sih Yin, Nicholas
Ms. LEE Wai Yee, Susanna
Ms. TSE Ching Han, Connie
Dr. TSE Wing Yee, Winnie

Poster Presentation

Ms. CHAN Man Yi
Ms. CHAN Sin Yee
Ms. CHENG Shuk Man
Ms. CHIU Sau Ying
Ms. CHONG Shuk Fan
Dr. FONG Nai Chung
Dr. FUNG Po Gee, Genevieve
Dr. HO Hok Kung Marco
Dr. Anne KWOK
Dr. Catherine LAM
Dr. LEE Tsz Leung
Dr. LEE So Lun
Ms. LEE Wan Ming
Dr. David LUK
Prof. Tony NELSON
Dr. NG Yin Ming
Dr. PEREIRA Valerie J.
Ms. TANG Sze Kit
Dr. William WONG

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President, Hong Kong College of Paediatricians

Ms. TSE Ching Han, Connie
President, Hong Kong Paediatric Nurses Association

Ms. LEE Wai Yee, Susanna
President, Hong Kong College of Paediatric Nursing

Time	Programme
10:00 am-10:30 am	**Registration & Setting Up Posters**
10:30 am-12:00 pm	**Paediatric Research** **Oral Presentation**
12:00 pm-2:00 pm	**Poster Presentation & Lunch**
2:00 pm-2:15 pm	**Keynote Session** **Officiating Ceremony with Speech by** **Prof. CHAN Sophia Siu-chee, JP** Secretary for Food and Health, Food and Health Bureau, Hong Kong SAR Government
2:15 pm-3:00 pm	**Keynote Lecture** **"Development of Paediatric Services in the New Era: Challenges and Opportunities"** **Dr. KO Pat Sing, Tony** Chief Executive, Hospital Authority
3:00 pm-3:30 pm	**Tea Break / Poster Viewing**
3:30 pm-5:00 pm	**Child Health Research** **Oral Presentation**

ACCREDITATION

Hong Kong College of Paediatricians CME (Cat A): Pending
Hong Kong Paediatric Nurses Association CNE: 3.5 points
Attendance Certificates for Nurses
Continue Education Points for other College and Allied Health: Pending

ENQUIRY (Doctors)

Dr. Patrick IP
Clinical Associate Professor,
Department of Paediatrics & Adolescent Medicine,
The University of Hong Kong
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REGISTRATION

Tel: 2578 3833 Fax: 2578 3929
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Online Registration:
http://wp1.medcomserver.com/hkps_20190928

ENQUIRY (Nurses)

Ms. LAU Sau Yee
Board Member,
Hong Kong Paediatric Nurses Association
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The Hong Kong Paediatric Society

The Office-Bearers and Council Members for Year 2019 - 2020

Patron	Ms. Elsie Oi-Sie LEUNG, GBM, JP
President	Dr. CHAO Sih Yin, Nicholas
Vice-President	Dr. Patrick IP
Honorary Secretary	Dr. FUNG Po Gee, Genevieve
Honorary Deputy Secretary	Dr. LAU Ka Fai, Tony
Honorary Treasurer	Dr. LUK Chi Kong, David
Social Convenor	Dr. MA Ping Yuen, Terence
Council Members	Dr. CHAN Chok Wan*
	Prof. CHAN Chi Fung, Godfrey**
	Dr. CHIU Cheung Shing, Daniel
	Dr. KWOK Mei Kwun, Anne
	Dr. LIU Sze Wai, Clarence
	Dr. SOO Man Ting, David
	Dr. TSOI Nai Shun
	Dr. WONG Hiu Lei, Lilian
	Dr. William WONG
	Dr. YU Chak Man, Aaron

* Appointed delegate to the New Council
** Immediate Past President

Hong Kong College of Paediatricians

College Council for Year 2018 - 2021

President	Dr. TSE Wing Yee
Vice President	Prof. LEUNG Ting Fan
Hon Secretary	Dr. FONG Nai Chung
Hon Treasurer	Dr. Hugh Simon Hung San LAM
Council Member	Prof. CHAN Chi Fung
	Dr. CHAN Hin Biu
	Dr. CHENG Chun Fai
	Dr. LEE Wai Hong
	Prof. LI Chi Kong
	Dr. SO Lok Yee
Immediate Past President	Prof. LAU Yu Lung
Ex-officio Council Member	Dr. CHAN Chok Wan
Co-opted member	Dr. LEE Kwok Piu
	Dr. LEE Mun Yau
	Dr. LEE Tsz Leung
	Dr. LEUNG Ka Yan, Karen
	Dr. LEUNG Tze Ching
	Dr. YEUNG Man Fung, Gerry
	Dr. YUNG Tak Cheung

Hong Kong Paediatric Nurses Association

Board Members list 2018 - 2020

President	Ms. TSE Ching Han, Connie
Immediate Past President	Ms. YEUNG York Mui, Iris
Vice President	Ms. CHAN Yuk Ming, Ada
Hon. Secretary	Ms. CHEUNG Mei Ying
Hon. Dep. Secretary	Ms. NG Lai Sze, Maxica
Hon. Treasurer	Ms. KWONG Kam Yuk, Tany
Hon. Dep. Treasurer	Ms. TANG Sze Kit
Board Members	Ms. CHEUNG Man Yee
	Ms. HO Kit Ha
	Ms. LAU Sau Yee
	Ms. LEE Wan Ming
	Ms. LEE Wing Sze, Caroline
	Ms. LEE Yeuk Chi, Gigi
	Ms. LO Chui Han, Carol
	Ms. WAN Yuet Mei, Connie
Co-opted Members	Ms. LEE Wai Yee, Wendy
	Ms. TSE So Wan

Hong Kong College of Paediatric Nursing

College Council for Year 2018 - 2021

President	Ms. LEE Wai Yee, Susanna
Vice Presidents	Ms. CHAN Yim Fan
	Ms. LEE Wan Ming
	Ms. LEE Suk Yin, Billie
	Ms. LO Chui Ying
	Ms. MA Po King
Honorary Secretary	Ms. HUI Tak Yee, Rebecca
Honorary Deputy Secretary	Ms. MA Tsui Mai, Ella
Honorary Treasurer	Ms. LAU Sau Yee
Honorary Deputy Treasurer	Ms. CHAN Man Yi
Council Members	Ms. CHAN Sin Yee
	Ms. CHENG Shuk Man
	Ms. LEUNG Suet Fong, Tomcy
	Ms. LUK Sau Kuen, Gloria
	Ms. WAN Yuet Mei, Connie

Paediatric Research

Oral

Presentation (PRO)

Paediatric Research Oral Presentation (PRO)

28th September, 2019 (Saturday)
Time: 10:30am - 12:00pm
Venue: 1/F, Tower A, Auditorium, Hong Kong Children's Hospital

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Paediatric Research Oral Presentation

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CD9 IS EPIGENETICALLY SILENCED IN PEDIATRIC ACUTE MYELOID LEUKEMIA AND IMPACTS DISEASE PROGRESSION

H Wang, TK Man, C Zhang, KY Chan, JT Cheung, MH Li, CK Li, KT Leung
Department of Paediatrics, The Chinese University of Hong Kong, Hong Kong

Background

Acute myeloid leukemia (AML) accounts for ~5% of pediatric malignancies with inferior survival rates of 50-70% despite optimal application of risk-directed, chemotherapy-based treatment protocols. It is therefore of prime importance to identify novel molecular targets that are amenable to therapeutic interventions, which relies critically on the dissection of key regulatory pathways governing disease progression and/or pathogenesis. We recently demonstrated that the tetraspanin family protein CD9 was associated with poor survival outcomes in pediatric acute lymphoblastic leukemia (ALL) and that CD9 blockade substantially suppressed leukemia progression in preclinical animal models (Leung et al, *Leukemia*, 2019). Yet, its expression, prognostic impact and functions in pediatric AML remain completely unknown.

Aims

This study was designed to: (1) characterize the expression and epigenetic regulation of CD9 in a cohort of pediatric AML patients and its association with long-term survival outcomes; and (2) to elucidate the multi-faceted functions of CD9 in pediatric AML, focusing on the crucial cellular properties affecting leukemia progression and the underlying mechanisms.

Methods

Bone marrow (BM) samples were collected from pediatric AML patients consecutively enrolled in the AML 96, NOPHO-AML 2004 and NOPHO-DBH AML 2012 studies. Immunophenotypes of isolated leukemic blasts were characterized with CD9, CD33, CD34 and CD45 antibodies by flow cytometry. Patients were stratified into CD9+ and CD9- subgroups for comparison of overall survival (OS) and relapse-free survival (RFS). Epigenetic control of CD9 in AML was investigated by bisulfite sequencing of CD9 promoter, and confirmed by decitabine and panobinostat treatment. The impact of CD9 on leukemic cell proliferation, cell division and chemosensitivity was measured by Trypan Blue exclusion, competition, colony formation, SNARF-1 and Annexin V/7-AAD assays, subsequent to transduction of a CD9-expressing lentiviral vector. The influence of CD9 on leukemia progression was evaluated in the NOD/SCID mouse xenograft model. Mechanisms were explored by genome-wide microarray.

Results

The median CD9 expression on leukemic blasts of AML patients (n=58) was significantly lower than that on CD34+ hematopoietic stem cells of normal BM donors (n=16; 11.6% *vs.* 46.9%, $P<0.001$). Higher abundance of methylated CpG sites in CD9 promoter was detected in AML compared with ALL patient samples (n=10 each; 4.0% *vs.* 1.6%, $P=0.008$) and in leukemic cell lines (n=10 each; 7.3% vs. 1.7%, $P=0.089$). CD9 cell surface expression was negatively correlated with the extent of CD9 promoter methylation in patient biopsies ($r=-0.568$, $P=0.009$). Treatment of CD9- AML cells with the DNA methyltransferase inhibitor decitabine or histone deacetylase inhibitor panobinostat significantly increased CD9 mRNA and protein expression by 4.9-64.1-fold (n=5-8; $P<0.05$). Of 58 cases of pediatric AML, blasts of 19 patients (32.8%) were CD9+ (≥20% CD9 expressing cells). Kaplan-Meier analyses revealed that the 5-year survival rates of CD9- patients were significantly lower than those of CD9+ patients (OS: 48.1% *vs.* 88.2%, $P=0.004$; RFS: 35.7% *vs.* 66.7%, $P=0.009$). Overexpression of CD9 in the AML cell line MV4-11 reduced proliferation, cell division and clonogenic potential, and enhanced cytarabine-induced apoptosis (n=4-6, $P<0.05$). NOD/SCID mice xenografted with GFP-tagged, CD9-overexpressing MV4-11 cells exhibited significantly reduced leukemic load in bone marrow, spleen, blood and liver by ≥71.4% ($P<0.01$), and had prolonged survival by 1.4-fold ($P=0.002$) when compared with animals transplanted with control, GFP-only MV4-11 cells. Transcriptome profiling revealed the differential expression of autophagic regulators VMP1, ATG9A and GNAI3 upon CD9 overexpression in MV4-11 cells.

Conclusions

CD9 was epigenetically silenced in pediatric AML and associated with dismal survival outcomes. Enhanced CD9 expression substantially suppressed leukemic cell proliferation *in vitro* and disease progression *in vivo* via modulation of autophagic pathways. Our results could potentially be harnessed for refinement of clinical risk group stratification and derivation of new targeted therapies.

ASSOCIATION BETWEEN CHOLESTEROL LEVELS AND ATOPY AMONG ADOLESCENTS WITH AND WITHOUT SUFFICIENT AMOUNT OF PHYSICAL ACTIVITY

KTS Tung, RS Wong, HW Tsang, FK Ho, P Ip
Department of Paediatrics and Adolescent Medicine, The University of Hong Kong

Objectives

Atopic diseases are increasingly prevalent among children and adolescents both locally and internationally. One of the possible contributing factors could be the hypercholesterolaemia which leads to cholesterol accumulation in macrophages and other immune cells that would eventually promote inflammatory responses, including augmentation of Toll-like receptor (TLR). Meanwhile, physical activity is well known for its beneficial effects against the condition of hypercholesterolaemia and incidence of atopic diseases. This study therefore explored whether atopic diseases were associated with increased cholesterol levels and whether physical activity habit influenced this association.

Methods

This is a sub-study derived from the longitudinal cohort study which recruited a group of children at 5 years of age in Kindergarten 3 (K3) to investigate the long-term impact of family socioeconomic status on child development. In 2018/19, adolescents (average age: 13 years old) were asked to report their physical activity habit and history of any atopic diseases. During health assessment, peripheral blood samples were collected from the adolescents to study their lipid profile [total cholesterol, high-density lipoprotein(HDL)-cholesterol, and low-density lipoprotein(LDL)-cholesterol]. Regression analyses were performed to test the relationships between variables of interest.

Results

Among the 315 adolescents, 99 (31.4%) reported to have allergic rhinitis. There were 45 (14.3%) with eczema, 17 (5.4%) with food allergy, and 12 (3.8%) with asthma. Regression analyses showed that adolescents with history of any type of atopic diseases had significantly higher total cholesterol ($B=13.3$, $p<0.01$) and LDL cholesterol ($B=7.9$, $P<0.05$) levels. Further subgroup analyses were conducted to examine the effect of physical activity level on the association between atopic diseases and cholesterol levels. We found stronger associations among those who did not meet the World Health Organization recommendation of at least 60 minutes of moderate-to-vigorous activities each day (Total cholesterol: $B=15.5$, $P<0.01$; LDL cholesterol: $B=10.4$, $p<0.05$). For those who met this recommendation, the associations between atopic diseases and cholesterol levels became insignificant.

Conclusion

Our study results support the current research evidence on the relationship between elevated level of cholesterol and atopic diseases. More importantly, our results provide preliminary support for the protective effect of regular exercises against elevated cholesterol level due to atopic diseases. The findings highlight the importance of healthy lifestyle for keeping cholesterol levels in normal range which can bring benefits to both physical and mental health.

EARLY-ONSET SEPSIS OF TERM AND LATE PERTERM NEONATES IN A LEVEL III HOSPITAL IN HONG KONG BEFORE AND AFTER THE IMPLEMENTATION OF UNIVERSAL GROUP B STREPTOCOCCUS SCREENING

XL Wang, HS Lam
Department of Paediatrics, Faculty of Medicine, The Chinese University of Hong Kong

Background

Early onset sepsis (EOS) is a life-threatening disease occurring in the first 3 days of life. Group B streptococcus (GBS) is reported to be the most often isolated strains in term and late preterm patients. Universal culture-based GBS screening has been implemented in Hong Kong since 1/1/2012, which has led to a great decrease in the overall incidence of early onset GBS disease (EOGBS). However, the change of EOS in term and late preterm neonates in the era of universal GBS screening is unknown.

Objective

To evaluate the changes of the characteristics of EOS and the impact of the implementation of universal GBS screening in term and late preterm neonates born at the Prince of Wales Hospital (PWH) in Hong Kong during the period from 2005 to 2017.

Methods

We retrospectively reviewed the medical records of the term and late preterm neonates born at PWH during the period from 01/01/2005 to 31/12/2017. Culture-confirmed EOS was defined by isolation of a pathogenic bacteria species from a normally sterile site within 72 hours of birth with at least 5 days of antibiotics prescribed. Culture-negative EOS was defined by sepsis diagnosed clinically with at least 7 days of antibiotics prescribed. We compared the characteristics of EOS and the outcomes in this group of neonates between the period of 2005-2011 and that of 2012-2017.

Results

There were 83762 live births in PWH during the study period, and 81839 cases were term or late preterm neonates. The demographic characteristics were similar between 2005-2011 and 2012-2017, except that there were more cases born by caesarean section in 2012-2017 (25.2% vs. 23.5%, $p<0.001$). Compared with the period from 2005 to 2011, the incidence of culture-negative EOS (4.4% vs. 7.2%, $p<0.001$), culture-confirmed EOS (0.14% vs 0.29%, $p<0.001$), and EOGBS (0.01% vs 0.07%, $p<0.001$) were all significantly decreased in 2012-2017, while the changes within period were not significant. Although more cases were evaluated for EOS (33.4% vs. 30.6%, $p<0.001$), there were less cases receiving antibiotics (9.9% vs. 12.8%, $p<0.001$) and admitted to neonatal unit (20.8% vs. 23.2%, $p<0.001$) in 2012-2017. The overall mortality rate was decreased (0.12% vs. 0.18%). The most common isolated strains were GBS, coagulase-negative staphylococcus, Escherichia coli and streptococcus bovis. The proportion of GBS was decreased and became similar with other pathogens in 2012-2017 compared with 2005-2011. EOS caused by other pathogens were also decreased except for streptococcus bovis (0.01% vs. 0.006%, $p=0.714$).

Conclusions

The incidence of EOGBS and EOS in term and late preterm infants in our hospital decreased significantly after Hong Kong's implementation of universal GBS screening. The main pathogens didn't change. However, there were more cases undergone EOS evaluation, and cases admitted to neonatal unit or receiving antibiotics were not reduced as much as the reduction of the disease. Better EOS triage algorithm is needed in this group of neonate.

MUSIC PROGRAM FOR PRETERM INFANTS IN NEONATAL INTENSIVE CARE UNIT

***HW Leung*[1], *KY Choy*[1], *WY Ip*[1], *MS Ng*[1], *SY Lee*[1], *WY Tang*[1], *HS Lam*[2]**
[1]*Neonatal Unit, Department of Paediatrics, Prince of Wales Hospital*
[2]*Department of Paediatrics, The Chinese University of Hong Kong*

Background and Aim

Admission to NICU for preterm infants is sometimes unavoidable. However NICU is filled with unpredictable loud and disorganized sounds from various noise-producing sources. With low capacity of noise tolerance of preterm infants and the unfavorable NICU environment, stress levels may be expected to be high in these infants.

Music has been shown to be associated with beneficial outcomes in preterm infants by stabilizing preterm infants for growth. Therefore, a music program is established to promote well-being for both preterm infants and their parents.

Methods

Selected lullabies were played for eligible candidates in music intervention group 2 times/day and 30 minutes for each session while no music was played for those in preparation group. Music was played by a music player hanging inside the incubator with preset sound volume. Sound levels, body weight, vital signs (Heart Rate, Respiratory Rate and SpO2) of candidates at different time points were recorded and compared between groups. Parental stress level and parent-infant bonding were measured by validated questionnaires.

Results

3933 sets of data were collected from total 29 subjects during the music program period between 22 October and 24 December 2018. The raw data of each subject were "compressed" into summary variables by calculating the mean values of each variable to avoid bias. Vital signs, percentage of body weight gain, sound levels and parent-infant bonding were found to be not statistically different between the two groups but the intervention group parents were significantly less stressed (P=0.025). Nursing compliance ranged from 89%-100%, overall 92%. Besides, trend to a significant finding on percentage body weight gain (p=0.052) was noted.

Conclusion

In view of the relatively short time period, the number of subjects in the program was small. Although some trends were observed, there were not many statistically significant results. However, important variables, such as heart rate and SpO2 showed consistent trends toward improved values in the intervention group compared with preparation group and thus with a larger number of recruited infants it is possible that significant results may be observed.

Acknowledgement

The team would like to thank Ms. Joanne Wu (Music therapist) for her professional advice on music choices and volume of music. Also, we would like to thank Ms. Cheng, M. L., Ms. Cheung, W. S., Ms. Cheung, F. Y., Mr. Chow, Y. T., Mr. Tse, L. P., Ms. Wan, W. M. and Ms. Wong, S. Y. for taking part in data collection.

REANALYZING CLINICAL WHOLE EXOME SEQUENCING (WES) DATA PROVIDES ADDITIONAL DIAGNOSIS IN PAEDIATRIC-ONSET UNDIAGNOSED DISEASES – A YALE-HKU COLLABORATIVE STUDY

J Fung*[1]*, S Huang[2]*, S Pajusalu[2], M Yu[1], M Chan[1], C Mak[1], V Hui[1], C Chung[1], M Lek[2], B Chung[1]

[1]*Department of Paediatrics and Adolescent Medicine, The University of Hong Kong*
[2]*Department of Genetics, Yale School of Medicine, Yale University*
**Co-first authors*

Objective

To evaluate the effectiveness of WES reanalysis in undiagnosed patients in Hong Kong.

Methods

This is a secondary analysis to Mak et al (2018) (PMID: 30109123), where 104 patients with suspected genetic disorder were recruited for WES in 2013-2017. The diagnostic yield was 40% (43/104). In this study, we included patients with no definitive diagnosis and 46 of them consented for reanalysis. Samples were either raw sequencing data obtained from clinical laboratories or DNA retrieved from HKU and sent to Yale for re-sequencing. Reads were aligned to hg19 reference genome using BWA and processed following GATK best practice guidelines including variant calling with HaplotypeCaller. Copy-number variants were called using gcnv (part of GATK4). Variants were uploaded to seqr for analysis.

Results and Discussion

Among the 46 WES reanalyses (26 singletons, 1 duo and 19 trios), there were at least 11 definitive additional diagnoses. Eight are autosomal dominant conditions, with heterozygous pathogenic/likely pathogenic variants identified in *PTPN11, PACS1, MFN2, SPTAN1* (2 patients), *ATP1A3, GNB1* and MN1; three are autosomal recessive conditions (*COQ7, SKIV2L* and *PRF1*).

By reviewing the 11 positive diagnoses, the majority (7/11; 64%) of patients harboured variants in genes that had weak/no gene-disease association in the initial analysis (*PACS1, MFN2, SPTAN1, ATP1A3, GNB1* and *COQ7*), the pathogenicity became more confident with increasing literature. Four patients had a phenotype update or were presented with atypical symptoms that masked the core features (36%). Improved sequencing technology and bioinformatics also contributes to the increased yield (27%). Two variants had increased sequence coverage (*PTPN11* and *SKIV2L*) and one exonic deletion was detected by new CNV caller (*SPTAN1*). The pathogenicity of *MN1* was confirmed through international research collaboration.

Conclusion

Reanalysis of WES in collaboration with a research centre provides promising additional diagnoses to patients, increasing the diagnostic yield from 40% to 52%. Increasing literature, evolving phenotype, improving analytical tools and international collaboration were the main reasons for positive findings in the reanalysis.

Acknowledgement

We would like to thank The Society of Relief of Disabled Children for their support.

MICROARCHITECTURE ALTERATIONS IN BOYS WITH DUCHENNE MUSCULAR DYSTROPHY ON LONG-TERM GLUCOCORTICOID TREATMENT

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Background

Osteoporosis is a major health issue in boys with Duchenne Muscular Dystrophy (DMD) that is attributable to muscle weakness and long-term glucocorticoid treatment. Measurement of areal bone mineral density (aBMD) by dual-energy X-ray absorptiometry (DXA) is commonly performed but has its limitations.

Objectives

This study aimed to assess the bone health in boys with DMD on long-term glucocorticoid, using a panel of tests including DXA and high resolution peripheral quantitative computed tomography (HR-pQCT).

Methods

This is a cross-sectional, case-control study. Genetically confirmed DMD boys older than 5 years, who were seen in a single tertiary centre from 2017 to 2018 and had been started on long-term glucocorticoid treatment for at least one year, were recruited. Patients were excluded if: (i) they required daytime ventilatory support, or (ii) they were on bisphosphonate therapy. For each participant, three gender-, age- (within 1 year of age) and race-matched controls were selected randomly from an existing HR-pQCT database of healthy individuals. Volumetric bone densities (vBMD) and bone microarchitecture were measured at the non-dominant distal radius using the HR-pQCT; aBMD of the lumbar spine (LS) and total body less head (TBLH), and vertebral fracture assessment were assessed by DXA. Relevant clinical information was retrieved from patients' records.

Results

Nine boys with DMD were included. Their mean age was 10.6 years ± 3.7 years. They were started on prednisolone at a mean age of 6.6 ± 2.8 years for a mean duration of 4.1 ± 2.3 years. Their mean prednisolone dose was at 0.65 ± 0.13mg/kg/day. Three were non-ambulatory, while four and two were at ambulatory and late ambulatory state respectively. Their vitamin D statuses were kept at optimal level (mean 25OH vitamin D = 72 ± 13nmol/L) with mean daily vitamin D supplementation dose of 2400 ± 911 iu. Their DXA BMD Z-score at LS and TBLH were -2.1 ± 1.9 SD and -5.8 ± 3.7 SD respectively, while the corresponding height-adjusted Z-score were at -0.94 ± 2.1 SD and -3.5 ± 4.2 SD respectively. Three had vertebral fracture, and among these 3 boys, one also had history of long bone fracture.

The HR-pQCT findings of these 9 boys was compared to 27 gender-, age- and race- matched healthy controls (mean age 10.9 ± 3.4 years). Trabecular microstructure indices, including trabecular vBMD, number of trabeculae, trabecular network inhomogeneity and trabecular separation at the distal radius were significantly inferior in the DMD boys when compared to healthy boys (p values all <0.001).

Among the DMD boys, there was no significant age difference between the group with fracture vs. without fracture (11.3y vs 11.0y; p= 0.91). The fracture group had significant lower trabecular thickness (p=0.01). No significant aBMD difference by DXA was observed.

Conclusion

Reduced vBMD and microarchitecture alterations of trabecular bones were observed in DMD boys on long-term oral steroid. HR-pQCT also revealed significant alterations of trabecular microstructure in DMD boys with history of fracture. This may imply that HR-pQCT would provide a more sensitive measure than DXA on the bone health status in this group of individuals.

INFLUENCE OF MATERNAL, OBSTETRIC AND FETAL RISK FACTORS ON THE NEWBORN TELOMERE LENGTH

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Objectives

Telomere is a DNA-protein complex located at the distal ends of each chromosomes with well-known function on preventing DNA damages due to replication flaw. Previous studies showed that telomere shortens progressively in the somatic cells. However, heterogeneous rate was observed across individuals, as it is influenced by environmental factors such as exposure to stressors in an adverse environment, particularly during the period of intrauterine growth. Therefore, this study aimed to examine the effect of maternal, obstetric, and fetal factors on the telomere length of newborn.

Methods

A total of 774 pregnant women in the 20th to 24th week of gestation were recruited at a public hospital in Hong Kong. The mothers completed questionnaires on demographics and health related quality of life at the time of recruitment. The health record of the mothers during the pregnancy period and also the incidence of any birth complication were identified via Clinical Data Analysis Reporting System (CDARS). Umbilical cord blood was collected by midwives at the time of delivery. The newborn telomere length was quantified using quantitative PCR method and expressed in T/S ratio (the ratio of telomere repeat copy numbers to single-copy gene numbers). Regression analyses were performed to test the relationships between variables of interest.

Results

Among 774 pregnant women recruited, the average age at recruitment was 32.2 years. Majority of the mothers was married (92.1%) and only 7.9% was reported to be single/divorced. Based on the records from CDARS, around one third of the mothers (30.8%) were found to have obstetric infection. Also, 29.1% of them had anaemia and 13.7% of them had gestational diabetes mellitus. The mean telomere length of newborn was 15.04 (SD: 6.25). Multiple regression analyses showed that newborns of mothers with any episode of obstetric infections had a shorter telomere length ($B=-1.04$, $p<0.05$).

Conclusion

Our study provided preliminary support for the association between maternal infection during pregnancy and shorter telomere length of newborns. Some possible pathways underlying this association include the induced acute/acquired inflammation and cellular stress as well as the increased level of reactive oxygen species. Further research is needed to elucidate the mechanism that alters the telomere length of the newborn during the period of intrauterine growth.

DIAGNOSTIC OUTCOME OF WHOLE EXOME SEQUENCING IN HONG KONG FAMILIES WITH AUTISM SPECTRUM DISORDER

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Background

Autism spectrum disorder (ASD) is characterized by deficit in social communication and restricted repetitive behaviour or interest. While it is known that common variants and copy number variations contribute significantly to the pathogenesis of ASD, rare *de novo* single nucleotide variants are known to cause ASD in some of the cases. Currently, the mutational spectrum of ASD in Southern Chinese is understudied. We aimed at studying the diagnostic outcome of whole exome sequencing (WES) in Hong Kong families with ASD.

Methods

We recruited subjects diagnosed with ASD based on DSM IV-TR or DSM-V criteria and their asymptomatic parents at Duchess of Kent Children's Hospital Child Assessment Centre to this study. WES was performed at Icahn School of Medicine at Mount Sinai as a part of the Autism Sequencing Consortium international collaboration. We performed sample-level and variant-level quality control using GATK-VQSR, KGGSeq and PLINK. *De novo* variants were called using customised bioinformatics pipeline with triodenovo and confirmed by manual inspection using IGV. Variants were prioritized based on population frequency (gnomAD frequency ≤ 1%) and ASD gene list curated by literature search. Phenotype-based variant prioritization was performed using text-mining algorithm VarElect in cases with additional phenotype or dysmorphism. The pathogenicity of variants was determined using ACMG guideline. Pathogenic mutations were confirmed using Sanger Sequencing.

Results

We recruited 329 subjects in this study, of which 100 probands originated from trio or multiplex families and 229 subjects were singleton. Nine pathogenic/ likely pathogenic variants were identified in 8 cases (one proband was found to harbour both *NSD1* and *CHD7* mutations). Disease-causing mutation were identified in overgrowth-related genes (*NSD1, PPP2R5D, PTEN, EZH2*), multiple-congenital-anomalies-related genes (*CREBBP, CHD7*), neurodevelopmental-disorder-related genes (*DEAF1, GRIN2B*) and hearing-loss-related gene (*WFS1*). 6/9 of the variants were de novo while the inheritance of the remaining cases cannot be determined due to the lack of parental samples. The overall diagnostic yield was 2.5% while the diagnostic yield of trio/multiplex cases was 5.3%.

Conclusion

Despite having relatively low diagnostic yield, WES still identifies pathogenic mutations in a small but significant proportion of ASD families. Case-based analysis also highlights phenotype expansion of ASD as clinical genetics transit into the era of genotype-guided practice. Pathogenic variants identified in syndromic ASD genes were found to present as non-syndromic ASD.

Acknowledgements

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RITUXIMAB DOSE AND MAINTENANCE IMMUNOSUPPRESSION IN STEROID-DEPENDENT/ FREQUENTLY-RELAPSING NEPHROTIC SYNDROME: AN INTERNATIONAL MULTICENTRE STUDY

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Abstract

Rituximab is an effective treatment in steroid-dependent/ frequently-relapsing nephrotic syndrome (SDFRNS) in children. However, the optimal rituximab regimen remains unknown. In an international, multicentre retrospective cohort study at 11 tertiary paediatric nephrology centres in Asia, Europe and North America, children 1-18 years with complicated SDFRNS receiving rituximab between 2005-2016 and ≥ 18 months' follow-up were included. We examined the effect of rituximab prescribed at three dosing levels: low (375mg/m2), medium (750mg/m2) and high (1125-1500mg/m2), with or without maintenance immunosuppression (mIS). Among the 511 children (median age 11.5 years, IQR 8.1-14.3; 67% boys), 191, 208 and 112 received low, medium and high dose, respectively. 283 patients (55%) received mIS. Renal biopsies were performed in 317 children, of which the predominant histology was minimal change disease (74%). Without mIS, low-dose rituximab had a shorter relapse-free period and a higher relapse risk (8.5 months [95% CI, 7.2-13.3]) than medium (12.7 months [95% CI, 10.4-16.9]; adjusted hazard ratio [HRadj], 0.62 [95% CI, 0.41-0.94]; p=0.02) and high dose (14.3 months [95% CI, 12.0-18.4]; HRadj, 0.50 [95% CI, 0.33-0.77]; p=0.002). With mIS, the relapse-free survival in low-dose rituximab (14 months [95% CI, 11.0-18.1]) was similar to medium (10.9 months [95% CI, 10.0-14.2]; HRadj, 1.23 [95% CI, 0.87-1.75]; p=0.24) and high dose (12.0 months [95% CI, 9.0-22.0]; HRadj, 0.92 [95% CI, 0.61-1.39]; p=0.70). Most adverse events were mild. In conclusion, children receiving low-dose rituximab without mIS had the shortest relapse-free survival. Both rituximab dose and mIS have important effects on the treatment outcomes.

Child Health Research

Oral

Presentation (CHRO)

Child Health Research Oral Presentation (CHRO)

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LONG-TERM PSYCHOSOCIAL IMPACTS OF EARLY CHILDHOOD EXPOSURES TO GAME CONSOLES

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Objectives

As technology advances, exposures in early childhood are no longer confined to stimulations in the surrounding physical environments. Children nowadays are also subject to influences from the digital world. In particular, early access to game consoles can cause risks to child development especially when the game is not developmentally appropriate for young children. Overstimulation is possible and could impair brain development. On the other hand, recreational parent-child activities including outdoor activities and visits to museums require child interaction with parents which is beneficial for developing adaptive emotion regulation and social skills. Given the differences between these two types of exposures, this study investigated and compared the independent effects of early exposure to game console and early play-based parent-child activities on children's long-term psychosocial outcomes.

Methods

This study used data from a subset of children (n=304, 142 male and 162 female) in the longitudinal cohort study which studied the long-term impact of family socioeconomic status on child development. In 2012/13, we recruited a group of children at Kindergarten 3 (K3) randomly from Hong Kong local kindergartens and collected data regarding their duration of exposure to game console and recreational parent-child activities at that time. In 2018/19, we re-surveyed the parents of these children who were matriculated as Form 1 (F1) students (ages ranging from 11 to 13 years) in secondary schools and asked the parents to rate their children's psychosocial problems in F1. Linear regressions were conducted to examine the associations between early exposures and adolescent psychosocial problems with and without adjustment for child gender and K3 family socioeconomic status.

Results

On average, at K3 children each day spent around 42 minutes on game console and each week had 2-3 times recreational activities with parents. Univariate analyses showed that more time spent on game consoles at K3 was associated with more psychosocial difficulties in F1 particularly more externalizing problems. The effect of early exposure to game console on externalizing behavior remained significant (B=0.59, 95%CI: 0.15 to 1.03, p=0.009) after adjusting for recreational parent-child activities and child gender. For recreational parent-child activities at K3, its effect on overall psychosocial difficulties became insignificant after adjusting for early exposure to game consoles and child gender. However, it was found to have significant protective effect on externalizing problems (B=-0.65, 95%CI: -1.23 to -0.07, p=0.028) even after adjusting for the confounders.

Conclusion

Early exposure to game consoles has negative impact on children's psychosocial health, whereas play-based parent-child activities can foster positive psychosocial outcomes. More efforts should be directed to propagate the risks and benefits of these activities and urge the parents and caregivers to replace child-alone screen time with parent-child play time in daily routine.

UNDERSTANDING YOUNG SUBSTANCE USERS AND THEIR HEALTHCARE PATHWAY USING THE BIG DATA APPROACH: TOWARDS BETTER MANAGEMENT IN HONG KONG

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Aim/Objective

Describing the demographic and clinical profiles of young substance users under the age of 21 in Hong Kong, and ascertaining evidence-based interventions for this population.

Methods

A population-based descriptive study using the Clinical Data Analysis and Report System (CDARS) databases was conducted. Patients with a diagnosis of substance abuse, who presented to Accident & Emergency (A&E) departments in Hong Kong public hospitals between 2004 and 2016 were identified. The demographic and clinical profiles of patients aged under 21, in addition to trends in their A&E attendance due to substance abuse were analysed using descriptive statistics.

Results

In this study, 8,423 substance abusers were identified from CDARS between 2004 and 2016, and 823 were under the age of 21 (368 [44.7%] males, mean [SD] age: 17.4 [3.3] years; 455 [55.3%] males, mean [SD] age: 18.0 [3.7] years). For the young substance users, the most frequently abused substance was ketamine (409 cases, 42.3%), followed by amphetamines (87 cases, 9.0%), barbiturate/hypnotics (36 cases, 3.7%), and cannabis (31 cases, 3.2%). Among female substance users, 15.7% had at least one maternity episode under the age of 21 and 6.5% sought medical care for substance abuse from A&E departments during the gestation, pre-pregnancy or post-delivery period. Approximately 23.3% of young substance users had concurrent mental disorders and 10.0% had attempted suicide. The overall trend of A&E attendance due to substance abuse appeared as an 'M' shaped curve peaking around years 2008 and 2012, with 17.1% of patients having at least one substance abuse-related A&E re-attendance.

Conclusion

Although substance abuse among the youth has taken a downward trend since 2012, challenges such as high prevalence of concurrent mental disorders, teenage pregnancy and substance abuse during pregnancy continue to be of concern. Different from the greatest use of opioid among people aged 21 reported by the Narcotics Division, ketamine is the dominant substance used in those aged under 21. Young substance users should be offered early intervention to improve health and address behavioural issues.

Key words

substance abuse, clinical profile, youth

This project was supported by Beat Drugs Fund 160052, Narcotics Division, Security Bureau, Hong Kong Special Administrative Region.

HYGIENE PRACTICE AND EARLY CHILDREN DEVELOPMENT: EVIDENCE FROM FIVE DEVELOPING COUNTRIES IN EAST ASIA AND PACIFIC REGION

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Background

The hygiene practice status and its association with children development is unclear, particularly in developing countries. This study aims to reveal the hygiene habits of children in five developing countries in East Asia and Pacific region (EAPR) and evaluate its association with childhood development.

Methods

This is a multinational cross-sectional study conducted from June 1, 2013, to December 13, 2013. The children aged from 3 to 6 were selected by multilevel stratified random sampling in Cambodia, China, Mongolia, Papua New Guinea, and Vanuatu. Their hygiene practice, including handwashing and toothbrushing habits, was obtained from the parents or caregivers questionnaire interviews. East Asia Pacific Early Child Development Scales (EAP-ECDS) were used to evaluate the early childhood development in different aspects, including the development of cognitive, socio-emotional, motor, emergent literacy and linguistic, cultural knowledge and participation, and approaches to learning. The SES index was measured by multiple correspondence analysis with parental education levels and family assets. Linear mixed regression models with adjustment of age, gender, urbanicity, and family SES were fitted to evaluate the association.

Results

The study recruited a total of 8,296 children (4,142 girls; mean age 4.5 years) from the targeted countries in EAPR. Among them, over two thirds (66.3%) had a habit of tooth brushing at least one time a day, while more than one-quarter rarely or never washing hands after toilet (28.3%) and before meals (26.0%). All developmental scores were statistically higher in children who lived in urban areas compared to those living in rural areas, except motor development. Hygiene practice differed significantly among countries. Less than half of the children (44.3%) had regular teeth-brushing habits in Papua New Guinea, while in Mongolia it was up to 89.9%. In the univariable analysis, toothbrushing, washing hands after toilet and after meals were all positively associated with the developmental scores. Notably, the children who wash hands after toilet had shown higher scores in socio-emotional development (β: 13.24, 95% CI: 11.54 - 14.93) and cultural knowledge and participation (β: 12.44, 95% CI: 10.63 - 14.25). Among the three hygiene habits, toothbrushing consistently had a positive association with child development across all six domains.

Conclusions

It is more common to see children brushing their teeth rather than washing their hands in the EAPR. The habits varied across the countries, and between rural and urban areas. A significant association was observed between poor children hygiene practices and inferior early development. Effective intervention to improve the children hygiene practice is warranted to improve the childhood development in EAPR.

PERSISTENCE OF OBESITY AMONG JUNIOR PRIMARY SCHOOL STUDENTS IN HONG KONG

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Introduction

Childhood obesity is an important public health issue worldwide. In Hong Kong, if students are screened to be obese during routine health checks at the Student Health Service, they would be referred the Hospital Authority for further management by paediatricians. However, this referral guideline only applies to students >/=10 years of age. With the childhood obesity epidemic, some suggested to lower the age of referral for early intervention. However, little is known about the natural history of the weight status among obese junior primary school children in Hong Kong.

Objectives

This study aimed to examine persistence of obesity among junior primary school students to early adolescent period, and to identify associated factors for being persistently obese from childhood to early adolescent period.

Methods

This study utilized data from the School Physical Fitness Award Scheme (SPFAS). Primary school students were included for analysis if they participated in SPFAS in both the school year of 2014 (Primary 1 and 2) and 2018 (Primary 5 and 6) with longitudinal follow-up identifiers. Their anthropometric parameter and physical fitness parameters were analysed. Obesity was defined using International Obesity Task Force BMI cut-offs.

Results

A total of 19120 students fulfilled the inclusion criteria and were included for analysis, of which, 10660 (66%) were boys and 8460 (44%) were girls. The prevalence of obesity at baseline (at 5-7 years of age) was 5.9%. After 4 years, the obesity prevalence increased to 7.5%. Among the 5.9% obese children in 2014, only 35.1% remained to be obese in 2018, whilst 18% overweight students became obese after 4 years. Poorer baseline physical fitness level, as indicated by lower overall and individual fitness z-scores, was associated with being obese 4 years later. However, among those who were obese at baseline, the additional of baseline physical fitness level did not add predictive value on the persistence of obesity 4 years later

Conclusions

The majority of obese junior primary students were not obese on follow-up 4 years later. Early referral of all obese junior primary school students may not be necessary as most of them would become non-obese after few years. Baseline physical fitness level did not add predictive value on the persistence of obesity. Future studies looking into the prognostic factors influencing the natural history of obese children would be needed. This would provide further information in the planning of childhood obesity program, targeting the most high-risk group. Children who are predicted to be at high risk of being persistently obese should be targeted for early interventions.

ACCEPTANCE OF NURSING STAFF IN NEONATAL UNIT ON USING BREAST MILK FOR ORAL CARE

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Background

It is known that breast milk can provide numerous nutritional and immune factors, such as oligosaccharides, lactoferrin and sIgA, which enhance babies' growth and protect them from infection. However, if the hospitalized baby is Nil by Mouth (NPO), he cannot be benefited. Oral immune therapy is the usage of breast milk in oral care aiming to provide an immune protection for babies, even those who are NPO. Before this study, oral care practice for non-oral fed babies was varied among nursing staffs in Kwong Wah Hospital (KWH) neonatal unit. Some nurses performed oral care with sterile water, while the others used Normal Saline. Also, the frequency of oral care practice varied, which included once or Q4H or just when necessary per shift.

Aims and Objectives

Our study aims are to introduce an evidence based practice, i.e. oral immune therapy, to nursing staffs and standardize the oral care practice in KWH neonatal unit. With knowledge sharing, it was expected that nurses would be motivated by the value of new practice and develop self-confidence to adopt and implement oral immune therapy, i.e. higher practice rate on using breast milk for oral care. Ultimately, the patients' health outcome could be enhanced.

Interventions

1. Distribution and collection of Pre& Post-study questionnaires to collect baseline assessment and evaluation on current nursing practice in oral care for neonates in the unit.
2. Creation of newsletter and distribution via intranet to nurses
3. Provision of 1-hour sharing session with demonstration video and live demonstration
4. Establishment of instruction in oral immune therapy and posting in area where nurses usually prepare milk feed for neonates
5. Establishment of a leaflet to parents
6. Data collection on documentation of oral care from daily chart records

Results

Questionnaires were collected from 45 nursing staffs and daily chart records of 18 neonates were reviewed. 100% of our targets claimed that they would provide oral care for neonates every three or four hours. Before the study, only 7% of our nursing staffs knew about oral immune therapy and could list one benefit while 100% of them could list at least one benefit after the interventions. Among them, 73% (33 out of 45) could correctly point out three benefits. When breast milk is available, compared with zero usage before the study, usage of breast milk in oral care weighed 94.8% after the interventions.

Conclusion and Recommendation

Our nursing staffs were equipped with knowledge and skill in oral immune therapy which is a safe practice and easy to implement. The study brought a behavioural change of them in oral care practice. Parent education and involvement in oral care is recommended.

MECHANISMS UNDERLYING THE EFFECTS OF SCHOOL-BASED INTERNET INTERVENTION FOR ALCOHOL DRINKING BEHAVIOURS AMONG CHINESE ADOLESCENTS

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Objectives

Underage drinking is an important public health problem both locally and globally. Conventional prevention/intervention relies on unidirectional knowledge transfer such as mail leaflets or health talks which showed mixed results in changing the target behaviour. Previously we conducted a school internet-based intervention which was found to be effective in reducing alcohol use among adolescents, yet the underlying mechanisms have not been properly investigated. This study therefore examined the mechanisms that explain how the intervention produced a change in alcohol drinking behaviours among Chinese adolescent as observed in our previous clustered randomised controlled trial (RCT) study.

Methods

This is a cluster randomised controlled trial with parallel group design. Participating schools were randomised to the Internet intervention or the conventional health education group (control) with 1:1 allocation ratio. Secondary 1–3 students of the participating schools were enrolled in this study. The Internet intervention was a web-based quiz game competition, in which participating students would answer 1,000 alcohol-related multiple-choice quiz questions. Conventional health education group received a promotional package on equivalent alcohol-related knowledge. The participants' alcohol-related attitude, knowledge, and perceived behavioural control were self-reported before the intervention (baseline) and one month and three months after the intervention.

Results

Our RCT results showed that participants in the Internet group were less likely to drink (risk ratio [RR] 0.79, $P<0.01$) as well as in lesser amount (β -0.06, $P<0.05$) compared to those in the control group at both post-intervention follow-ups. Within the intervention group, regression analyses showed that high quiz scorer had greater improvement in alcohol-related knowledge (β 0.28, $P<0.01$) and attitude (β -0.26, $P<0.01$) at 1 month after intervention, which in turn increased their perceived behavioural control against alcohol use (β 0.10 & -0.26, both $P<0.01$). Attitude, compared to knowledge, was found to be a stronger contributor to the intervention effect on perceived behavioural control.

Conclusions

Our internet-based intervention has demonstrated effectiveness in reducing the risk of underage drinking when compared with the conventional health education. Our study results further showed attitude to be a more important factor than knowledge in changing health-related behaviour. This has important implication for future prevention/intervention on underage drinking problem.

EFFECTIVENESS OF AN INTEGRATIVE BODY-MIND-SPIRIT GROUP INTERVENTION IN IMPROVING THE SKIN SYMPTOMS AND PSYCHOSOCIAL WELL-BEING IN CHILDREN LIVING WITH ATOPIC DERMATITIS: A RANDOMIZED- WAITLISTED CONTROLLED TRIAL

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Objective

The symptomatology of atopic dermatitis (AD) imposes heavy physical, phycological, and social burdens on children, yet their psychosocial needs have been commonly ignored in the AD management. Evidence of the psychosocial effects of psychosocial interventions on childhood AD is thin. The current study aimed to examine the effects of a customized Integrative Body-Mind-Spirit (IBMS) group intervention on both physical, phycological, and social outcomes of children with AD.

Methods

A randomized-waitlisted controlled trial was conducted. Children aged 6-12 who have been diagnosed of AD and their parents were recruited. Parent-child dyads were randomized to either the IBMS group or waitlisted controlled (WLC) group. Children and their parents attended 6-session (18 hours) workshop with treatment components based on the IBMS Intervention Model. The group intervention was conducted in parallel format, in which children and parents will attend independently. Outcome measures included the severity of AD, generalized and social anxiety symptoms, emotion regulation, self-esteem, quality of relationships with parents, and dermatology-specific quality of life (QoL) at preintervention (T0), postintervention (T1) and 5-week postintervention (T2).

Results

Data from 113 out of 163 randomized participating children were analyzed: 58 in the IBMS group and 55 in the WLC group, with no differences in baseline measures. Children in the IBMS group displayed significant decrease in the severity of AD, generalized anxiety and social phobia, and improvement in emotion regulation as compared with the WLC group. No significant difference on self-esteem, quality of relationships with parents, or dermatology-specific QoL between the two groups was found.

Conclusion

With a rigorously designed evaluation, the present study found that the IBMS parallel-group intervention based on a holistic perspective and Eastern philosophies on health and well-being was effective in improving skin symptoms and psychosocial well-being among 6-12-year children living with AD. Future research needs to customize this IBMS intervention to other developmental stages of children with AD in other geographical contexts for benefiting more population.

DEVELOPMENT AND VALIDATION OF THE HONG KONG EARLY CHILDHOOD DEVELOPMENT SCALE - SHORT FORM (HKECDS-SF)

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Background

Accurate assessment of early childhood development is essential for both clinical and research use. While there are well-used direct assessments of early childhood development in Hong Kong, they are often too long to be used in population-based large-scale studies. This study aims to develop and validate a brief direct assessment ('Short Form') based on the Hong Kong Early Childhood Development Scale (HKECDS).

Methods

This is a cross-sectional study. Purposeful sampling of three kindergartens were recruited to represent a wide range of socioeconomic background. Trained research assistant conducted the HKECDS (283 sub-items). Children's sociodemographic information was also collected. Iterative Rasch analysis was conducted to select items from the HKECDS to ensure good reliability and validity in the Short Form.

Results

A total of 144 participants were recruited from three kindergartens. The original 283 subitems in the HKECDS have undergone the iterative Rasch model analysis. The fitting statistics have been stablished after 4 iterations of item selection, resulting in a total of 99 subitems (7 for personal and self-care, 12 for language, 12 for school readiness, 13 for cognitive, 12 for gross motor, 8 for fine motor, 13 for health and safety, 7 for moral, and 15 for society and environment), taking on average 20 minutes to complete. The Short Form has excellent criterion validity against the HKECDS long form (correlation 0.97). The Short Form has moderate-to-strong correlation (0.48–0.77) with children's biological age and district-level socioeconomic status (Cohen's d 0.25, $p<0.0001$), which are comparable to the HKECDS. The Short Form have slightly lower, but still excellent, person separation reliability (0.97) compared with the HKECDS (0.99).

Conclusions

The Short Form of HKECDS is a brief instrument with excellent psychometric properties.

ELECTRONIC DEVICE USE IN EARLY CHILDHOOD: HOW DOES IT AFFECT CHILDREN'S PSYCHOSOCIAL HEALTH?

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Objectives

Electronic devices have become an essential part of our lives. Various reports have highlighted the alarming usage of electronic devices at early ages and its long-term developmental consequences. More sedentary screen time was associated with increased adiposity, worse cognitive and motor development and psychosocial health. Apart from the problems caused by children's own screen time, parents today are often paying less attention to their children due to hand-held device. Some anecdotes suggest that distracted parenting has negative impact on parent-child relationship. This study examined whether distracted parenting detrimentally affected parent-child activities which may in turn impair children's psychosocial health.

Methods

In 2018/19, we recruited a cohort of preschoolers from 32 local kindergartens in Tin Shui Wai and Sham Shui Po for a 5-year programme aiming to build stronger foundations for children from disadvantaged backgrounds through an integrated support model involving medical, education and social service sectors. A comprehensive set of questionnaires were used to survey parents on their frequency of being distracted while parenting and their frequency of learning and recreational activities with children. Furthermore, they were asked to report children's screen time amount and their psychosocial problems. Mediation analyses were performed to test the direct and indirect effects of electronic device-distracted parenting on children's psychosocial problems.

Results

This study recruited 873 children (448 females and 425 males, average age: 3.42±0.35). Longer screen time was associated with more psychosocial difficulties (Adjusted B=0.37, 95%CI: 0.12 to 0.62, p=0.004). Children's screen time positively correlated with electronic device-distracted parenting (r=0.369, p<01).We also found that electronic device-distracted parenting was associated with more hyperactive/inattentive problems (Adjusted B=0.66, p<0.01), fewer prosocial behavior (Adjusted B=0.74, p<0.01), and more emotional symptoms (Adjusted B=0.61, p<0.001) in children. Further analyses showed that electronic device-distracted parenting exerted influences both directly and indirectly through parent-child interactions but to different extent depending upon the outcome under investigation (38.8% for hyperactivity/inattention, 31.3% for prosocial behavior, and 15.6% for emotional symptoms).

Conclusion

We found that parents' use of devices and children's own screen time both have negative effects on children's psychosocial health. It is important for parents to set "device-free times" each day so as to ensure enough relaxed down time for connecting with children and responding to their needs.

PREVALENCE OF AMBLYOPIA AND STRABISMUS IN HONG KONG: HONG KONG CHILDREN STUDY

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Purpose

To determine the prevalence of amblyopia and strabismus, and report on the refraction and socioeconomic factors with amblyopia among school children in Hong Kong.

Methods

The Hong Kong Children Study, a population-based study, was conducted in children aged 6-8 years old in Hong Kong using an age-stratified random sampling procedure. A total of 4,273 children were recruited. Comprehensive eye examinations were performed by a team of optometrists and ophthalmologists, using standardized study protocols including cycloplegic auto-refraction, best corrected visual acuity etc.

Results

Amblyopia was present in 68 children, including 25 anisometropic, 7 strabismic and 7 combined strabismic/anisometropic amblyopia. The prevalence of amblyopia had no statistical differences in gender (p=0.167), but significant statistical differences between different age groups (p=0.003). Strabismus was found in 320 children, with no statistical differences in gender (p=0.429) and age (p=0.417). Among these, 12 had concomitant esotropia, 50 had concomitant exotropia, 63 had intermittent exotropia and 10 had pure vertical strabismus. In multivariate analysis, amblyopia was significantly associated with hyperopia, astigmatism and anisometropia. Children who were newly diagnosed with amblyopia were more likely to come from family with low paternal education level (P=0.041), and where they lived in public housing or subdivided flats (P=0.019).

Conclusion

The prevalence of amblyopia and strabismus was suboptimal despite of a good vision screening service in Hong Kong. Refractive error is one of the risk factors for amblyopia. Children newly diagnosed with amblyopia were more likely coming from lower socioeconomic backgrounds. Resource allocation in vision screening services should be emphasized for particular group of population.

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PRP34	**IMPROVING METHOD FOR DETERMINING THE INSERTION LENGTH OF ORO-GASTRIC TUBE IN LOW BIRTH WEIGHT INFANTS** *MY Chan, CC Shek, T Kwong, M Lee, HL Liu* *Department of Paediatrics and Adolescent Medicine, Princess Margaret Hospital*	76
PRP35	**USING A SMART PHONE APPLICATION TO PROMOTE NURSE-LED ASTHMA EDUCATION PROGRAM FOR CHILDREN WITH ASTHMA AND THEIR FAMILY: A FEASIBILITY STUDY** *SK Ng[1,2], AWK Chan[2], JPC Chau[2], TY Li[1], MY Shek[1], JCL Wong[1], PK Ma[1]* *[1]Department of Paediatrics and Adolescent Medicine, United Christian Hospital, Hong Kong* *[2]The Nethersole School of Nursing, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong*	77

HIGH DIAGNOSTIC YIELD BY WHOLE EXOME SEQUENCING IN A COHORT OF PATIENTS WITH MOVEMENT DISORDERS AND / OR PROGRESSIVE SPASTICITY – POSSIBLE TARGETED TREATMENT IMPLICATIONS AND A WAY TO PRECISION MEDICINE

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Background

Movement disorders are a group of heterogeneous neurological diseases including hyperkinetic disorders with unwanted excess movement and hypokinetic disorders with reduction in the degree of movement. Spasticity, though not being defined as a movement disorder, is a type of motor disorder occasionally admixed with movement disorders. Previous investigation on the underlying genetic causes of movement disorders in paediatric cohorts is not found in Asian countries. The objective of our study is to investigate the genetic causes of a cohort of Hong Kong paediatric patients with movement disorders and/ or progressive spasticity by whole exome sequencing and review the potential treatment implications.

Methods

We studied a cohort of 30 patients who have paediatric-onset movement disorders and/ or progressive spasticity with unrevealing etiologies after extensive neurometabolic investigations including lumbar puncture. Patients highly suspected to have neurometabolic diseases such as mitochondrial diseases were excluded as a different disease category. Whole exome sequencing was performed in local settings of our department and oversea laboratory (Genome Diagnostics Nijmegen). Rare variants with population frequency ≤ 1% were interrogated for pathogenicity based on the ACMG guideline. In addition, we have reviewed some recent studies which shed light to the use of targeted therapies against the genetic defects associated with the disorders.

Results

Genetic variants have been identified in 13 patients (43%) in our cohort. Five patients presented with dystonia were identified with variants in the VPS13D, CTNNB1, PURA and KMT2B genes. Three cases of ataxia were found to have variants in KCNC3, KCND3 and SLC2A1 associated with spinocerebellar ataxia 13, 19/22 and glucose transporter type 1 deficiency respectively. Three patients with progressive spasticity with or without admixed with movement disorders have variants in SPAST and SPG11 leading to spastic paraplegia 4 and 11 respectively. A patient with an initial diagnosis of dystonic cerebral palsy was identified with a GNAO1 variant associated with GNAO1 encephalopathy. Another patient with infantile-onset parkinsonism features, spasticity, episodic attacks of worsening of rigidity and tremor was identified with an ATP1A3 variant leading to a widening of the ATP1A3-related neurological phenotypic spectrum. Recent studies demonstrated some effective therapies against these genetic defects: 1) potassium channel activators for potassium channels (KCNC3) mutations; 2) L-dopa treatment to SPG11 associated neurotransmitter abnormalities and CTNNB1/beta-catenin deficient dystonia; 3) ketogenic diet as the first line treatment for SLC2A1 mutations; 4) globus pallidus interna deep brain stimulation (GPi-DBS) for KMT2B dystonia, with significant improvement in our patient; 5) Tetrabenazine as effective drug for GNAO1 encephalopathy; 6) ATP supplementation for ATP1A3-related neurological disorders. Interestingly, dissection of phenotype-genotype correlation in GNAO1 encephalopathy suggested that different mutations affecting the protein in different ways implicate different treatment strategies.

Conclusion

High diagnostic yield by whole exome sequencing has been shown in our patient cohort. Identification of the genetic etiologies may allow a more effective clinical management using targeted therapies and suggests potential development of precision medicine according to the particular variants identified in movement disorders and/ or progressive spasticity.

COLLAGEN VI AND XII RELATED MYOPATHIES: CLINICAL VARIABILITY AND NOVEL VARIANTS FOUND IN HONG KONG PATIENTS

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Objectives

Mutations in the genes encoding collagen VI alpha subunits (*COL6A1, COL6A2, COL6A3* and *COL12A1*) cause severe Ullrich congenital muscular dystrophy (UCMD), mild Bethlem myopathy (BM) and the intermediate (IM) phenotypes. These were not separate entities but represent a continuous clinical spectrum. We analysed the clinical characteristics and the specific neuromuscular investigations findings of the patients with collagen-related myopathy in Hong Kong.

Methods

This is a retrospective study. The clinical, histological, radiological and genetic characteristics in 12 patients with collagen-related myopathy confirmed with variants in the *COL6A1, COL6A2, COL6A3* and *COL12A1* genes were reviewed and illustrated.

Results

Among 12 patients with collagen-related myopathies, 4 (33.3%) patients had the phenotype of typical UCMD, 3 (25%) patients showed IM phenotype and 5 (41.7%) patients had the BM phenotype. The mutations in *COL6A1* (n=5), *COL6A2* (n=4), *COL6A3* (n=3) and *COL12A1* (n=1) included 7 missense variants, 1 nonsense variant, 1 frameshift variant, 1 in-frame deletion, 1 deep-intronic pseudo-exon inserting variant and 2 variants destroying the splice sites leading to exon skipping. Eleven variants (11/13, 84.6%) are dominant negative, of which 10 are de novo, and 2 variants are autosomal recessive. For the 12 variants identified in collagen VI gene in 11 patients, majority (10/12, 83.3%) are located at THD and 2 are located at C-terminal. Three novel variants have been found in the patients including an in-frame mutation [c.1084_1092del, p.(Ser362_Gly364del)] and a missense mutation [c.811G>C, p.(Gly271Arg)] located at THD of COL6A2, both leading to UCMD phenotypes, and a truncating variant [c.9113dupC, p.(Gly3039argfs*7)] of *COL12A1* leading to BM phenotype. Those patients with muscle biopsies had findings showing distinct pathological features. Muscle MRI studies also revealed selective pattern of leg muscle involvement.

Conclusions

Collagen-related myopathy with characteristic features are not uncommon in Hong Kong. We found the dominant negative mutations in the THD of the three collagen VI genes in our patients, with a spectrum of mild to severe presentation, are the most common mutations associated with this condition. Genotypic-phenotypic correlation is found in some but not all cases. Muscle MRI and muscle biopsy gives diagnostic clues to guide genetic diagnosis. Diagnosis of deep intronic pseudo-exon inserting variant could be challenging.

EVALUATING THE DIAGNOSTIC IMPACT AND COST OF RAPID WHOLE-EXOME SEQUENCING FOR RARE GENETIC DISEASES IN HONG KONG

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Background

Most rare diseases have a genetic component and are often chronically debilitating. Our recent publication revealed that 1 in 67 people in Hong Kong (HK) has rare disease (1.5% of the population). Local clinicians need to send samples to overseas laboratories as clinical whole exome sequencing (WES) is not available. The turnaround time (TAT) typically takes 2-4 months from test request to final reporting, making it impractical for urgent cases. Rapid WES (rWES) can provide timely molecular diagnosis and has the potential to initiate or alter medical or surgical management (clinical utility) promptly and profoundly. This may avoid unnecessary investigations and hospitalization, prevent mortality, and save costs in the healthcare system.

Method

Patients with suspected monogenic disorders who i) were critically ill in intensive care unit (NICU/PICU) urging for a diagnosis; or ii) would benefit from a timely diagnosis to support decision in clinical management; or iii) required prenatal diagnosis for an on-going pregnancy; or iv) were referred by clinicians; were prospectively recruited from Queen Mary Hospital. We aimed to achieve a rapid TAT of 14 days. Diagnostic and clinical utility of rWES were assessed. Related costs were evaluated when matched controls with standard of care genetic testing in the same setting were available for comparison. Cost analysis is on-going and is completed in four patients where matched controls were available.

Results

rWES was offered to 80 families from 2016 to 2019, of which 34% (27/80) were recruited from ICUs. The overall diagnostic yield was 33% (26/80), with a median TAT of 11 days (range: 4-86 days). Clinical management changed in 88% of diagnosed patients (23/26), including surgical and interventional procedures to be performed or contraindicated (31%), referral to specialists (31%), surveillance (27%), and palliative care and termination of pregnancies (19%). In those four patients where matched controls were available, it was estimated that the length of stay was reduced by 566 days; total healthcare cost from avoidance of planned surgical and interventional procedures and reduced length of stay was estimated to save at least UK£583,399 (HK$5,833,990).

Conclusion

This study illustrates that rWES in HK is feasible, has high diagnostic and clinical utility, is cost saving, and is comparable to international standards. Cost analysis for rWES is challenging as each rare disease is individually rare and a control diagnosed by conventional methods is even rarer. In addition, each genetic condition has unique clinical features and may not be obvious in neonatal period. rWES merits consideration as a routine clinical diagnostic test in the HK public healthcare system.

Acknowledgment

We would like to thank the Health and Medical Research Fund, The Society for the Relief of Disabled Children, and The Edward and Yolanda Wong Fund for the support.

CONGENITAL MEGAPREPUCE: IT IS NEITHER PHIMOSIS NOR MICROPENIS, MORE THAN BURIED PENIS, AN UNDER-RECOGNIZED CONDITION IN HONG KONG

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Background

The condition of congenital megaprepuce(CMP) was first described in 1994. It was until the last decade that more case series were published in literature. CMP is a subtype of buried penis characterized by excessive redundancy and ballooning of the inner prepuce in the presence of stenotic preputial ring. Patients typically present with difficulty in voiding, poor urinary stream and pooling of urine in the enlarged preputial sac. To date, CMP remains largely unheard of in our medical community.

Methods

We conducted a retrospective review on all consecutive boys who underwent surgical repair of CMP in a single tertiary centre over the period of Jul 2012 to March 2019. We collected data on demographics, diagnosis on referral and at the first paediatric surgical visit, surgical repairs and outcomes.

Results

Twenty four patients were identified for the study. Provisional diagnoses were given on 22/24 referrals and were phimosis(n=12; 50%), buried penis(n=4; 17%), micropenis(n=2; 8%), curved penis(n=1; 4%), urethral diverticulum(n=1; 4%), and CMP(n=2; 8%). Correct diagnosis of CMP was made in 13/24(54%) patients at the first paediatric surgical visit. Patients underwent surgical repairs at the median age of 36 months(range 4month-12years). There was no intraoperative complication while postoperative wound complications developed in two patients and both were managed conservatively. At a median follow-up of 13months, all patients had normal voiding function while good/satisfactory cosmetic outcome was achieved in 21/24(88%) patients.

Conclusions

CMP requires early surgery to restore normal urination and improve cosmesis. Awareness of this condition needs to be enhanced particularly among the general practitioners and paediatricians to avoid delay in proper referral. Accumulation of surgical experience in this new entity has improved the surgical outcomes lately.

Remarks

A video on the typical clinical presentation of congenital megaprepuce will be shown if accepted for oral presentation.

HOW COMMON IS MOSAICISM? THE 9 YEARS-EXPERIENCE IN A UNIVERSITY AFFILIATED GENETIC CLINIC IN HONG KONG

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Background

Mosaicism refers to the co-existence of 2 or more genetically distinct cell populations in an individual. It can be somatic, gonadal or gonosomal. They arise from de novo mutations, which can occur during gametogenesis or postzygotic. It is clinically important as i) de novo mutations are associated with neurodevelopmental disorders, ii) mosaicism affects how the disease expresses, and iii) recurrence risk varies with the type of mosaicism. In this study, we aim to investigate how common mosaicism is in local patients.

Method

We perform a retrospective review from 2010 to 2019 on all patients evaluated by the HKU Clinical Genetic team. We provide genetic evaluation and counselling for children but also adult patients in prenatal and preimplantation genetic diagnosis. A total of 2700 patient records have been reviewed to identify genetic mosaicism using various cytogenetic and molecular technologies.

Results

We identified evidence of mosaicism in 39 subjects including 6 from prenatal diagnosis. In 3, parental mosaicism is evident while 36 are mosaicism in the patient. Fifteen are identified cytogenetically, including Turner syndrome (n=7), Pallister Killian syndrome (n=2), and 1 each for trisomy 8, trisomy 9, Klinefelter syndrome, Down syndrome, 9p deletion and triple X. The other 24 are molecular causes, including PIK3CA-related overgrowth spectrum (n=13), pigmentary mosaicism (n=2), PIK3CA-related autism (n=2), and 1 each for NF2-associated atypical meningioma, NEMO-associated Incontinentia Pigmenti, PTPN11-associated Juvenile Monomyelocytic leukaemia, UPD 11-assocoiated Beckwith Wiedemann syndrome, EYA1-associated Brachio-Oto-Renal syndrome, CDKL5-associated epilepsy and KRAS-associated Encephalo Craniocutaneous Lipomatosis. Other than these, there are also 3 cases that are clinically suspected but not yet genetically confirmed. Evidence of mosaicism is seen in 1.4% cases (39/2700) we have seen.

Conclusions

Recent large cohort studies of neurodevelopmental disorders showed mosaicism is present at 3.5%, 5.1% and 4.2% in epilepsy (PMID:28837158), autism(PMID:27632392) and intellectual disability (ID) (PMID:28867142) respectively. In our cohort, the percentage of mosaicism is 1.4% and is likely underestimated. Detection of mosaicism can be improved by i) lowering the detection threshold in our bioinformatic pipeline, ii) collecting multiple specimens from patients/parents other than blood, and iii) performdigital PCRor high depth NGS using molecular barcoding or molecular inversion probes.

Acknowledgment

ACY Lui is a year 3 Bachelor of Medicine and Bachelor of Surgery (MBBS) student in HKU. This work represents part of the coursework for his enrichment year. We would like to thank all the patients and their families for providing invaluable information for this study.

A COMPOUND HETEROZYGOUS MUTANT OF COQ8B GENE IN A CHINESE GIRL PRESENTING NEPHROTIC SYNDROME FAST INTO CHRONIC KIDNEY DISEASE STAGE 5

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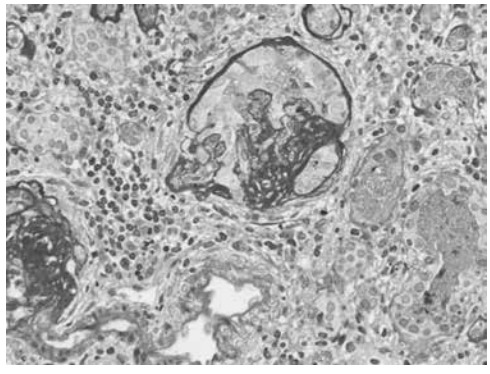
COQ8B gene is located at 19q13.2 and encodes ADCK4 which participant into coenzyme Q10 (CoQ10) biosynthesis. Mutations in COQ8B resulted in reduced CoQ10 levels and reduced mitochondrial respiratory enzyme activity. COQ8B gene mutants can cause steroid-resistant nephrotic syndrome type 9.

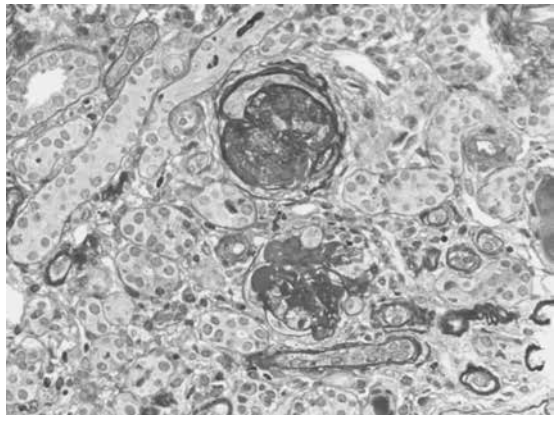
Here, we describe a case diagnosed with nephrotic syndrome caused by COQ8B compound heterozygous mutant.

A 6-year-old Chinese girl presented with typical nephrotic syndrome which was resistant to steroid therapy. Renal histology reveals 29/32 globular sclerosis glomeruli and 3/32 collapsing focal segmental glomerulosclerosis. Next generation sequencing for whole exons shows her compound heterozygous mutant of COQ8B gene which are p.D250H and p.Q158X inheriting from her parents respectively. It took only 3 months from her obvious edema to chronic kidney disease stage 5. Now she needs maintenance peritoneal dialysis to maintain homeostasis.

Mitochondrial-related nephrotic syndrome is always steroid-resistant and could be cured by high dosage of CoQ10. To reverse the bad outcome like CKD5, gene sequencing following CoQ10 repletion is emergent. Considering time consumption of gene sequencing, availability and safety of high dosage of CoQ10, it might be reasonable to prescribe CoQ10 with typical renal histology without the result of gene sequencing.

Key words
nephrotic syndrome, mitochondria, CoQ10, gene sequence.





THE *KLHL40* C.1516A>C IS A CHINESE-SPECIFIC FOUNDER MUTATION IN CAUSING NEMALINE MYOPATHY 8

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Background

Autosomal recessive or compound heterozygous mutation in *KLHL40* is one of the causes of severe nemaline myopathy (nemaline myopathy 8, phenotype MIM number 615348). This severe form of nemaline myopathy is characterized by congenital fetal akinesia/hypokinesia, fractures, respiratory failure, and swallowing difficulties. Patients usually pass away in infancy. We identified five patients from four families of non-consanguineous Chinese were affected by nemaline myopathy 8. All were found to carry at least one pathogenic *KLHL40*:c.1516A>C p.(Thr506Pro) variant, and hence we hypothesized that the c.1516A>C variant is a founder mutation in Chinese.

Methods

The prenatal history and postnatal outcome of these four families were retrieved from the medical records. Three patients included in this study have been published recently (Lee et al. 2019).Using the Infinium OmniZhongHua-8 v1.4 BeadChip, we examined the region of homozygosity on three patients carrying the homozygous c.1516A>C mutation.

Results

Prenatal history of five pregnancies can be retrieved. Common prenatal features included reduced fetal movement (n=3), clubfoot (n=2) and polyhydramnios (n=2). Two pregnancies were terminated in view of the abnormal ultrasound findings, including one family that had two pregnancies affected where the first was live-born while the second pregnancy was terminated. There were four live-born and their clinical features were compatible with typical nemaline myopathy 8. The length of survival ranged from 49 days to 17 months with respiratory failure or infection being the principal causes of death. Haplotype and region of homozygosity analyses showed a shared haplotype block of >1cM spanning over the c.1516A>C. This suggests that the c.1516A>C variant is a Chinese-specific founder mutation.

Conclusion

The *KLHL40*:c.1516A>C variant is a Chinese-specific founder mutation. Together with other reported cases in the literature, it is the most common molecular cause of nemaline myopathy 8 in the Chinese.

Acknowledgment

This project is supported by the Society for the Relief of Disabled Children.

FUNCTIONAL OUTCOME IN CHILDREN WITH SPASTIC DIPLEGIA: SIX TO TWELVE YEARS POST SELECTIVE DORSAL RHIZOTOMY

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Background and Objective(s)

Selective dorsal rhizotomy (SDR) is a procedure for reducing spasticity in young children with spastic diplegic cerebral palsy (CP). Studies on long term benefit on functional outcomes, community participation and quality of life were limited. This study aimed to examine the long term functional outcomes, if any, in individuals who had undergone SDR.

Study Participants & Setting

This is a retrospective cohort study. Individuals with confirmed diagnosis of spastic diplegic CP were recruited from Child Assessment Service, Department of Health, Hong Kong, China. Those who were 6 to 12 years post-SDR were included. Age, gender, range of intelligence quotient and Gross Motor Function Classification System (GMFCS) level matched individuals with spastic diplegic CP who had not undergone SDR were recruited as controls. Patients with moderate intellectual disability or worse or those of GMFCS level worse than III were excluded.

Materials/Methods

SDR was performed by a single surgeon in a single centre. Intraspinal nerve root division over the cauda equina from L1/2 to S1/2 levels were performed. No more than 60% of the dorsal rootlets were cut. Outcome measures included physical level as assessed by joint angles and muscle tone of lower limb muscles. Hip adductors, hamstrings and gastrocnemius were assessed by Modified Ashworth Scales (MAS); muscle power of hip abductors, hip extensors and knee extensors was assessed by Medical Research Council Scale. Functional level was assessed by Gillette Functional Assessment Questionnaire, Edinburgh Visual Gait Score and 6-minute walk test (6MWT) following standardized protocol (American Thoracic Society, 2002). For the physiological level, all participants wore a mask connected to breath by breath gas analyzer (Oxycon Mobile, CareFusion, CA, USA) to measure the level of oxygen consumption at rest (5 minutes before 6MWT), during and 5 minutes after 6MWT to detect the level of oxygen consumption. Quality of life was evaluated by Cerebral Palsy Quality of life Questionnaire-Teen (HK version). All data were compared by independent t-test.

Results

When compared with control group(n=12), individuals post-SDR(n=15) demonstrated a significantly better range of ankle dorsiflexion in knee extension by -5.7±2.1 degree (mean±SEM) (95%CI:-10.1 to -1.2). However, no between-group differences were observed in any of the functional outcomes, physiological outcomes or quality of life.

Conclusions/Significance

SDR can provide long term reduction in spasticity with no major complications. We were not able to draw a conclusion that SDR improves the long term functional outcome based on the present study. However, it may not be adequate to define outcome by means of mean group differences to measure the effectiveness of a single procedure in a complex disease like spastic diplegia.

CLINICAL UTILITY OF WHOLE-GENOME SEQUENCING FOR CYTOGENETICALLY BALANCED CHROMOSOMAL ABNORMALITIES IN GENETIC DISEASES

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Background

Balanced chromosomal abnormalities (BCAs) involve changes in localization or orientation of a chromosomal segment without visible gain or loss of genetic material. It cannot be detected through chromosomal microarray analysis. BCAs occur at a frequency of 1 in 500 newborns and are associated with a higher risk of multiple congenital anomalies and/or neurodevelopmental disorders, especially when there is a de novo change. Whole genome sequencing (WGS) has the advantage of higher resolution of detecting breakpoints at single nucleotide level. The application of this new technology for BCAs can improve the detection of the underlying genetic mechanism of the cause of paediatric patients.

Methods

In this pilot study we recruited 10 families with fetuses/ babies affected by de novo BCAs from 2008 to 2018. These cases were retrospectively identified from the Prenatal Diagnostic Laboratory, Tsan Yuk Hospital with archival DNA or frozen cells for DNA extraction. The cases had no known teratogenic exposure and major structural anomalies on prenatal ultrasound. WGS was performed using Illumina pair-ended short read sequencing.

Results

Of these 10 families, 8 reciprocal translocation and 2 inversion were identified by conventional G-band karyotype analysis. Pair-ended short read WGS successfully identified the BCA and their breakpoints in all 10 cases with improved resolution to single nucleotide level. In 5 of the 10 cases, extra DNA was available for validating the WGS findings using orthogonal methods including Sanger sequencing (n=4), Nanopore sequencing and PacBio sequencing (n=1). For each case, we assessed bioinformatically for the presence of cryptic deletion/duplication, gene disruption or Topologically associating domain (TAD) disruption. Gene disruption was identified in 2 cases leading to definitive diagnoses for two families with proband affected by: 1) X-linked epilepsy (disruption of PCDH19) and 2) microcephalic osteodysplastic primordial dwarfism type II (MOPDII) (a SNV and gene disruption on PCNT by inversion with phase analysis).

Discussion and conclusion

Compared to karyotyping, WGS can precisely detect BCA breakpoints down to nucleotide level and identify disrupted disease-causing genes. This information allows accurate and personalized disease risk prediction for BCAs; otherwise, the family is given a general 6-9% risk for neurodevelopmental problems later in life when a de novo BCA is identified. Moreover, with accurate breakpoint identification in WGS, the geneticist is able to further predict the disease outcome, for instance, extremely high risk of developing X-linked epilepsy in a female baby and early identification of the predominant skeletal disease in MOPDII in the 2 aforementioned cases identified with gene disruption. These specific findings from WGS give further advantage over traditional karyotyping, which allows the practice of personalized medicine.

Acknowledgements

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GENETIC VARIANTS INFLUENCING TELOMERE FUNCTIONS CONTRIBUTE TO HEALTHY AND LONGER-LIFE EXPECTANCY IN HONG KONG POPULATION

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Hong Kong population is continuing to be the longest life expectancy around the world. Hong Kong men could expect to live to 81.24 years while women had and expected lifespan of 87.32 years. Researches revealed reasons that contribute to Hong Kong's leading life expectancy including easy access to health care units, comfortable weathers and low proportion of smokers, allowing HongKongers to live in a healthier lifestyle. However, genetics can also be a significant factor in contributing healthiness and longer-life expectancy in which corresponding genetic data are missing in our population. In this study, we aimed at illustrating how the genetic factors influencing the telomeric length, an age- and stress-related biomarker, reflecting the associated biological benefits that give rise to long life expectancy in HK population.

Eight previously identified genetic variants related to life expectancy were selected for investigations. Genotyping were performed on 4,932 Hong Kong healthy blood donors' leukocytic DNA by Illumina 610-Quad Human Beadchip array. In silico analysis were carried out in three other ethnicity groups, Japanese, British and Kanyan for genetic comparison with the sequenced HK genotyping data. MAF were retrieved from Geography of Genetic Variants Browser (1000 genome, hg19) and correlates with the corresponding populations median age. Telomeric length which was expressed in relative T/S ratio were measured by real-time PCR method in a selected similar age groups' DNA.

Two genetic variants strongly followed the median age pattern among all 4 chosen ethnicity groups. Beneficial alleles "T" in rs10936599 and "A" in rs9420907 were found to be dominant in Japanese and HongKongers when compared to British and Kenyan, highly correlated and validated the identified genetic variants to longer life expectancy. Majority of our population carries the beneficial alleles with 53.39% and 98.80% in rs10936599 and rs9420907 respectively. Around 2 million HongKongers was estimated carrying both beneficial alleles in these 2 genetic polymorphisms. Subsequent relative telomeric length measurement in the beneficial genotype carriers' (TT+AA) DNA revealed 30.61% ± 1.90% longer T/S ratio than individuals carrying the non-beneficial genotype (CC+AC), indicating the target genetic variants influence through telomeric functions and predicted to be responsible for the cellular healthiness to an individual.

Leading life expectancy in our population can be contributed by advantageous genetic factors disposed in our genome, which gains efficiency in telomere manipulation or maintenance abilities, results in more buffering capacities to cellular stress. This beneficial genetic disposition leads us to stay healthy possibly by strengthening regenerative capabilities or resistance to age-related diseases, leads to longer lifespan. Further investigations will emphasize in the genetic regulations of the target variants to the influencing genes' functions, establishing the biological linkage between healthiness and longevity in our population.

OUTCOME OF SEVERE GROUP A & GROUP B STREPTOCOCCUS DISEASES AT A PAEDIATRIC INTENSIVE CARE UNIT

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Background

Prompt treatment of most childhood infections are associated with good recovery; however, life-threatening complications associated with severe infections may sometime occur together with significant morbidities and mortalities, requiring the need of intensive care supports at a Paediatric Intensive Care Unit (PICU). Group A β-hemolytic streptococcus (GAS) and Group B streptococcus (GBS) are two common pathogens that are associated with many diseases in children. Severe infections as a result of these two streptococci are albeit uncommon but associated with high mortality and morbidity, and often necessitate intensive care support. Therefore, in this study, the experience and outcomes, i.e. mortality and morbidity of severe infections caused by these infectious pathogens, namely Group A β-hemolytic streptococcus (GAS) and Group B streptococcus (GBS) at the PICU of Prince of Wales Hospital (PWH) were reviewed.

Methods

All children admitted to PICU of PWH between October 2002 and May 2018 with laboratory-proven GAS, GBS isolations were included. Demographic data, mortality, length of PICU stay, hospital stay (till discharge or death), complications, specimen site and co-infection, were compared with chi-squared test (for numerical values), Fisher's exact test (valid for all sample sizes, especially when sample sizes are small), or Mann–Whitney U test (for non-parametric data).

Results

(1) There were 19 patients (0.7% PICU admissions) with streptococcal isolations (GAS, n=11 and GBS, n=8). Comparing to GAS, GBS affected infants were younger (median age: 0.13 vs 5.47 years, p=0.0003), and cerebrospinal fluids more likely positive (p = 0.0181). All GAS and GBS were sensitive to penicillin, with majority of GAS sensitive to clindamycin and erythromycin, and half of the GBS resistant to clindamycin and erythromycin. Co-infections were prevalent, but viruses were only isolated with GAS (p=0.024). Isolation of GAS and GBS was associated with nearly 40% mortality and high rates of mechanical ventilation and inotropic supports. All non-survivors had high mortality (PIM2) and sepsis scores.

Conclusion

Severe GAS and GBS infections are rare but associated with high mortality as well as high rates of mechanical ventilation and inotropic supports in PICU. The streptococci are invariably sensitive to penicillin. The high PIM2 and Sepsis scores suggest that prompt recognition of sepsis and timely judicious institution of antibiotics and intensive care support may be life-saving for these devastating infections.

OUTCOME OF SEVERE ENTEROVIROUS INFECTIONS AT A PAEDIATRIC INTENSIVE CARE UNIT

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Background

Most childhood viral infections are not serious, and often associated with mild signs and symptoms; with prompt treatment, most childhood infections are resulting with good recovery. However, life-threatening complications, which associated with severe infections, may sometime occur together with significant morbidities and mortalities. This requires the need of intensive care supports at a Paediatric Intensive Care Unit (PICU). The Enteroviruses (EVs) is one of the common viral pathogen found in the childhood period; although more than 90% of infections caused by the Enteroviruses are asymptomatic, or only resulting in a mild undifferentiated febrile illness, severe EVs infections, which associated with high mortality and morbidity, are still alarming, requiring intensive care support. In this study, EVs infection cases at the PICU of Prince of Wales Hospital (PWH) were reviewed, indicating the experience and outcomes, i.e. mortality and morbidity associated with these severe infections.

Methods

All children admitted to PICU of PWH between October 2002 and May 2018 with laboratory-proven EVs isolations were included. Demographic data, mortality, length of PICU stay, hospital stay (till discharge or death), complications, specimen site and co-infection, were compared with chi-squared test (for numerical values), Fisher's exact test (valid for all sample sizes, especially when sample sizes are small), or Mann–Whitney U test (for non-parametric data).

Results

There were 76 patients (2.9% PICU admissions) with EVs isolations. EVs isolation was significantly lengthen the PICU stay in infants (<1 year; Median PICU stay: 4.5 vs 2 days, p=0.047) together with a significantly higher rates of need for ventilatory supports, both intubation ($p = 0.039$) and conventional respiratory support ($p = 0.015$). Moderate mortality (6.6%) was associated with EVs infections, but neurological complications were commonly found in non-survivor, leading to a high rate of needs of anticonvulsant therapies ($p = 0.0011$) together with mechanical ventilatory ($p = 0.0029$) and inotropic supports ($p = 0.0018$). Majority of the non-survivors were presented with a significantly high mortality risk at the time of admission, contributing to a had high PIM2 (53.66%, $p < 0.0001$) and sepsis scores.

Conclusion

Severe Enterovirus infections are rare but associated with high rate of neurological complications, requiring high rate of intensive care supports, by the means of anticonvulsant therapies and mechanical ventilatory and inotropic supports. Although moderate mortality was demonstrated in this study, the high mortality risk, i.e. PIM2 and Sepsis scores in these severe infections are still alarming, suggesting the prompt recognition of sepsis and the associated neurological complications for timely monitoring, treatments as well as intensive care supports to be life-saving for these devastating infections.

AUTOMATED MODULAR BIOREACTOR FOR MESENCHYMAL STEM CELL CULTURE

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Background and aims

Using automated bioreactor to grow cells is an effective way to meet the demand for human stem cells in cell therapy. We designed a system that can save cost, time and space while keeping the in vitro culture contaminant-free. Single-use cell culture bioreactors in the form of hollow fiber filters or fluidized bed reactors have been tested in our modular system to grow human mesenchymal stem cells (MSCs).

Methods

For most of the experiments, a telomerase reverse transcriptase immortalized cell line – hTert-MSC was cultured with medium supplemented with fetal bovine serum (FBS). To culture normal bone marrow MSCs isolated from a healthy donor, a modified recipe that substitutes FBS with human platelet lysate was used instead. MSCs were maintained in the bioreactor for 7-14 **days**, and then tested for their multilineage differentiation potential and immune-modulation properties respectively.

Results

For hollow fiber filter & fluidized bed systems, pre-conditioning of the hollow fiber filter and using optimal medium perfusion rate were two crucial factors for ex vivo cell expansion respectively. The relative metabolic activities by glucose/lactate ratio could be used to monitor the growth and an abnormal ratio would indicate contamination. Cytodex® 1 microcarrier beads attached with MSCs were added to the fluidized bed reactor, the beads were kept in suspension with minimal perfusion rate in order to prevent unwanted shear stress. MSCs grown inside the bioreactor retained normal trilienage differentiation potential and showed no significant difference in modulating T cells under mixed lymphocyte reaction when compare to control, which used a conventional 2 dimensional cell culture system.

Conclusions

This study has demonstrated the flexibility of our modular bioreactor to maintain in vitro human MSCs culture. We could see the potential of this technology for growing other adherent cells for research and clinical purposes.

Acknowledgement

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CLINICAL SEVERITY ASSESSMENT OF RSV INFECTION IN YOUNG CHILDREN

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Introduction

Respiratory syncytial virus (RSV) is one of the major causes of respiratory tract infection (RTI) in infants and young children. The spectrum of the infection varies from mild upper-airway infection to very severe lower respiratory tract infections presenting as pneumonia or bronchiolitis in infants and young children. The viral and host factors determining the severity of RSV infection are still unclear. There is no gold standard for defining clinical severity and despite a number of scoring systems assessing severity, they can be significant subjectivity. Defining the overall severity of the entire illness is more challenging and will often include a degree of clinical judgement.

Objective

To retrospectively assess the severity of the disease in children with RSV infection using overall clinical judgement and to compare the assessment with individual / combined key objective and surrogate markers of severity.

Study design and population

A retrospective study was carried out on in-patients ≤ 5 years old with laboratory-confirmed RSV infection at Prince of Wales Hospital (PWH) between 1 January 2015 and 31 December 2015 identified from the hospital's microbiology databases. Clinical presentation and overall treatment of patients were extracted from the case records and electronic clinical management system and reviewed by two paediatricians and a medical doctor to determine an overall clinical judgement of disease severity: (1) 3-point score (mild/moderate/severe); (2) 10-point score (10 as most severe). Inter-rater agreement among 3 experts was assessed with Fleiss' Kappa and intraclass correlation coefficient (ICC). The associations of objective (clinical presentation and treatment) and surrogate (PICU admission, length of stay) markers for disease severity with the overall clinical judgement on disease severity were assessed by multivariate logistic and linear regressions adjusted for age (months), gender and all variables with p-value < 0.1.

Results

There were 227 paediatric patients aged x to y years (mean age of x years) included in this study, with mean length of hospital stay 3.7 ± 2.6 days and 4% admitted to PICU. Inter-rater agreement of overall clinical judgement on disease severity among 3 experts had a weighted kappa of 0.46 ($p<0.001$) and ICC of 0.68 (95% CI 0.62, 0.73), indicating moderate agreement for both the 3-point and 10-point scores. Major presenting symptoms at admission were cough (99% of all patients), fever, (81%) shortness of breath (30%), wheezing (37%), crepitation (37%) and retraction (23%). For the 3-point scoring, overall clinical judgement of moderate to severity was associated with increase in respiratory rate, retraction and wheeze at admission, supplemental oxygen, intravenous fluid (IVF), and longer hospital stay (all $p<0.05$). For the 10-point scoring, higher score was associated with respiratory distress, retraction, prolonged expiration and lower oxygen saturation at air at admission, and supplemental oxygen, IVF, bronchodilator and mechanical ventilation and longer hospital stay (all $p<0.05$).

Conclusion

Clinical assessment by experts, particularly using the 10-point score, correlated well with clinical parameters and surrogate markers of disease severity. There is no gold standard to assess the severity of RSV infection, so overall scoring by a number of clinical assessors can be considered.

THE SPECTRUM AND RISK FACTORS OF CONGENITAL ANOMALIES OF THE KIDNEY AND URINARY TRACT (CAKUT) IN CHINESE- A FIVE YEAR RETROSPECTIVE REVIEW

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Introduction

CAKUT is increasingly identified by prenatal ultrasound. It constitutes a group of disorder with great impact in clinical practice. CAKUT was found to be a predominant cause of End Stage Renal Disease in Childhood. However, the incidence and natural history of these anomalies are not clear in the local population.

Objective

To study the incidence, the spectrum and outcome of CAKUT diagnosed in a regional center in Hong Kong. Risk factors for the development of CAKUT would also be studied.

Study Design

This is a retrospective review of live births in Queen Elizabeth Hospital, Hong Kong, from 1st January 2011 to 31st December 2015. New-borns with any congenital anomaly was identified. Birth characteristics, including gender, gestation, birth weight, and the number of congenital anomalies are recorded. Maternal factors, including maternal age, pre-existing disease, pre-existing drug history, and complications of pregnancy are reviewed.

Results

From 2011 to 2015, there was 30,869 live birth delivered in Queen Elizabeth Hospital. Among these live births, 345 babies were identified to have some form of CAKUT. Six patients have more than one congenital anomaly of the urinary system. Combinations of the duplex kidney with multicystic dysplastic kidney (MCDK) was the commonest (1.4%) combined anomalies.

Among all these CAKUT, Congenital hydronephrosis was the commonest (83%), followed by Renal Agenesis (5.1%), Renal cyst including MCDK (5.1%), Duplex kidneys (2%), ectopic kidney (1.4%). Other malformations were extreme rare like horseshoe kidney was found 1 in 351, Potter syndrome 1: 351, ARPKD 1: 351, and Renal tumour 1 in 351. Comparing babies with CAKUT and without CAKUT, there was no difference in gestational age and birth weight. However, male baby and babies with higher birth order are more likely to have CAKUT. There was no significant difference between maternal factors in CAKUT and non-CAKUT groups.

PATIENT-DERIVED INDUCED PLURIPOTENT STEM CELLS AND THEIR INDUCTION TO CARDIOMYOCYTES AS A PLATFORM FOR DISEASE MODELLING FOR X-LINKED DILATED CARDIOMYOPATHY

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Background

X-linked dilated cardiomyopathy (XLDCM) is a serious condition caused by abnormalities in the *DMD* gene (dystrophin gene). The affected patients present with early signs of heart failure and deteriorate quickly despite medical treatment resulting in early death. Currently there is no curative treatment and heart transplantation is often required. Interestingly, patients with splice site mutations in intron 1 of the *DMD* gene developed XLDCM, a cardio-specific phenotype with progressive dilated cardiomyopathy but no major skeletal muscles weakness.

Objectives

We study the pathomechanism of the *DMD*-associated XLDCM with mutation in the first exon-intron boundary, through examination of the different dystrophin isoforms expression and the functional characterization of the cardiomyocytes generated from patient-derived induced pluripotent stem cells (iPSCs) and compare the results with a normal control.

Method

We derived integration-free iPSCs from the peripheral blood mononuclear cells (PBMCs) of our XLDCM patient with DMD c.31+1G>A intron 1 splice site mutation. A healthy donor was recruited as normal control. Pluripotency of iPSC clones was confirmed by immunofluorescent staining, RT-PCR and teratoma formation. Patient and control iPSC cell lines were maintained and differentiated into cardiomyocytes (CM) with in-house protocol. The CM generated were pathologically and functionally characterized.

Result

The patient-derived iPSCs pluripotency was confirmed. Cardiomyocytes differentiated from the iPSCs of the patient and the normal control expressed cardiac-specific markers. Decreased expression of dystrophin isoforms in the patient-derived iPSCs differentiated CM is associated with high osmotic fragility to hypotonic stress, as compared with that from normal control.

Conclusion

This XLDCM patient-derived iPSCs model serves as an effective disease platform to study disease mechanisms.

WHAT ARE THE OUTCOMES OF DUPLEX KIDNEYS – A 12-YEAR REVIEW

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Introduction

Duplex kidney, a kidney with two pelvicalyceal systems, is the second commonest CAKUT following hydronephrosis. While most patients remained asymptomatic, some had recurrent urinary tract infections (UTI), or associated renal anomalies requiring surgical interventions. There is no local data regarding the characteristics and outcome of duplex kidneys. Research on local epidemiology is mandatory for counselling and formulating management plans.

Material & Methods

We conducted a retrospective review on patients younger than 18 years old with duplex kidneys diagnosed in Queen Elizabeth Hospital, Hong Kong between 2006–2017. Demographic data, features of duplex kidneys, and outcomes including UTI and necessity for surgical repair were collected. Complicated duplex kidneys were defined as presence of ectopic ureter or ureterocele.

Results

62 patients were included in the study. 5 patients (8.1%) had bilateral duplex kidneys. Ureterocele or ectopic ureter were present in 17.9% of duplex kidneys. Hydronephrosis (APD >/= 5mm) was the commonest associated anomalies (52.2%), followed by vesicoureteric reflux (VUR) (20.1%) and urinary tract obstruction (8.8%). 13 patients (21.0%) received surgical interventions, with 7 requiring partial nephrectomy. Significant predictors for surgery included presence of ectopic ureter ($p<0.001$), ureterocele ($p<0.001$), hydronephrosis in either moieties ($p=0.005$), VUR ($p=0.045$), urinary tract obstruction ($p=0.006$) and history of UTI ($p=0.001$).

20 patients (32.3%) had history of UTI, with median age of first episode at 6 months old. Presence of bilateral duplex kidneys did not increase risk of UTI. Univariate analysis showed that complicated duplex kidneys and upper moiety hydronephrosis were associated with UTI in unilateral duplex patients.

Conclusions

Duplex kidneys were commonly associated with other structural anomalies. These anomalies and UTI increased need for surgical interventions. UTI occurred in one-third of duplex patients, in particular complicated duplex kidneys and upper moiety hydronephrosis. Further research is needed to investigate the role of antibiotic prophylaxis to prevent renal damage.

Keywords

Duplex, CAKUT, Ureterocele, Ectopic ureter

Table 1. Characteristics of patients with duplex kidneys (n = 62)

	Frequency	Percentage
Gender (Male)	34	54.8%
Laterality		
Left	41	66.1%
Right	16	25.8%
Bilateral	5	8.1%
Presentation		
AN screen Duplex kidneys	17	27.4%
AN screen: Other renal abnormalities	8	12.9%
Urinary tract infections	9	14.5%
Other urological symptoms (e.g. PNE)	4	6.5%
Incidental finding	24	38.7%
Outcome		
Urinary tract infections	20	32.3%
Surgical interventions	13	21.0%

AN screen: Antenatal screen; PNE: Primary nocturnal enuresis

Table 2. Features of duplex kidneys (n = 67)

	Frequency	Percentage
Complicated duplex kidney	12	17.9%
Ureterocele	7	10.4%
Ectopic ureter	10	14.9%
Hydronephrosis		
Upper moiety only	11	16.4%
Lower moiety only	15	22.4%
Both moieties	9	13.4%
VUR (Upper moiety)#		
Grade 2	1	2.2%
Grade 3	1	2.2%
Grade 4	2	4.4%
Grade 5	1	2.2%
VUR (Lower moiety)#		
Grade 1	1	2.2%
Grade 3	3	6.7%
Grade 4	2	4.4%
VUR (Moiety not specified)#		
Grade 2	2	4.4%
Grade 4	1	2.2%
Urinary tract obstruction^		
Upper moiety	4	7.0%
Lower moiety	0	-
Moiety not specified	1	1.8%

VUR: Vesicoureteric reflux
Investigation for VUR performed in 45 patients
^ Investigation for urinary tract obstruction performed in 57 patients

Table 3. Unadjusted odds ratio (OR) of UTI in unilateral duplex kidney

	Unadjusted OR (95% CI)	p value
Male gender	0.22 (0.06, 0.79)	0.021*
Complicated duplex kidneys	7.64 (1.68, 34.63)	0.008*
Hydronephrosis (Upper moiety)	3.33 (1.02, 10.92)	0.047*
Hydronephrosis (Lower moiety)	1.80 (0.57, 5.70)	0.317
Vesicoureteric reflux	3.07 (0.58, 16.31)	0.189
Urinary tract obstruction	2.75 (0.35, 21.76)	0.338

UTI: Urinary tract infection

INTERHOSPITAL TRANSPORT OF CHILDREN WITH MEDIASTINAL MASS

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Background

Children with newly diagnosed mediastinal mass often requires interhospital transferal to tertiary hospital with oncology expertise for definitive management. There are no guidelines in the literature describing the management and issues of interhospital transport of patients with mediastinal mass syndrome. As such, we describe 3 cases and discussed planning and management specific to interhospital transport of patients with mediastinal mass.

Cases

3 patients with mediastinal mass were transferred to our Paediatric Intensive Care Unit. The first case was a 17-year-old male, presented with fever, cough, decreased exercise tolerance and weight loss. CT scan revealed a large mediastinal mass encasing the left pulmonary arteries and compressing the superior vena cava. Biopsy was done prior to the transferal but unfortunately, the sample was inconclusive. The second case was a 14-year-old female, presented with syncope and decreased exercise tolerance. She was transferred to us after a provisional diagnosis of mediastinal mass on the chest x-ray. The third case was a 17-years-old female, presented with supraclavicular lymphadenopathy and cough. CT scan showed a mediastinal mass obliterating the left brachiocephalic vein and compressing the superior vena cava. Biopsy and dexamethasone was started at the referring hospital. All 3 interhospital transport to our unit were uneventful. However, although our centre has oncology expertise, it does not have cardiothoracic surgery support. The 2 cases where diagnosis were not established prior to transferal required another interhospital transport to a centre with cardiothoracic surgery support for definitive diagnostic procedures.

Conclusion

Interhospital transport of children with mediastinal mass are high risk. Risk assessment for superior vena cava obstruction and contingency plans in case the patient develop life-threatening respiratory or cardiovascular complications should be delignated prior to transport. Pre-transport preparation includes putting the patient in the optimal position for the hemodynamic and respiratory status; preload augmentation with fluid and pharmacologic support and maintaining spontaneous breathing as much as possible. For very high risk patient, early steroid therapy should be considered. Children with a provisional diagnosis of a mediastinal mass should ideally be transferred to a centre with oncology expertise and cardiothoracic surgery support to facilitate diagnosis and treatment.

Table – Clinical features of the 3 cases of mediastinal mass

	Case 1	Case 2	Case 3
Diagnosis	Hodgkin lymphoma	T- lymphoblastic lymphoma	Hodgkin's Lymphoma
Age/Sex	17/Male	14/Female	17/Female
Presentation	Fever, cough, decreased exercise tolerance, short of breath, weight loss	Syncope and decrease exercise tolerance, weight loss	Cough, lymphadenopathy and decrease exercise tolerance
Location of mass	Anterior mediastinum	Anterior mediastinum	Anterior mediastinum
Size of mass	14x11x10.5cm	12.4 x 8.8 x 11.8cm	8.8x12.1x9.5cm
Compression of the airway	No, but left side airways are encased	Yes, left pulmonary bronchus narrowed	No
Obstruction of flow into the superior vena cava	Yes, 2cm portion of the mid-SVC narrowed to 3mm	Yes, compression on left brachiocephalic vein	Yes, left brachiocephalic vein obliterated, SVC compressed
Compression of vessels of left or right ventricular outflow tract	Yes, encasement of left pulmonary arteries	Yes, compression on main pulmonary artery, left pulmonary artery	No

RETROSPECTIVE STUDY OF SEIZURE OUTCOME AND ANTICONVULSANT REDUCTION IN PAEDIATRIC REFRACTORY EPILEPSY AFTER CURATIVE EPILEPSY SURGERY IN TUEN MUN HOSPITAL

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Background

Around one third of epilepsy patient are refractory to medical treatment and they are suffered from repetitive seizure and anticonvulsant side effect. Surgical treatment has been proved to be effective in improve seizure control and could reduce use of anticonvulsant in these epilepsy patients.

Objective

To retrospective study of the seizure outcome and change of anticonvulsants of Paediatric Refractory patient underwent epilepsy surgery in Tuen Mun Hospital

Methodology

Children with medical refractory epilepsy underwent pre-surgical evaluation for possibilities for epilepsy surgery. The pre-surgical evaluation include Video EEG monitoring, MRI imaging, FDG-PET, Ictal SPECT. Each case will be discussed in depth in multi-disciplinary conference. Suitable candidates with localised epileptogenic focus will be selected for curative epilepsy surgery either resective or disconnective surgery. Patient with no definite focus and frequent drop attack will consider for Corpus Callosotomy or Vagal Nerve Stimulator or Ketogenic Diet.

The seizure outcome of refractory epilepsy patient after curative epilepsy surgery is classified according to Engel Classification i.e. Engel I: seizure free; Engel II: rare seizure; Engel III: worthwhile improvement; Engel IV: seizure no change. The change of anticonvulsants is also studied.

Result

Total 49 Paediatric Epilepsy patient underwent curative resective and disconnective surgery from Jan 2000-July 2019. Total 57 epilepsy surgeries performed one patient underwent 4 resective surgeries followed by hemisphereotomy; 4 patients underwent two epilepsy surgeries. Age at surgery ranged from 8 months to 19 year mean age: 9.7 year. Follow up duration range from one month to 15 years; mean duration: 6.7 years. 28 patients underwent Temporal lobe surgeries. 86 % of patient underwent temporal lobe surgeries had Engel I (seizure free); 3.5% was Engel II (rare seizure); 3.5% was Engel III (worthwhile improvement); 7% was Engel IV (seizure no change) 39% patient became anticonvulsant free; 32% patient with anticonvulsant reduction. 14 patients underwent extra-temporal foreign surgeries. 71% of patient was Engel I (seizure free); 29% was Engel IV (seizure no change); 7% patient with anticonvulsants free; 42% patient with anticonvulsants reduction.4 patient underwent disconnection surgeries either hemisphereotomy or TPO disconnection. 50% patient was Engel I (seizure free) 25% patients was Engel III (worthwhile improvement); 25% patient was Engel IV (seizure no change). 50% patient with anticonvulsant reduction; 50% patient with anticonvulsant no change. 4 patients underwent Hypothalamic Hamartoma resection. Post-operatively, 50% patient was Engel I; 25% patient was Engel II(rare seizure); 25% was Engel IV. 50% patients with anticonvulsant reduction; 50% patients with anticonvulsant no change.

Conclusion

Curative Paediatric Epilepsy Surgery is effective in seizure control and could reduce anticonvulsant used in refractory epilepsy patient.

LONG TERM CLINICAL REMISSION OF TINU SYNDROME ASSOCIATED PANUVEITIS USING MYCOPHENOLATE MOFETIL AS AN ADJUNT THERAPY

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Purpose

To describe a rare case and management of tubulointerstitial nephritis and uveitis (TINU) syndrome associated with panuveitis.

Methods

Retrospective case report.

Results

A 7-year-old Chinese girl investigated for nocturnal enuresis was found to have renal impairment on work up followed by development of bilateral anterior uveitis 5 months later. Subsequent renal biopsy revealed significant tubule-interstitial nephritis and a diagnosis of TINU syndrome was made. Bilateral panuveitis in the form of inferior vitritis and vasculitis occurred later in the course. The combined use of prednisolone and mycophenolate mofetil has successful induce clinical remission over 3 years with preservation of visual acuity at 0.8 bilaterally.

Conclusion

We report that combination treatment with systemic steroid and MMF were efficacious to TINU with panuveitis and had shown clinical remission for up to 8 years. Prompt initiation and adequate duration of immuno-suppression is required for to preserve vision and prevent growth failure.

IDENTIFICATION OF ANTI-INFLAMMATORY MOLECULES FROM CHINESE HERBAL MEDICINE USING TWO IN VITRO MODELS

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Cimicifuga species have been used as traditional medicinal herbs to treat inflammation around the globe. However, the underlying mechanism of their anti-inflammatory effects remains to be investigated. With bioactivity guided purification involving the use of partitioning extraction and high performance liquid chromatography, we isolated several bioactive constituents from the rhizome extracts of Cimicifuga racemosa.

In response to injury and microbial invasion, the human host mounts inflammatory responses to control the pathogen and to initiate the repair process. Macrophages could eliminate the intracellular bacteria through different cell death pathways by the action of cytokines and chemokines. In order to identify the active anti-inflammatory components, we used two *in-vitro* models to mimic gram-positive and gram-negative bacterial infection, respectively. Lipopolysaccharide (LPS) is the main component of the outer coat of gram-negative bacteria. Previous studies demonstrated LPS could activate Toll-like receptor (TLR)-4 for the overproduction of cytokines, such as IL-6 and TNF-alpha in macrophage. Therefore, most of the studies using this as a representative screening model for bacterial infection and inflammatory responses. By using this model, we identified an anti-inflammatory molecule, compound 1 abrogated the LPS-induced TNF-alpha production via the suppression of MAPK and NF-κB.

However, we understand that gram-positive bacteria act through TLR-2 for the induction of immune responses. Therefore, we used Pam3CSK4, which is a synthetic tripalmitoylated lipopeptide that mimicks the acylated amino terminus of bacterial lipoproteins, to stimulate primary human macrophage for the induction of TNF-alpha and IL-6. By using bioactivity guided purification, we identified two molecules, PSM-6 and PSM-7 specifically suppressed Pam3CSK4 induced cytokines production, but not the LPS. These results demonstrated there are different molecules in a single herb that can used for different diseases. In conclusion, it is recommended to use different screening models for the study of drug mechanisms in herbal medicine.

THERAPEUTIC EFFECT OF NARINGIN IN SKIN FIBROBLASTS FROM A PATIENT WITH MITOCHONDRIAL DISEASE CAUSED BY SCO2 MUTATIONS

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Background

Mitochondria are the major source of cellular adenosine triphosphate (ATP), which is synthesized by the mitochondrial respiratory chain (MRC) through oxidative phosphorylation (OXPHOS). Primary mitochondrial disorders (MD) are caused by mutations in genes encoding OXPHOS proteins, potentially causing severe disability and death in children and adults. Mammalian cytochrome c oxidase (COX) is a terminal component of the MRC. COX catalyzes the transfer of electron from reduced cytochrome c to molecular oxygen. *Sco2* encodes a metallochaperone involved in copper metallation of COX. *Sco2* mutations lead to fatal infantile COX deficiency causing encephalopathy, myopathy, and hypertrophic cardiomyopathy. There is currently no effective treatment available for MD. However, evidence suggested a promising therapeutic target by activating mitochondrial biogenesis through the AMP-activated protein kinase (AMPK)/PPAR-gamma Coactivator 1 alpha (PGC-1α) axis.

Methods

In this study, we hypothesized that naringin, a natural herbal medicine, could elevate ATP content, regulate OXPHOS subunit expressions, as well as activate AMPK-PGC1α axis in *Sco2* mutated patient's fibroblast cells.

Results

Our preliminary data showed that naringin treatment elevated ATP content, increased COX-related gene expressions including COX4 and COX5a, and up-regulated AMPK-PGC1α axis related genes including AMPK, TFAM, NRF2 in *Sco2* mutated patient's fibroblast cells.

Conclusion and Future Plan

Naringin shows its potential as a therapeutic agent in treating mitochondrial disease via regulating ATP content, OXPHOS subunits activities and AMPK-PGC1α axis. We aim to study the therapeutic efficacy of naringin administration in *Sco2* KO/KI mouse model in the future.

Keywords

Mitochondrial disease, cytochrome c oxidase, AMPK- PGC1α axis, Naringin, Sco2

GENDER DIFFERENCES AND CLINCAL CHARACETERISTICS OF PATIENTS ADMITTED TO A PICU WITH DIABETES KETOACIDOSIS OVER 16 YEARS IN A SINGLE TERTIARY CENTRE

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Background

The prevalence of diabetes ketoacidosis (DKA) is also reported to be similar between gender in the Western countries. We aim to compare the gender differences and describe the clinical characteristics in children admitted to the Paediatric Intensive Care Unit (PICU) with DKA.

Methods

Retrospective study reviewing the clinical characteristics of children admitted to the PICU of a tertiary hospital from 2002 – 2018.

Results

Over a 16-year study period, there were 53 admissions (35 female: 18 male) with DKA, accounting for 0.02% of PICU admissions. All of these patients were Type 1 diabetic patients. Two girls had repeated admissions with DKA. There was no differences in their mean ages at admission (7.8 versus 8.5 years, p=0.58) and their mean length of stay in PICU (1.9 versus 1.8 days, p=0.69). Streptococcus pneumonia was isolated from the blood culture (n=1), enterovirus/rhinovirus (n=2) and influenza A (n=2). One patient was transiently encephalopathic but there was no mortality. One patient presented with abdominal pain but DKA was not diagnosed until the second presentation when blood glucose was measured. All were managed with judicious fluid replacement and insulin. It appeared that most admissions occurred between October and December but there was no definitive seasonality of admission in this subtropical city.

Conclusion

In conclusion, DKA is a rare cause of PICU admission and affecting more female than male children (2:1). Since the baseline female to male ratio among Type 1 diabetic children in Hong Kong was reported to be 1.32:1, the observation of more female admitted to PICU for DKA could not be fully explained by the baseline gender differences. Around 10% of DKA was associated with concrete evidence of infections. This re-emphases that infection prevention with vaccinations and appropriate support for sick day management are potential strategies to prevent the development of DKA among known diabetic children. Physicians should be aware to this rare diagnosis of DKA in Hong Kong in patients with unexplained weight loss and gastrointestinal symptoms. When promptly treated and monitored in the PICU, morbidity is low and the length of stay is short.

PILOT STUDY TO INVESTIGATE THE MICROSTRUCTURAL BRAIN CHANGES AFTER TAKING METHYLPHENIDATE IN CHILDREN WITH ATTENTION-DEFICIT/ HYPERACTIVITY DISORDER (ADHD)

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Aim

ADHD is one of the most common neurodevelopmental disorders that affects up to 5-9% of school-aged children. We aim to study whether there are distinctive microstructural brain changes as shown by diffusional kurtosis (DK-MR) magnetic resonance imaging after taking Methylphenidate in school-aged children with ADHD.

Method

2 children age 6 & 8 years old with confirmed diagnosis of ADHD were recruited. Severity of ADHD was assessed by the Strengths and Weaknesses of ADHD Symptoms and Normal Behavior Rating Scales (SWAN) questionnaire. Both cases were treated with Methylphenidate with dosing according to treatment response. Case subjects had plain MRI Brain (including T1 & T2 weighted images) and DK-MR imaging. Both subjects had neuroimaging study at diagnosis prior to treatment with Methylphenidate (T0) and neuroimaging study again after being on Methylphenidate for 3 months' duration (T3).

Results

Both cases have improved SWAN scores after taking Methylphenidate. After taking Methylphenidate for 3 months' duration, the largest changes in DKI metrics were found in the mid temporal lobe with 1-2% increase in the fractional anisotropy (FA), mean diffusivity (MD) and the mean kurtosis (MK). Our results are in contrary to previous findings where individuals with ADHD showed no significant age-related increase in MK.

Conclusion

Our pilot cases provide preliminary evidence of microstructural changes suggestive of improved structural integrity in the mid-temporal lobe of the brain after taking Methylphenidate.

PREVALENCE OF DIABETES AUTOANTIBODIES IN HONG KONG CHILDREN AND ADOLESCENTS WITH TYPE 1 DIABETES – A SINGLE CENTRE EXPERIENCE

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Background

Diabetes-associated autoantibodies are the main markers of pancreatic autoimmunity in type 1 diabetes (T1DM) and are becoming increasingly important in the clinical setting. This study aimed to investigate the prevalence of these autoantibodies in children with type 1 diabetes, including glutamic acid decarboxylase 65 antibody (GADA), insulinoma-associated protein 2 antibody (IA2A) and islet cell antibody (ICA).

Method

This is a single-centre descriptive, retrospective study. Data were retrieved from patients' record. Patients are included if they have T1DM diagnosed before age 18 years and are actively being follow up. ICA was checked at diagnosis, while GADA and IA2A were only checked in 2018 when the service commenced, Serum GADA and IA2A were measured using enzyme-linked immunosorbent assay (ELISA) with commercial kit while ICA was measured with immunofluorescence assay.

Result

Fifty-two patients with clinical diagnosis of T1DM were recruited (Female: 69%). The majorities were Chinese (71%). The mean age of diagnosis was 7.8 ± 4.7 years and the mean duration of illness was 5.9 ± 3.2 years. Of the recruited patients, forty-six patients had all the 3 antibodies checked; 42% had GADA, 46% had IA2 and 50% had ICA. The presence of IA2 was associated with the presence of GADA ($p<0.0001$) and ICA ($p=0.044$), while there was no significant association between the presence of GADA and ICA ($p=0.114$). There was no significant association between the presence of antibodies between the age of diagnosis and duration of illness.

Conclusion

While studies in Chinese population are available, there is no local data on the prevalence of diabetes-associated autoantibodies among Southern Chinese. As these antibodies decline with disease duration, major setback of our study is that antibodies were checked in different time point of the disease, as the test has become available only recently. Diabetes-associated autoantibodies are key parameters in the diagnosis of T1DM and are increasingly recognized to play a role for predicting the course of disease and giving prognostic information. It also aids disease prediction in at-risk individuals before disease onset. It is hoped that through wider availability of the test, more research on the correlation between these antibodies and clinical parameters can be conducted in the future.

A CASE OF PITUITARY GERMINOMA MASQUERADING AS LYMPHOCYTIC HYPOPHYSITIS

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Background

Childhood onset central diabetes insipidus (DI) remains a common presentation of hypothalamic-pituitary tumours and Langerhans cell histiocytosis [1]. In contrast, central DI due to autoimmune causes were of higher incidences in the adult counterparts [2]. Intracranial germinoma, 80% presenting with central DI, was more prevalent in Asians [3]. Challenges in achieving pathological diagnosis exist as a result of potential difficulty to obtain a good volume of biopsy tissue due to tumour location and in hope of preserving pituitary function. Clinical, epidemiological, radiological and pathological data are all important to arrive on an accurate underlying cause of central DI.

Case Presentation

An 11-year-old Chinese girl has one-year history of growth failure and central DI. Baseline pituitary function surveillance, aside from central DI, and magnetic resonance imaging (MRI) of the pituitary were unremarkable. Subsequent MRI performed one year afterwards demonstrated thickened pituitary stalk with nodularity. Further evaluation demonstrated growth hormone deficiency and partial central adrenal insufficiency. Alpha-fetoprotein and beta-hCG of the cerebrospinal fluid were negative. Trans-sphenoidal biopsied pituitary tissue showed lymphocyte aggregates in absence of germ cells and normal IgG4:IgG ratio. An initial histological diagnosis of lymphocytic hypophysitis was proposed. Upon further histological review, a small cluster of germ cells was identified by immune-staining. Growth hormone therapy was not instituted in view of the malignant diagnosis.

Conclusion

Germ cell tumours are immunogenic tumours [4], as such, the potential possibility of lymphocytic infiltration masking a small number of germ cells should be carefully excluded. A good collaboration among paediatrician, radiologist, neurosurgeon and pathologist is always the key to the care of this special cohort of patients.

References

[1] Dabrowski E., et al. Best Pract Res Clin Endocrinol Metab. 2016;30(2):317-28.
[2] Gubbi S., et al. Rev Endocr Metab Disord. 2018;19(4):335-347.
[3] Tso WWY., Liu APY., et al. Journal of Neuro-Oncology. 2019;141(2):393-401.
[4] Pal R., et al. Intracranial germinoma masquerading as secondary granulomatous hypophysitis: A case report and review of literature. Neuro-endocrinology. 2019. Advanced release.

INFECTION AND ITS IMPACT TO A NEW PAEDIATRIC INTENSIVE CARE UNIT

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Introduction

Infection is commonly encountered among critically ill children and is associated with significant morbidity and mortality in children admitted to the Paediatric Intensive Care Unit (PICU). The objective of the study was to characterize the clinical features and outcome among children with infections admitted to a newly established PICU.

Methods

We retrospectively reviewed the medical records of children admitted to the PICU of the Hong Kong Children's Hospital from March to July 2019. The microbiological results of children with infection were described. The clinical features and outcome variables were also compared between those with and without infection.

Results

Altogether 51 children were included for analysis. The median (interquartile range) age was 5.1 (10.0) years and 66.7% were male. Oncology patients constituted 58.8% of PICU admissions, followed by 27.5% of surgical patients and 13.7% of other specialties. Totally 31.4% of admissions were associated with a microbiologically proven infection. Concerning the distribution of type of infection, 31.3% were bacterial infection, 31.3% were viral infection and 37.5% were co-infection. Concerning the site of inoculation, 56.3% of positive cultures were obtained from respiratory tract (sputum, nasopharyngeal aspirate, bronchoalveolar lavage or pleural fluid), followed by 25% from blood, 18.8% from urine and 12.5% from cerebrospinal fluid. Table 1 showed the comparison of clinical features and outcome between children with and without infection. Those having infections were mostly oncological patients (81.2% vs 48.6%, p=0.035), and the median Pediatric Index of Mortality 3 (PIM3) score was significantly higher (1.7[4.5] vs 1.0[4.3], p=0.01). Among children having infections, the length of PICU stay was significantly longer (5.5[10.0] vs 1.0[2.0], p<0.01) and a higher proportion required ventilatory support (37.5% vs 8.6%, p=0.02). The overall mortality in this cohort was low at 2.0% and there was no significant difference of mortality between children with and without infection.

Conclusion

Infections were common among children admitted to PICU, especially among those with oncological diagnoses. Respiratory tract infection was the most prevalent type of infection. Co-infection was as common as isolated bacterial or viral infection. Children with infections were associated with a higher requirement of ventilatory support and a longer length of PICU stay.

Table 1: Comparison of clinical features and outcome among children with and without infections

Variables	With infection	Without infection	p-value
Demographics and clinical features			
Male sex	11 (68.8%)	23 (65.7%)	0.831
Age (years)	8.3 (12.1)	4.5 (9.9)	0.239
Oncology patients	13 (81.2%)	17 (48.6%)	0.035
PIM3 score	1.7 (4.5)	1.0 (4.3)	0.010
Shock index# on admission	1.3 (0.5)	1.1 (0.5)	0.269
White blood cell count on admission (x109/L)	4.8 (7.1)	7.4 (11.0)	0.123
Neutrophil count on admission (x109/L)	3.8 (5.9)	4.9 (10.5)	0.353
Neutrophil count <1.0x109/L	3 (23.1%)	4 (20.0%)	1.000
Morbidity and outcome			
Length of PICU stay (day)	5.5 (10.0)	1.0 (2.0)	<0.01
Required ventilatory support^	6 (37.5%)	3 (8.6%)	0.020
Required inotropic support	3 (18.8%)	3 (8.6%)	0.363
Mortality	0 (0%)	1 (2.9%)	1.000

Expressed in either number (percentage) or median (interquartile range)
#Heart rate (beats/minute) / systolic blood pressure (mmHg)
^Included both invasive and non-invasive ventilation

FLUDARABINE-INDUCED LONGITUDINALLY EXTENSIVE TRANSVERSE MYELITIS AFTER HAEMATOPOIETIC STEM CELL TRANSPLANT

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Introduction

Fludarabine-related neurotoxicity is a rare but devastating complication of haematopoietic stem cell transplant. While neurological complications are fairly common after haematopoietic stem cell transplant, clinicians have to consider a broad range of differential diagnosis, and various patient and transplant factors – conditioning regime, stem cells preparation, and post-transplant timing and clinical course. We report a case of longitudinally extensive transverse myelitis early after hemopoietic stem cell transplant due to fludarabine neurotoxicity.

Case presentation

Our patient is a 12-year-old girl with relapsed B-cell acute lymphoblastic leukaemia. She received haploidentical donor peripheral blood stem cell transplant with conditioning using fludarabine, busulfan, thiotepa, and cyclophosphamide. On day 14, she developed septic shock and was complicated by acute respiratory distress syndrome, acute kidney injury and veno-occlusive disease, which resolved with management in the intensive care unit. On day 36, she developed paraplegia, areflexia, and sensory level at T8. Magnetic resonance imaging (MRI) of the spine showed long segment patchy irregular increase in T2-weighted hyperintense signal in spinal cord that extended from T2 level down to conus medullaris. She was treated as immune-mediated transverse myelitis with pulse methylprednisolone, intravenous immunoglobulin, and then therapeutic plasma exchange. Clinically she did not respond to the treatment. Blood and cerebrospinal fluid investigation did not reveal an infectious or immune-mediated aetiology. Follow-up MRI showed interval progression with involvement up to C3 level at 2-4 weeks from onset and eventually there was gradual improvement at 7 weeks from onset.

Discussion

Potential causes of the longitudinally extensive transverse myelitis included vascular abnormalities, structural compression, metabolic disturbance, neoplastic and paraneoplastic phenomenon, immune-mediated and demyelinating diseases, central nervous system infection, and drug related toxicity. The diagnosis of fludarabine related neurotoxicity was not apparent until the other causes were ruled out by her clinical, radiological and laboratory findings. Fludarabine neurotoxicity was reported as acute toxic leukoencephalopathy, but spinal cord involvement has been reported in pre-clinical animal trial. This report highlights the approach to neurological complications post haematopoietic stem cell transplant, and the importance of recognising drug-related neurotoxicity as a cause in the early post-transplant period.

DECLINE IN MORTALITY AND CEREBRAL PALSY WITH IMPROVEMENT IN PERINATAL CARE IN EXTREMELY-LOW-BIRTH-WEIGHT INFANTS IN A TERTIARY CENTRE IN HONG KONG

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Introduction

We retrospectively review a cohort of extremely low birth weight (ELBW) babies born at a tertiary perinatal centre in Hong Kong (Queen Mary Hospital) during the period of 2008-2015. We explored if there is any time trend in survival, major morbidity and short-term neurodevelopmental outcomes, and identified significant factors that might account for any observable changes.

Methods

We included infants with birth weight ≦1000 g born at QMH between January 1, 2008, and December 31, 2015. Infants born outside of QMH were excluded. Data were retrieved from the Clinical Data Analysis and Reporting System (CDARS) under Hospital Authority and Vermont Oxford Network database. Chi-square test was used for categorical variables and median test for continuous variables. The relationships between multiple risk factors with survival and neurodevelopmental outcomes were analyzed by either cox regression or univariate logistic regression analysis. We also compared the birth-year period (2008-2015) with our previous study from 1993-2002. All p values were two-tailed, and a p value of <0.05 was considered statistically significant.

Results

217 infants weighing less than or equal to 1000 g were delivered during the study period of 2008-2015. Mean gestational age was 26.5 weeks with a mean birth weight of 762 grams. The proportion of babies born small for gestational age (SGA) and with Apgar score at one minute of life less than or equal to 3 were significantly lower in the 2008-2015 cohort ($p = 0.01$ and 0.03 respectively), while the use of antenatal steroid was significantly higher ($p = 0.0001$) than the 1993-2002 cohort. There was significantly higher overall survival rate in recent years (81.1% for 2008-2015) compared with 71.4% for 1993-2002 ($p = 0.02$). There was statistically significant increase in the use of surfactant replacement in respiratory distress syndrome (RDS) ($p = 0.0001$) and the use of home oxygen therapy upon discharge ($p = 0.0001$) in the 2008-2015 period. The incidence of severe intraventricular hemorrhage (IVH) and total number of necrotising enterocolitis (NEC) ($p = 0.01$ and $p = 0.0005$ respectively) were significantly decreased in the 2008-2015 cohort. Among the survivors, there was a significant decrease in the mean length of stay (LOS) from 112.25 days in the period of 1993-1996, 108.53 days in 1997-2002, 96.3 days in 2008-2011 to 96.0 days in 2012-2015 ($p = 0.001$). Mean duration of invasive mechanical ventilation was shortened significantly from 26.7 days (1993-1996), 16.7 days (1997-2002), 9.8 days (2008-2011) to 9.2 days (2012-2015) ($p <0.0001$). 143 out of 176 (81%) survivors were assessed for neurodevelopmental outcomes at a corrected mean age of 18.1 months (range 8.6 to 28.5 months) for the birth year of 2008-2015. 7.7% were diagnosed to have cognitive impairment with an overall DQ of less than 2SD, 4.2% had cerebral palsy, 2.1% with profound visual impairment, 0.7% with profound hearing loss. 12.6% were diagnosed to have autistic spectrum disorder, 7.7% with attention deficit hyperactivity disorder, 2.1% with epilepsy. Risk factors identified affecting cognition included male sex ($p = 0.003$), earlier birth years ($p =0.013$) and longer duration of invasive ventilation ($p = 0.000$). Risk factors identified affecting behaviour (autistic spectrum disorder or attention deficit hyperactivity disorder) included male sex ($p = 0.015$) and lower birth weight ($p = 0.038$) respectively. No significant risk factors could be identified for cerebral palsy, hearing and visual impairment. There were significantly lower rate of cerebral palsy ($p = 0.01$) and visual impairment ($p = 0.01$) in 2008-2015 cohort. Rate of significant developmental delay defined as an overall DQ of less than 2 SD as well as the rate of significant delay in the personal-social subscale were significantly lower in the recent cohort (2018-2015) compared with 1993-2002 ($p = 0.04$ and 0.01 respectively). However, delay in the hearing and speech subscale was significantly higher in the recent cohort ($p = 0.01$). Rate of profound hearing loss and epilepsy had remained similar over the years.

OUTCOME OF STATUS ASTHMATICUS AT A PEDIATRIC INTENSIVE CARE UNIT IN HONG KONG

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Abstract

To characterize the clinical course and outcome of children with status asthmaticus (SA) admitted to a Pediatric Intensive Care Unit (PICU)

Methods

All patients with SA who were admitted to a PICU from January 2003 to December 2018 were reviewed. Polymerase chain reaction (PCR) studies on nasopharyngeal aspirate for respiratory pathogens were performed from 2014 to 2018.

Results

Sixty-seven SA admissions constituted 2.4% of total PICU admissions (n=2788). Fifteen (22.4%) children required noninvasive ventilation (NIV) while 7 children (10%) required invasive mechanical ventilation. Nonadherence to prior asthma therapy was common. PCR was positive for enterorvirus/rhinovirus in 84% (16 out of 19) and for any virus in 95% of nasopharyngeal aspirate (NPA) samples of patients between 2014 and 2018. Over the 16-year period, increased utilization of ipratropium bromide, magnesium sulphate, and NIV was noted ($p<0.05$). Patients who required invasive mechanical ventilation had significantly higher heart rate, lower pH, and longer PICU length of stay (LOS) when compared to non-intubated children ($p<0.05$). There was no mortality, gender difference or seasonal characteristics in these SA admissions. Median LOS in PICU was 2 days (interquartile range 1-3 days).

Conclusions

SA accounts for a small proportion of PICU admissions. LOS was short and prognosis generally good. Nonadherence to prior asthma therapy was common. The most common trigger is enterovirus/rhinovirus for children with severe asthma requiring PICU admission. A trend of increase in usage of ipratropium, magnesium sulphate and NIV was observed.

CORRELATION OF NASOPHARYNGOSCOPY AND PERCEPTUAL SPEECH ASSESSMENT IN CHILDREN WITH CLEFT PALATE

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Introduction

Some children with cleft palate may develop velopharyngeal insufficiency (VPI) even after primary palate repair. The condition would cause hypernasality, nasal emission, soft and hoarse voice, articulation errors, grimace – affecting speech function that warrants further surgical management. Perceptual speech assessment is the gold standard and first line of evaluation, while instrumental assessment (e.g. nasopharyngoscopy, NPS) allows visualization of velopharyngeal function and facilitates surgery planning. The two modalities are needed for assessing VPI and complementary to each other. However, correlation between the two is not well defined especially in the Cantonese speaking population due to the lack of speech sampling protocol. The recent development of a local clinical perceptual test (Cantonese – Cleft Speech Assessment Tool, C-CSAT) provides a platform to compare the two examinations, and thus to guide clinicians on operations of the investigations.

Objective

The aim of this study is to define the correlation between velopharyngeal function measures in NPS and perceptual speech findings on VPI in children with cleft palate.

Method

A consecutive case series of patients underwent NPS at Hong Kong Children's Hospital from April to July in 2019 was conducted. Five out of eight patients who completed the exam were included in the study. Speech sampling of C-CSAT was adopted in NPS and perceptual speech assessment. Clinical diagnosis of VPI was made by speech therapist based on five speech parameters including: resonance, nasal airflow, non-oral articulation errors, voice and grimace. Ratings for velopharyngeal function in NPS were done by two paediatric surgeons, including movement of lateral pharyngeal wall and velum, gap size, involvement of adenoid, and closure pattern. A cut-off of 80% was applied for the first three measurements as efficient closure. Inter-rater reliability tests were done. The results from perceptual speech assessment and NPS findings were compared with statistical analysis.

Results

A moderate inter-rater agreement (kappa of 0.521) was observed regarding the NPS ratings of velopharyngeal function. Comparison between inefficient velopharyngeal closure observed in NPS and findings from speech perceptual assessment was done by combining the speech parameters (n=25) using Chi-square test. Movement of velum and gap size, were found to be significantly associated with clinical diagnosis of VPI from speech perceptual assessment ($p = 0.0154$).

Conclusion

The association between the findings of NPS and perceptual speech assessment observed would guide clinicians in selecting valuable measurements for NPS, and thus shorten the time of this invasive procedure. Analysis of severity rating in speech parameters with respect to NPS findings is limited by the sample size. Further investigation of velopharyngeal function measurements obtained in NPS with respect to other variables such as surgical techniques, are warranted for service improvement.

TRANSCUTANEOUS PCO2 MONITORING IN INFANTS IN THE NEONATAL UNIT

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Background

Continuous transcutaneous (Tc) pCO2 monitoring is a non-invasive method to continuously measure a patient's blood pCO2 levels and has been shown to have good correlation with the gold standard, blood gas monitoring. There are few studies providing data upon which to determine the optimal use Tc pCO2 in preterm infants.

Objectives

To investigate the correlation, accuracy, and agreement of Tc pCO2 with blood gas monitoring and the factors affecting the accuracy of Tc pCO2 measurement.

Methods

Preterm infants admitted to the neonatal intensive care unit who required blood gas measurement to determine pCO2 values for clinical management were also connected to a Tc pCO2 monitoring device (SenTec Digital Monitoring System, SDM-PO2). Repeated measures correlation analysis and the mixed effects limits of agreement method were used to determine the correlation and agreement between the two methods, respectively. The validity of Tc monitor to detect abnormal pCO2 (<4 or > 7kPa) was also calculated.

Results

14 infants were included (median gestational age: 27 weeks and median birthweight: 1004g) and a total of 771 paired measurements were compared. The correlation between these values was 0.70 ($p<0.001$). The mean bias was 0.66 with a 95% confidence limit of agreement (LoA) of -1.6 to 2.9 kPa (Fig.1). The sensitivity and specificity of SecTec monitor for abnormal pCO2 is 64% and 72%, respectively.

Conclusions

Strong correlation was found between the Tc pCO2 and corresponding blood gas measurements, and the mean bias between the methods was within the clinically acceptable range of ±1kPa. However, due to the wide range of LoA, and fair sensitivity and specificity to detect abnormal pCO2 levels, we concluded that auditing a revised Tc monitoring algorithm to determine whether blood sampling could safely be reduced was warranted.

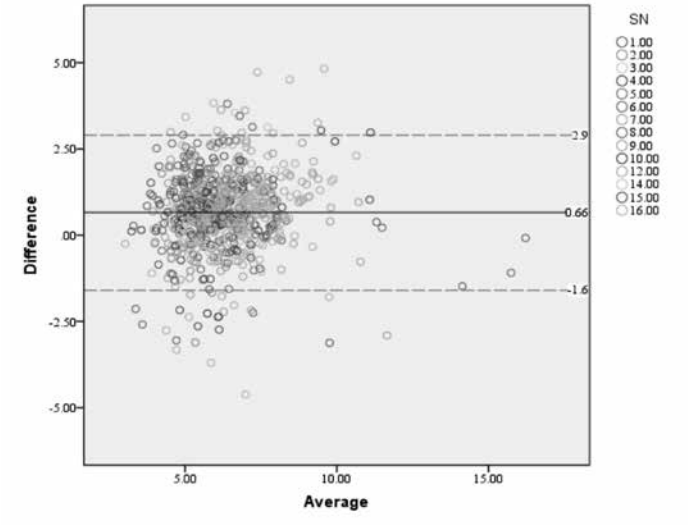

Fig. 1 Bland-Altman Plot showing the paired differences against the average.
Mean bias is shown by the solid line, while the limits of agreement are shown by the dashed lines.

PERI-DISCHARGE PROGRAMME IN NEONATAL UNIT

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Introduction

In the past, low birth weight (LBW) infants were discharged from our unit simply based on body weight target alone (for simple workflow decision). This resulted in some unnecessary longer stay for physiologically ready babies and may discharge some unready babies/family too early by just meeting the body weight target. Peri-discharge programme has been implemented since February 2018 to promote and facilitate early and safer discharge of LBW infants.

Objective

(1) To facilitate the transition of stable preterm and/or LBW infants from hospital to home/community care, (2) To empower parents and enhance their competency in infant care with peri-discharge support; (3) to shorten the length of stay for LBW infants and reduce inpatient workload

Methodology

The peri-discharge team was formed by a group of experienced neonatal nurses and paediatricians. First, a standardized infant assessment and parent education protocol, and a peri-discharge checklist were prepared. The team would assess the physical wellness of the infant including maintenance of body temperature after nursing in open cot, establishment of full oral feeding and satisfactory oxygenation in various activities including feeding and sleeping. Also, the team enhances parental competency in infant care by one-on-one coaching on parental skills in daily infant care, namely dressing, feeding and bathing.

Results and outcomes

200 infants who met our inclusion criteria were recruited into the programme between Feb and Dec 2018. Infants mean birth weight was 1.75kg, and mean gestational age was 33.15 weeks. Average time used in infant assessment and parental coaching was 9.64 days. Length of hospital stay was shortened by 7 days after implementation of the programme. The post programme questionnaire showed a significant improvement in parental competency score with p value of <0.00 ($p<0.05$). During the implementation period, only one infant was readmitted to the ward after discharge.

Conclusion

Our peri-discharge programme for LBW infants effectively promoted earlier and better preparation of infants and parents and thus was able to achieve earlier discharges and shorter lengths of stay.

IMPROVING METHOD FOR DETERMINING THE INSERTION LENGTH OF ORO-GASTRIC TUBE IN LOW BIRTH WEIGHT INFANTS

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Introduction

Oro-gastric tubes (OGT) are commonly used in low birth weight (LBW) infants for feeding, administration of medication and gastric decompression in Neonatal Intensive Care Unit (NICU). Studies have shown measurements of tube insertion length using Nose-Ear-Xiphoid (NEX) and Nose-Ear-Mid Umbilicus (NEMU) methods in LBW infants are inaccurate leading to patient safety concern. Weight-based method has shown to be more accurate, but reference guide for its use in LBW infants less than 750g was lacking in our local settings.

Objectives

To develop and validate new guideline for determining the insertion length of OGT in LBW infants.

Methodology

A chart review on newborns admitted to NICU with body weight ≤750g was conducted in PMH from January 2014 to April 2015. Body weight and tube insertion length were collected. The distance measured from inferior border of T10 to tip of the OGT in the first radiograph with OGT was used to determine the accuracy of tube insertion length calculation methods, where <1.4cm, between 1.4cm and 2cm, >2cm within stomach and >5cm beyond stomach were defined as high, borderline, optimal and low position respectively. A new guideline was developed and implemented to newborns admitted from April to June 2015 and was evaluated using the OGT position under X-ray reviewed by two nurses.

Results

Thirteen extremely LBW infants with mean body weight of 648g (range: 523g–750g) were recruited. Freeman's method (insertion length(cm) = 3 x weight(kg) + 12) was found to be more accurate than NEMU and NEX. A new weight-based scale was formulated for infants less than 2.5kg and was validated in 41 infants (body weight range: 690g–2280g) with 100% optimal position.

Conclusion

The new weight-based scale for estimating OGT insertion length in preterm infants was accurate. Nurse awareness on safety practice related to OGT insertion would be enhanced.

USING A SMART PHONE APPLICATION TO PROMOTE NURSE-LED ASTHMA EDUCATION PROGRAM FOR CHILDREN WITH ASTHMA AND THEIR FAMILY: A FEASIBILITY STUDY

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Background

Smart phone applications are widely used as health education promotion nowadays and are particularly popular among paediatric patients. Smart phone applications allow patients to gain access to education materials and share the knowledge with their family regardless of where they are.

Objective

The objective of the study is to assess the feasibility of using smart phone application to promote nurse-led asthma education program among asthmatic children and their family in an acute hospital setting.

Methods

The study was conducted in October 2018. Twelve asthmatic children and their parents (n=6, intervention group; n=6, control group) were enrolled. The intervention group received a set of QR codes to access the education materials and had a face-to-face discussion session with the respiratory nurse. Both groups used a mobile Apps (Android operation system) to record their daily medication adherence, exposure to triggers and frequency of physical exercise for one month. The primary outcome was the frequency of unscheduled doctor consultations and scores from knowledge, practice and attitude (KAP) regarding asthma questionnaire. The secondary outcomes were Childhood Asthma Control Test, anxiety level of inhaler and medication adherence. Data collections were conducted at baseline, post-test after intervention and at 8 weeks after discharge.

Results

All 12 participants completed the study, of which 3 were female (25%). The children were between the age of 4 and 10 years with a mean age of 4.6 (SD: 1.9). 83.3% of the children had normal body mass index. 66.7% of them had asthma medical history. All parents had a smart phone for QR code access. However, around one-third of them were not willing to use their smart phone due to low battery at the first attempt education session. Half of the parents' smart phones were used by their children for entertainment. More than half of them had concern on the use of mobile data. Two parents (16%) were not able to complete the post-intervention questionnaire due to personal issues. The research team had many questions on the mobile Apps download and the smart phone games operation at the beginning. Furthermore, half of participant parent had smart phone in iOS operation system.

Conclusion

The use of smart phone application for health education is becoming increasingly popular. However, thorough preparation and detailed planning are essential. By providing free Wi-Fi and portable smart phone charger, and using a web-based questionnaire can enhance the participants' adherence and decrease the attrition rate of the study. In order to data collection problem in post-test and follow up, we added web based format questionnaire and hardcopy asthma diary for the participant with smart phone in iOS operation system. Finally, all participants completed the study. Also, the cost for two different operation systems (Android and iOS) needs to be considered. Having a training session on information technology for the research team can also smoothen the workflow of the study.

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Poster

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COLOSTOMY IN CHILDREN ON CHRONIC PERITONEAL DIALYSIS: A REPORT OF THE INTERNATIONAL PEDIATRIC PERITONEAL DIALYSIS NETWORK

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Objective

The aim of this study is to evaluate the outcome of children on chronic peritoneal dialysis with a concurrent colostomy.

Methods

Patients were identified through the International Pediatric Peritoneal Dialysis Network (IPPN) registry and a query disseminated to all IPPN participating sites. Data pertaining to patient demographics, infection related complications and outcome were derived from a questionnaire completed on each patient by their respective center.

Results

15 centers reported a total of 20 children with a concurrent colostomy and peritoneal dialysis catheter (PDC). The most common cause of kidney failure was congenital anomalies of kidney and urinary tract (n=16, 80%). The most common reasons for colostomy consisted of isolated anorectal malformation (n=6, 30%), followed by VACTER/ VACTERL association (n=4, 20%) and Cloacal malformation (n=3, 15%). The median age at colostomy creation and PDC insertion were 0.1 [Interquartile range (IQR) 0-2.2] and 2.8 [IQR 0-2.2] months, respectively. Seven patients received PDC placement before (n= 3) or at the time (n=4) of colostomy placement. 17/20 (85%) PDCs had 2 cuffs, and 15/19 (79%) had a downward or lateral exit site orientation. All PDC exit sites were positioned over the abdomen, contralateral to the colostomy opening. The colostomies and PDCs were present together for 18 [IQR 4.9-35.8] months. Three patients had concomitant gastrostomy, three with vesicostomy and one child had both gastrostomy and vesicostomy.

Over a period of 413 months at-risk, 14 patients (70%) developed 39 episodes of peritonitis. The peritonitis rate was 1 per 10.6 months (annualized rate: 1.13). Whereas 6/7 (86%) of children with PDC placement prior to or at the time of colostomy placement developed peritonitis, a smaller percentage developed peritonitis when PDC was inserted after colostomy (8/13, 60%). Predominant causative microorganisms were staphylococcus aureus (n=6, 15%) and pseudomonas aeruginosa (n=5, 13%); 12 (31%) episodes were culture-negative. No PD catheter malfunction was described. 5 patients received a kidney transplant, 4 switched to HD, 3 patients remain on PD and 7 children (35%) died during the course of dialysis, in one case due to a dialysis-related infection.

Conclusion

Although chronic peritoneal dialysis is feasible in children with a colostomy, it is associated with an increased risk of peritonitis. Continued efforts to define preventive measures are essential to reduce the infection risk in this complex patient population.

A MULTICENTRE REVIEW OF THE EPIDEMIOLOGY AND IMPACT OF RESPIRATORY SYNCYTIAL VIRUS INFECTION ON CHILDREN WITH HEART DISEASE IN HONG KONG

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Objectives

Respiratory syncytial virus infection (RSV) poses a heavy disease burden in childhood globally. Haemodynamically significant congenital heart disease (hs-CHD) is one of the risk factors for severe RSV infection. National policies of immunoprophylaxis for this group have been adopted worldwide. In Hong Kong, under the Paediatric Coordinating Committee of the Hospital Authority, guideline and government funding for RSV immunoprophylaxis for children with bronchopulmonary dysplasia of prematurity has been in place since 2012. However, no consensus was reached on any guideline for children with heart disease as the epidemiology and impact of RSV infection on these patients has not been delineated in Hong Kong. It is imperative to conduct an updated local study on the epidemiology and impact of RSV infection on children with heart disease with a view to provide evidence-based recommendations on RSV immunoprophylaxis.

Methodology

A multi-centred retrospective case-control study was conducted in 4 local regional hospitals on paediatric RSV infection from the years 2013 to 2015. Information on epidemiology, demographics, clinical information, pre-existing co-morbidities, complications, reinfection, ICU and ventilator requirement were collected. Firstly, we studied the epidemiology of RSV infection and its association with meteorological conditions in the whole group. Secondly, patients with significant co-morbidities other than heart disease, including chronic lung disease, neuromuscular problems and immunocompromised status, which are expected to increase the severity of RSV infection, and patients with social problems with unduly prolonged hospital stay were excluded. The patients were then divided into Heart Disease (HD) Group and Control Group (without any co-morbidities) to compare the severity of RSV infection. Finally, only cardiac patients were analysed to identify cardiac predictors of severe outcome from RSV infection. The RSV immunoprophylaxis schemes for children with heart disease in different countries were reviewed.

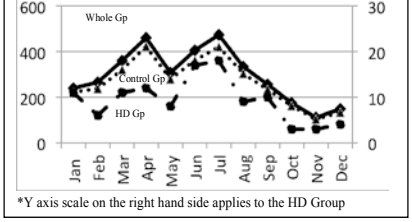
Results

There were 3538 RSV-hospitalizations. It accounted for 11.8% of acute respiratory infection admissions to the 4 departments and 43% of all RSV admissions to the public service. RSV infection was most common below 1 year old, namely 44.6% in the whole group and 56.3% in the HD Group. There was a similar mild male preponderance in the whole group and the HD Group (male to female ratio of 1.32 vs 1.29). The mortality rate was 0.14% (n=5) in the whole group and 0% in the HD Group. Some RSV seasonality does exist in Hong Kong. It was most prevalent from March to August, ie spring and summer (Fig 1). Monthly RSV incidence had a positive correlation with humidity (r=0.71, p=0.01) and a negative correlation with wind speed (r = -0.8, p=0.002) and atmospheric pressure (r = -0.62, p=0.032). Patients with heart disease had a more severe outcome than those without, namely a longer median hospital stay (4 vs 2 days, p=0.000), a higher complication rate (28.6% vs 9.8%, p=0.000), higher respiratory failure rate (17 % vs 5.1%; p=0.000), higher requirement for intensive care (11.6 % vs 1.4 %, p=0.000) and mechanical ventilation (3.6% vs 0.4%, p=0.003). RSV re-infection rate (> 1 episode in the study period) is more common in the HD Group than the Control Group (7.6% vs 1.7%, p=0.000). Myocarditis and Kawasaki disease were complications observed in non-cardiac patients. The predictors of severe RSV infection in patients with heart disease were heart failure, pulmonary hypertension and severe airway abnormalities associated with congenital HD.

Conclusions

RSV infection is common in Hong Kong, peaking in incidence from March to August. It is most prevalent in children below 1 year old with mild male preponderance. Infection is favoured by high relative humidity, low wind speed and low atmospheric pressure. Heart disease, both congenital and acquired, is a definite risk factor for severe RSV infection. In Hong Kong, a 5-monthly RSV immunoprophylaxis scheme in the first year of life during spring and summer should be considered in children with heart disease in the presence of any severity predictors identified in this study.

Figure 1 Aggregated monthly incidence of RSV-hospitalizations in different groups of patients, 2013-15



*Y axis scale on the right hand side applies to the HD Group

ESTIMATED PREVALENCE, SURVIVAL AND INPATIENT BURDEN OF TUBEROUS SCLEROSIS COMPLEX IN HONG KONG

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Aim

To elucidate the disease impact by accounting the prevalence, survival rate and inpatient burden of tuberous sclerosis complex (TSC) in Hong Kong.

Methodology

TSC patients with documented visits to hospitals under Hong Kong Hospital Authority in 1995-2018 were captured with the International Classification of Diseases (ICD)-9 code of 759.5. Demographics such as age, sex, death were retrieved with secondary data analysis was conducted (including prevalence, age distribution and survival rate). Subgroup analysis over the annual hospital admission profile (total number, total inpatient-days, total inpatient cost) using the 1st April 2015 – 31st March 2016 cohort was performed.

Results

We identified 284 surviving TSC patients (55.3% male) in Hong Kong. The age range was from 4.5 months to 89.9 years, with a median age of 27.2 years (paediatrics to adult ratio was 1:2.84). The overall prevalence of TSC patients was 3.87 in 100,000 (i.e. 1 in 26,455).

37 patients died within the study period. The age of death ranged from 7.6 years to 77.8 years, with a median death age of 36.6 years (IQR: 24.7-51.1 years). Most patients survived till adulthood. Survival rate at 20- and 50-year follow-up was 98.6% and 79.5% respectively.

The annual number of admissions for TSC patients was 234 (0.43% of the rare disease population's) in the 2015-16 cohort. They accounted for a total of 2,999 inpatient-days, giving rise to a total inpatient cost of HKD$14,486,170 (0.91% of the rare disease population's).

Conclusion

Prevalence of local TSC patients is comparable to the literature. Local TSC patients have good survival rate. Nevertheless, they account for a considerable inpatient burden. Since effective targeted therapy is now available, further research into disease burden and progression is necessary for cost and benefit analysis and facilitate future healthcare service planning.

COMPREHENSIVE GENETIC EVALUATION IN PAEDIATRIC-ONSET MITOCHONDRIAL DISEASES

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Background

Mitochondrial diseases (MD) are the commonest group of inborn errors of metabolism, characterized by defects in oxidative phosphorylation (OXPHOS). It is caused by mutations either in mitochondrial DNA (mtDNA) or nuclear DNA. Due to the phenotypic and genetic heterogeneity, a molecular diagnosis is crucial for disease management. MtDNA sequencing and whole exome sequencing (WES) are excellent diagnostic tools for MDs. In our study, we aim to investigate the clinical utility of mtDNA sequencing and WES in our cohort of patients with MDs.

Methods

We recruited patients suspected to have paediatric-onset MDs with a minimal mitochondrial disease criteria (MDC) scoring of 3. Genetic tests were performed based on paediatric neurologist and clinical geneticist recommendation. They were performed in local settings (Clinical Genetics Services, Department of Health, and Paediatrics & Adolescent Medicine, HKU) and overseas laboratory (Genome Diagnostics Nijmegen). MtDNA result analysis was based on data from MitoMap. For WES, rare variants with population frequency ≤ 1% were interrogated for pathogenicity based on the ACMG guideline. Analysis of OXPHOS complexes was performed in Radboud Centre for Mitochondrial Medicine, Nijmegen.

Results

Eighty-three subjects (male=54, female=29) with pre-biopsy MDC scoring range from 3 to 8 were recruited. CMA, targeted gene Sanger sequencing, mtDNA sequencing and WES was done in 2,3,46 and 75 patients respectively. 22q11.2 deletion was found in a pair of siblings by CMA. 3 pathogenic mutations and 2 variants of unknown significance (VUS) was found by mtDNA sequencing. 10 cases with disease-causing mutations were identified in MD-related genes (*COQ4* (n=4), *COQ7*, *GTPBP3*, *NDUFA9*, *NDUFS3*, *OPA1*, *SURF1*), 19 cases with non-MDs related genes (*ALDH5A1*, *AMACR*, *ATP1A3* (n=3, 2 from siblings), *ARX*, *FA2H* (n=2 from siblings), *KCNT1*, *LDHD*, *NEFL*, *NKX2-2*, *PTRH2* (n=2 from siblings), SPG20, TAZ (n=2 from siblings), WAC, WFS1) and 4 cases of VUS was found in *ERCC6* (n=2 from siblings), *OPA1* and *POLG* using WES or Sanger sequencing. The overall diagnostic yield was 41% (34/83).

Conclusion

MtDNA sequencing and WES are effective and promising tools in reaching the genetic diagnosis in our MD patients. As the majority of the disease-causing mutation was identified in nuclear DNA (37%, 31/83), and the ability of copy number variations and mtDNA analysis using WES data by enhanced bioinformatics pipeline, we suggest WES should be the first-tier testing in patients suspected to have MD.

Acknowledgements

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GENETIC LITERACY AND AWARENESS OF PERSONALIZED MEDICINE AMONG UNDERGRADUATES IN HONG KONG

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Background and methods

Personalized medicine describes the use of an individual's genetic profile to diagnose diseases as well as guide treatments. In a common core undergraduate course with 129 teaching hours at the University of Hong Kong (The World Changed by DNA, https://commoncore.hku.hk/ccst9064/), students were taught on topics surrounding genomics through interaction with patients and guided discussions. During the course students took part in pre- and post-teaching online questionnaires on perceptions of personalized medicine and pharmacogenomics, adopted from Mahmutovic et al. (*Human genomics* 2018), covering ethical, legal and social aspects of genetic testing.

Results

A total of 118 students were enrolled, and the response rate was 70% (n=83). The teaching evaluation reported an above average course effectiveness rating of 78% (mean for the Area of Inquiry: Scientific & Technological Literacy = 70.7%). Pre-teaching, 37% of individuals indicated that they have not heard of personal genome testing before, and 52% reported that they would feel "helpless" or "pessimistic" in case of an unfavorable genetic test result, which reduced to 47% after teaching on the basic concepts of genetics. Overall, 78% would consider having a genetic test done for potential illness that may manifest at a later age, and 78% of the students were aware of the related ethical issues, such as patient privacy and racial issues.

Conclusions

Genetic literacy of the general public is an important consideration especially if the Hong Kong Genome project is to be implemented. Over one-third (37%) of undergraduates have not heard of genetic tests prior to the course. Despite that fact that the an course effectiveness rating was above average, and 80% students indicated that our course has enhanced their capability to understand scientific aspects of contemporary issues related to personalized medicine, negative perceptions were only reduced by 5%. Almost half (47%) of the students still indicated that they would feel helpless when faced with an unfavorable result which reflects the need for further input in a real scenario of genetic testing.

The risks of a low public awareness in a rapidly growing industry have been raised by experts, and there are increasing concerns for the safety and privacy of such tests. These findings only represent university students, and the impact on the general population is likely to be more exaggerated. Our results emphasize the need to build an educational framework early in nursing or medical schools extending to the wider community. There is also a strong need to couple this effort with professionals such as genetic counsellors and geneticists such that misconceptions and negative impacts cause by this gap in knowledge are minimized.

Acknowledgement

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EARLY CHILDHOOD PHYSICAL ACTIVITY AND SUBSEQUENT ADHD SYMPTOMS

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Background

Physical activity was suggested to reduce ADHD symptoms but there were limited evidence on its preventive utility. This study investigated the association between early childhood PA and later ADHD and behavioural outcomes in middle childhood. Prospective cohort study

Methods

This is a prospective study with 3 years of follow-up. Six hundred and eighty-one children in Year 3 of kindergartens (K3) in Hong Kong were recruited using stratified random sampling. Assessment at recruitment included family demographics, frequency of parent-child activities, and school readiness. Children were reassessed 3 years later (P3) for ADHD and behavioural problems. To test for confounding, parent-child singing and storytelling activities were analysed as negative control variables.

Results

The study followed up 519 children (76.2% retention) at P3. Parent-child PA at K3 predicted fewer ADHD symptoms (β -0.41, 95% CI -0.68 to -0.15, p=0.002) and behavioural problems (β -0.25, 95% CI -0.49 to -0.01, p=0.04) at P3. The negative control variables did not significantly predict any of the outcomes. The association between PA and ADHD were more pronounced among boys, underprivileged children, and children with predisposed ADHD symptoms at baseline.

Conclusion

Early childhood parent-child PA predicts fewer ADHD symptoms and behavioural problems in middle childhood.

A NEPHROTIC SYNDROME SECONDARY TO SYPHILIS INFECTION

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Secondary nephrotic syndrome is rare in children; however the treatment regime is totally different.

Here, we report a case diagnosed with nephrotic syndrome which was secondary to syphilis infection.

A 3-year-old Chinese girl presented typical nephrotic syndrome. Infection workshop revealed syphilis TP reactive. Further investigation showed TRUST and TPPA were both reactive. Family member screening confirmed her father also got syphilis infection. Renal histology show minimal change disease with a few granuloma under light microscopy and IgG IgA IgM C3 and C1q were negative neither under immunofluorescence microscopy, and a little electron density deposit under the epithelium by electron microscopy. The nephrotic syndrome was partially remission about one month after anti-syphilis treatment, completed remission 6 months after this treatment. No relapse was found during 26 months follow-up.

It is unclear how this girl got syphilis. The whole story confirmed her nephrotic syndrome secondary to syphilis infection. Steroid treatment is not necessary in this condition.

Key word
nephrotic syndrome, syphilis, treat regime.

CHARACTERISTICS OF BREAST ABSCESS DURING LACTATION SEEN AT A CLINIC

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Introduction

Breast abscess is a serious complication of lactating mothers. It would be helpful if this can be prevented or treated early. This paper is a review of cases presented to a private clinic run by a doctor with the training of International Board Certified Lactation Consultants (IBCLC)[1].

Method

In 2018, a total of 153 lactating mothers with breast pain were seen. Diagnosis of breast abscess was made mainly by history and physical examination. At least there would be a local tender mass with or without fever. Pain related to blocked duct can be relieved by gentle breast expression while mastitis cannot. If pus can be expressed, then breast abscess was diagnosed. Or when pus cannot be expressed yet there was an area of bulging or fluctuation, referrals to surgeons were made for an ultrasound examination, needle aspiration or incision and drainage. Patients with substantial amount of pus had their pus cultured together with drug sensitivity.

Results

A total of 24 patients were confirmed to have breast abscess. Many of them were mild, having mastitis mainly but beginning to form a little pus and can be expressed through the milk duct opening or the alveola. A total of 7 patients were referred to the clinic of a private surgeon. No pus was detected by ultrasound in 3 and they were excluded from this study. One required needle aspiration. Two had incision and drainage (I&D) under local anesthesia. Another one had a loculated abscess requiring I&D under general anesthesia in hospital. All were prescribed antibiotics. Two patients were referred to A&E of public hospitals.

Organisms cultured were staph aureus in one, Group B strep in one, Klebsiella in one and MRSA in one. Although the antibiotics prescribed were sensitive according to the tests, one patient need a change of antibiotics before pus forming can subside. Details of these patients will be presented in the poster.
More patients delivered their babies in private than in public hospitals---14 vs 10. Prior to consultation, 12 had suffered breast pain for less than or equal to 3 days, 7 had pain from 4 to 20 days and 5 had pain from 20-45 days.

Conclusion

Breast abscess may be preventable if blocked duct or mastitis can be treated early. Dietary factor may play a role. Overconsumption of animal foods and underconsumption of vegetables and fruits might have lowered their resistance to bacterial infection[2].

References

1. SSF LEUNG, Breast pain in lactating mothers. Hong Kong Medical Journal 2016 22:341-6
2. VWS WONG et al, Positive relationship between consumption of specific fish type and omega 3 polyunsaturated fatty acids in milk of Hong Kong lactating mothers. British Journal of Nutrition doi:10.1017/S0007114519000801

POPULATION SURVEY ON MASTITIS

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Introduction

The Hong Kong Department of Health and Hospital Authority have successfully promoted breast feeding. However the currently available medical services to support breast feeding may not be adequate. Breast pain and mastitis was not uncommon, a delay in management might lead to premature weaning. This is the first population survey on mastitis in Hong Kong on the prevalence and service received.

Methods

In 2019, a telephone interview was made through random sampling of both home and mobile phone numbers. Inclusion criteria was that they had breast feed their children within the past 5 years. They were asked about demographic data, experience of breast pain and help received using a questionaire.

Results

A total of 504 mothers were interviewed. Majority (387, 77%) had breast feed for 6 m or more. 293(58%) had received education at or above university level.

1. 349 (69%) have experienced breast engorgement
2. 319 (63%) have experienced breast pain
3. Majority (364, 81%) of these problems occurred after 7 days of delivery
4. When they had these problems, only 75(24%) went to MCH for help.
5. 97 (19%) had been diagnosed to have mastitis. 52(17%) had received antibiotics.
6. 18 (6%) of those diagnosed with mastitis wanted to stop breast feeding.
7. Majority of those interviewed (340, 67%) believed that mastitis can be prevented.
8. Of all the possible preventive measures, 81(24%) believed that diet may play a role. 109 (32%) considered regular breast massage a preventive measure.

Conclusion

Mastitis is a term loosely used. It is therefore difficult to compare the prevalence rate of mastitis in different populations. Blocked duct may present similar symptoms and can be resolved by physical means. An important message from this survey was that most breast pain occurred after discharge from maternity hospitals, which can help the medical field to plan for a better supportive service, including education and management.

FEASIBILITY OF CONSUMING ADEQUATE PROTEIN IN A VEGETARIAN PREGNANT AND LACTATING MOTHER

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Introduction

Pregnant and lactating women in Hong Kong tend to eat a lot of animal foods for fear of a lack of protein. The daily protein requirement for a woman with a prepregnant weight of 50kg should be 60-70g during pregnancy and lactation. We would like to inform the public that plant foods also contain protein and in addition contain other nutrients necessary for health. This study aims to look into the possibility of consuming adequate protein (Pro) by designing a one- day vegan meal without any animal foods.

Methods and Results

Breakfast	Pro, g	**Lunch**	Pro, g	**Snack**	Pro, g	**Dinner**	Pro, g
Calcium fortified soy milk, 240ml	5.8	Quinoa cooked, 1 cup	8	Mixed nuts, unsalted, 30g	5.2	Boiled brown rice with chickpeas, 1 cup	14
Oatmeal, 50g	8.5	Mixed mushroom 100g	2	Seaweed, 5g	Tr	Tempeh, 50g	9.1
Dry Fig, 60g	1.2	Firm tofu, 150g	16	Apple, 120g	Tr	Broccoli, 100g	3.1

Conclusion

At least 70g protein can be provided in the designed menu. With the food pictures in the poster one can easily understand that it is not difficult to fulfil the dietary protein requirement even without meat, egg or milk. This sample menu can also provide fibre, iodine, folic acids and vitamin B12. Pregnant and lactating mothers should be encouraged to consume more plant base foods in order to consume more phytochemicals and micronutrients. Even if mothers chose to be a vegetarian, the amount of protein can be adequate if the choice of foods is wise.

BREAKFAST HABITS AS PREDICTORS OF ADOLESCENT EMOTIONAL AND BEHAVIORAL PROBLEMS: AN 8-YEAR LONGITUDINAL STUDY

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Background

Breakfast is widely regarded as the most important meal in a day, we therefore evaluated the prospective associations of breakfast habits with emotional/behavioral problems in Hong Kong adolescents.

Methods

Three cohorts of 118,765 Primary 4 students (girls 52.1%, age 9.9±0.58 years) attending the Student Health Service of the Hong Kong Department of Health in 2002, 2004, 2006 were followed for 8 years till 2010, 2012, 2014, respectively. Emotional/behavioral problems were examined at least once using the Child Behavior Checklist-Youth Self-Report (CBCL-YSR) in Secondary 2, 4 and 6, and lifestyles were biennially examined using standardized questionnaires from Primary 4 to Secondary 6. Prospective associations of breakfast habits with emotional/behavioral problems were assessed using generalized estimating equations, adjusted for age, sex, weight status, highest parental education and occupation status, number of follow-ups, cohort and frequency/duration of extracurricular physical activity.

Results

At Primary 4, 88.2%, 7.2% and 4.6% of participants ate breakfast at home, away from home and skipped it, respectively, of which 2.7%, 3.7% and 4.6%, respectively, reported total emotional/behavioral problems at least once at Secondary 2, 4 or 6. Compared with eating breakfast at home, greater adjusted odds ratios were observed for eating away from home and skipping breakfast in relation to total emotional/behavioral problems (1.52, 2.57) and the 8 syndromes including withdrawal (1.19, 2.11), somatic complaints (1.63, 2.35), anxiety/depression (1.47, 2.56), social problems (1.11, 1.56), thought problems (1.56, 2.32), attention problems (1.59, 2.71), delinquent behaviors (2.29, 3.80) and aggressive behaviors (1.65, 2.83).

Conclusions

Eating breakfast away from home and especially skipping breakfast predicted emotional/behavioral problems during adolescence. Having breakfast, particularly at home, may benefit adolescent mental health.

THE RELATIONSHIP BETWEEN THE OPTIMIZATION OF PARENTERAL NUTRITION STRATEGY AND THE MICROSTRUCTURE OF WHITE MATTER IN PRETERM IFNANTS

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Objective

To investigate the effect of parenteral nutrition strategy optimization on the white matter microstructure in premature infants.

Method

The research objects was picked by gestation age and birth weight , and all baby must be born in our hospital for the period from January , 2014 to November, 2017;According to early nutritional strategies, they are divided into two groups: optimization group and routine group; comparing nutrition intakes and parenteral nutrition related complications within 28 days after birth , and the FA of some important white matter tracts on CGA 36 weeks between the two groups;

Result

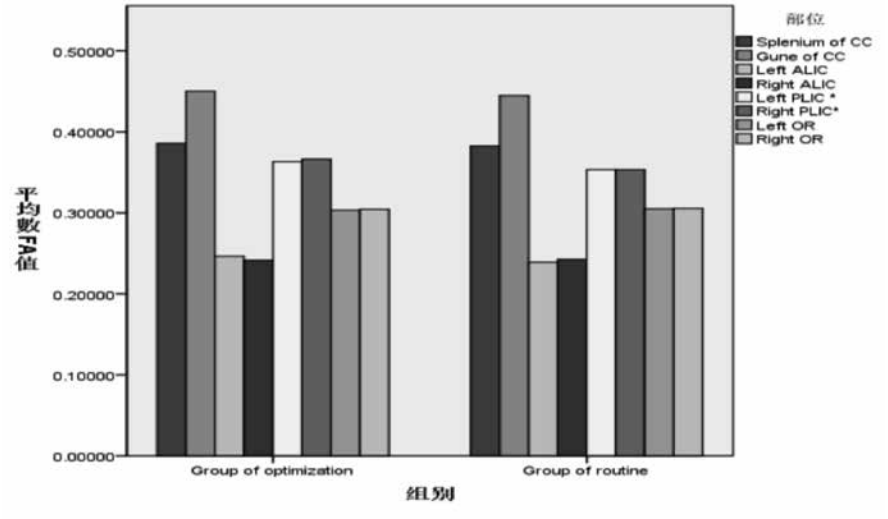
A tolal of 52 preterm babies were recruited ;there were 26 cases in the optimization group and the other in the routine group (n = 22). There was no significant difference in the gestational age, birth weight, brain injury and intrauterine growth retardation rate between the two groups (P > 0.05). the total protein and calories intake in 28 days of optimization group respectively (3.02±0.25 g/kg.d ,102.29±3.16 kcal/kg.d), were higher than that of the conventional group (2.90±0.22 g/kg.d ,96.35 ±3.15 kcal/kg.d), protein intake and calorie intake increased by 4.0% and 5.8%, the difference was statistically significant (P < 0.05); About FA of white matter tract on CGA 36 weeks, the difference only was found in bilateral PLIC, the optimization group respectively compared with the conventional group increased by 2.8% and 5.5%,and statistically significant (P < 0.05), and the difference in ALIC, OR and CC were not significant (P > 0.05).

Conclusion

The increment derived from the optimization of parenteral nutrition can improved the maturation of white matter microstructure in premature infants.

Key words

Nutritional support: Parenteral nutrition: Brain development: Diffusion Tensor Image



RELIABILITY AND VALIDITY OF PERFORMANCE OF THE UPPER LIMB MODULE FOR CHINESE PATIENTS WITH DUCHENNE MUSCULAR DYSTROPHY

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Introduction

Duchenne muscular dystrophy (DMD) due to DMD gene mutation has progressive weakness affecting the skeletal, heart and respiratory muscles, in which currently has no known cure. The recent rapid development of approved disease-modifying therapies and many ongoing clinical trials highlight the importance of reliable clinical outcome measures. Performance of Upper Limb Module (PUL) for Duchene Muscular Dystrophy was established in 2013. Reliability, validity and correlations with pulmonary function and other motor scales have not been investigated in local Chinese patients. This study aims to examine the psychometric properties, the internal consistency for intra-rater and inter-rater reliability, and validity of PUL for DMD in local Chinese patients.

Methods

23 patients with DMD were assessed. For inter-rater reliability analysis, three raters evaluated the same PUL performance. For intra-rater reliability, the three raters evaluated individually the same timed performance one month later. Internal consistency was evaluated using the Cronbach's alpha. Floor to ceiling effect and item analysis were performed to analyse for scale and item effectiveness. Known groups validity between ambulatory and non-ambulatory state was investigated using receiver operating curve analysis. Construct validity was conducted correlating the serial forced vital capacity (FVC% predicted) and Hammersmith motor scale that were performed on the same day with the PUL.

Results

23 patients with DMD aged 7 to 32 were assessed from 2016 to 2019. 18 subjects were on steroid. Assessment was carried out in 8 patients at their ambulatory state and 17 patients at their non-ambulatory state. Two patients had been studied both at the ambulatory state and later the non-ambulatory state with the disease progression. There was no floor or ceiling effect for total PUL score and the score distribution was not skewered. The result showed excellent intra-rater and inter-rater reliability for the total and the three level PUL scores with intra-class correlation coefficient (ICC) range from 0.95 to 0.99. The internal consistency was good for the total and the level scores with Cronbach's alpha ranging from 0.97 to 0.99. Receiver Operating Characteristic curve (ROC) analysis found significant better area under curve (AUC) values (0.69 - 0.97) for total PUL and three level scores between ambulatory and non-ambulatory state indicating good known-groups validity in the differentiation of the two groups. PUL was also found to be strongly correlated inversely with age, but positively with FVC (% predicted) and Hammersmith motor scale with correlation coefficient of -0.81, 0.84 and 0.86 respectively. The serial PUL scores correspond well with age, pulmonary function and motor progression.

Conclusion

PUL is a reliable, valid and easy to use tool with good scoring distribution and no ineffective items for Chinese patients with DMD, in the monitoring of disease progress and treatment effect, and as outcome measure for therapeutic trials.

ATYPICAL PRESENTATION OF MYASTHENIA GRAVIS

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Myasthenia gravis (MG) is relatively uncommon in adolescent boys. Ophthalmologic symptoms and muscle weakness are common presentations. Atypical presentation may cause diagnostic delay. Here we reported an adolescent boy presented with unexplained pneumonia and subsequently found to have generalized myasthenia gravis.

Case Presentation

A 14-year-old boy with good past health was admitted with a 6-month history of chronic cough and significant weight loss. It was associated with intermittent fever. High resolution computerized tomography (HRCT) of thorax showed non-specific pneumonia. Extensive microbiological investigations were negative.

He was put on multiple antibiotics including ciprofloxacin. About a week later he developed marked bilateral ptosis and dysarthria. On further reviewing the history, he noted episodes of dysphagia, choking, dysarthria and ptosis of milder degree approximately 3 months prior to hospital admission. The symptoms were worse in the evening and improved after rest. Upon physical examination, fatigability was demonstrated on looking up and repeated shoulder abduction. Tensilon test was positive with improvement in ptosis. Anti-acetylcholine receptor antibody was not elevated. The clinical picture was compatible with generalized myasthenia gravis, complicated by repeated aspiration leading to pneumonia. Intravenous immunoglobulin (IVIG) was commenced in view of the prominent bulbar symptoms. Ciprofloxacin was stopped because of potential exacerbation of myasthenic symptoms Unfortunately, he developed respiratory failure the next day and was admitted to intensive care unit for ventilatory support. We continued with IVIG, add on prednisolone and pyridostigmine later. He was weaned off ventilation and his bulbar symptoms resolved around four weeks after treatment.

Discussion

The muscle weakness seen in MG is due to the binding of antibodies to acetylcholine receptors in the postsynaptic membrane at the neuromuscular junction. Most patients with MG have raised acetylcholine receptor (AChR) antibodies (80%), some are found to have muscle-specific tyrosine kinase (MuSK) antibodies (10%), and occasionally antibodies against agrin and LRP4 are found.

The incidence of MG is estimated to be around 150-250 cases per 1,000,000 persons. Approximately 15% of the Caucasian patients have the onset of the disease before 15 years of age (Juvenile MG) and females are more commonly affected. A higher incidence of Juvenile MG is noted in the Southern Chinese.

Patients typically present with painless proximal muscle weakness that worsens with exercise and repetitive use (fatigable weakness). Ocular muscles are most commonly affected (73%) and patients commonly present with ptosis and diplopia. The second most commonly affected muscles are the oro-pharyngeal muscles (18%) and patients typically complain of dysphagia, frequent choking and nasal speech. Limb weakness is also observed (9%).

In the case of our patient, the main presenting complaint was chronic cough with significant weight loss, which was likely related to repeated aspiration and decrease oral intake. But these symptoms might mislead us to 'rule out' common infections like tuberculosis, etc. Our postulation was supported by prompt resolution of chest symptoms after initial non-oral feeding and subsequent resolution of dysphagia. But there was also rare association of interstitial lung diseases with MG. The use of ciprofloxacin may have exacerbated the disease, resulting in marked ptosis and ophthalmoplegia.

Under-reporting of symptoms may also be common in MG, as symptoms 'wax and wane'- getting better after rest, patients and families may just attribute them to fatigue and do not seek medical help.

Conclusion

This case highlights that MG with predominant bulbar muscle weakness may present with chronic cough and weight loss. A high index of suspicion and specific enquiry upon swallowing problems may be necessary for prompt recognition and diagnosis.

CLINICAL BURDEN OF INFLUENZA-ASSOCIATED NEUROLOGICAL COMPLICATIONS IN HONG KONG PAEDIATRIC PATIENTS, 2014-2018

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Background

Influenza is a very common contagious respiratory illness caused by the influenza virus. It can cause mild to severe diseases. Severe infection can result in hospitalization, serious flu-related complications and even death. There are only a few population-based retrospective studies of the influenza-associated neurological complications (IANC) in children (<=18 years old). In this study, we aim to examine the epidemiological pattern of IANC and (2) characterize the clinical burden of IANC in hospitalized Hong Kong children.

Methods

We utilized the Hospital Authority inpatient data from Clinical Data Analysis and Reporting System (CDARS), which accounts for 82.1% of all hospital admissions in Hong Kong. We extracted the clinical data of admitted paediatric patients with laboratory-confirmed influenza A & B and identified the number of patients with IANC between 2014-2018. Information on demographic characteristics, medical treatment, hospitalization duration, mechanical ventilation and ICU admission, were collected.

Results

Among 27,002 paediatric influenza patients (18081 cases were FluA), we identified 1,907 cases of IANC over the past five years, accounting for 6.37% of total cases. Influenza A patients showed a significantly higher incidence rate of IANC when compared to influenza B patients (7.70% vs 3.65%). There had a high correlation between the admission of influenza and neurological cases (PCC=0.71 for FluA and 0.44 for FluB) by Pearson coefficient test. The spectrum of IANC was broad and included Encephalopathy (n=45), Febrile seizure (n=1420), Myositis (n=253), Guillain-Barre syndrome (n=1) and Viral encephalitis (n=1). Influenza A patients contributed majority of influenza-associated Encephalopathy (n=42, 93%) and Febrile seizure (n=1253, 88%). Influenza B patients predominately showed a higher percentage of influenza-associated myositis (n=157, 62%). Over 80% of influenza A patients with IANC were aged ≤ 5 years where 36% of Influenza B patients with IANC were 6-8 years old. A small proportion of IANC cases caused ICU admission and death.

Conclusion

We demonstrated a high percentage of neurological complications in seasonal influenza patients (<=18 years old) in the Hong Kong population. IANC generated a severe clinical burden in Hong Kong and responsible for influenza-associated mortality cases in paediatric patients. Efforts are needed to educate the public on IANC, possible prevention by vaccination and Flu treatment for those at risk of complications for paediatric patients.

REVISION PALATOPLASTY IMPROVES SPEECH OUTCOME AND VELUM ANATOMY IN CLEFT PALATE PATIENTS WITH VELOPHARYNGEAL INSUFFICIENCY: EXPERIENCE IN REGIONAL CLEFT CENTER

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Background

Veolpharyngeal insufficiency in repaired cleft palate patients poses significant morbidities to patients and remain a formidable surgical challenge. The aim of this study is to review the speech outcome of these patients after revision palatoplasty, and further correlate with Magnetic Resonance Imaging (MRI) findings.

Methods

From 8/2017 to 7/2019, 9 consecutive cleft palate patients that undergone revision palatoplasties for velopharyngeal insufficiency were retrospectively reviewed. Total of 6 patients that have both preoperative perceptual speech assessment using Pittsburgh weighted speech scores (PWSS) and postoperative assessment at least 3 months after the operation were recruited. All patients have nasoendoscopies done preoperatively to document velophayngeal closure. Preoperative and postoperative MRI pharynx was performed in 3 of these patients to measure following parameters: soft palate length, levator muscle thickness, levator inclination angle from posterior pharyngeal wall, and continuity of velar muscles.

Results

4 patients undergone revision furlow palatoplasty with buccal myomucosal flap, 1 patient undergone furlow palatoplasty and 1 patient undergone pharyngeal flap. Mean age (range) at operation was 15 years (7 – 24). Mean (range) preoperative anteroposterior closure on nasoendscopy was 0.57 (0.1 – 0.8). Mean duration for postoperative speech assessment is 7.8 months. Improved speech outcome is indicated by a reduction of mean modified PWSS from 5.7 preoperatively to 2.8 postoperatively ($p=0.002$). MRI studies revealed improvements of soft palate length from 3.66cm preoperatively to 4.34cm postoperatively ($p=0.122$), improved velar muscle thickness from 6.8mm preoperatively to 7.9mm postoperatively ($p=0.158$), steeper angle between levator muscles and posterior pharyngeal wall from 62.7 degree preoperatively to 51.7 degree postoperatively ($p=0.008$) and restoration of levator muscles continuity in all patients postoperatively.

Conclusion

Revision palatoplasty improves speech outcome and velum anatomy for cleft palate patients with velopharyngeal insufficiency.

ESTHETIC, FUNCTIONAL AND PSYCHOSOCIAL OUTCOME ON ADOLESCENT PATIENTS WITH CLEFT LIP AND/OR PALATE: REGIONAL CLEFT CENTER EXPERIENCE

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Aim

This study aims at evaluating esthetic, functional and psychosocial outcome of adolescent patients with cleft lip and/or palate and their parents' after surgery.

Method

Patients who had cleft lip and/or palate repair surgery done and aged >= 12 years old and their parents are recruited. An interview-guided questionnaire of 17 questions for evaluation of satisfaction for esthetic, functional and psychosocial outcome were completed. The above study had been approved by HA research ethics committee (HA REC).

Results

64 patients (Aged 12-31, median = 14) and 47 of their parents were recruited from January 2017 to March 2019. 25 patients had cleft palate (CP), 20 patients had unilateral cleft lip and palate (UCLP) and 19 patients had bilateral CLP (BCLP).The questionnaire showed good internal consistencies; Cronbach's alpha was 0.792 and 0.714 for patient and parents group respectively. Majority of patient and parents were satisfied with the esthetic (overall facial appearance 92% of patients and 100% of parents had moderate to high satisfaction), functional (overall functional 98% of patient and 97% of parents had moderate to high satisfaction) outcome. Despite the high level of satisfaction, there is a substantial proportion of patients and parents reported to have significant negative psychosocial impact (16% and 21% in patients' and parents' group respectively). CP were more satisfied with esthetics and functions than those with BCLP and UCLP, especially of nose, upper lip and overall facial esthetics ($t=2.045$-4.777, $p<0.05$). Patients with higher level of satisfaction of esthetic outcome (Rho = -0.284 to -0.399) and speech outcome (Rho = -0.261 to -0.447) had less negative impact psychosocial impact.

Conclusion

Most patients after cleft repair surgery are satisfied with esthetic and functional outcome; However, there is a group of patient with significant negative psychosocial impact. Patient has less negative psychosocial impact when they had higher level of satisfaction of esthetic and functional outcome. Further study is needed to look into the factors affecting the psychosocial aspect of patients and their family members.

CHARACTERISATION OF BRAIN DEATH IN A PAEDIATRIC INTENSIVE CARE UNIT IN HONG KONG

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Objective

To determine the clinical characteristics of paediatric patients declared brain dead in Hong Kong

Methods

This is a retrospective analysis of a prospectively collected patient database. The PICU is a university affiliated hospital's medical-surgical intensive care unit. All deaths between October 2002 and October 2018 were screened. Patients included were 0-16 years old diagnosed with brain death. Their demographics and clinical characteristics were collected. It was compared with cardiopulmonary death.

Results

There were 127 deaths, giving a mortality rate of 4.6% of the 2784 PICU admissions. Brain death accounted for 22 deaths (17.3% of all deaths). Causative mechanisms of brain death were: traumatic brain injury (4/22), cardiac arrest, shock, and/ or respiratory failure (9/22), central nervous system infection (5/22), brain neoplasm (2/22) and others (2/22). Accident and trauma accounted for a larger proportion in the brain death than in the cardiopulmonary death (27.3% vs 3.8%, p=0.0002). PICU lengths of stay were longer in the brain death than the cardiopulmonary death (8.5 days vs 2 days, p=0.0042). There was no difference in the proportion of under 2 years old in brain death and cardiopulmonary death. (31.8% vs 40%, p=0.47). Organ donation had been discussed in 3/22 patients but these were screened out.

Conclusion

One in five PICU deaths were brain death. Acute hypoxic-ischaemic brain injury was the commonest mechanism, whereas accident and trauma led to one quarter of brain death. Brain death determination lengthened PICU stay. Younger age was not a deterring factor to perform brain death testing. Organ donation rate was suboptimal. This study emphasized the importance of injury prevention in childhood, and the education of the public on acceptance of brain death and support for organ donation.

THE FIRST 100 DAYS OF A NEW PICU: DOES THE PIM SCORES PREDICT LENGTH OF STAY IN PICU?

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Background and Aims

Paediatric index of mortality (PIM) 2 score is one of the severity scoring system used for predicting mortality of patients admitted to Paediatric Intensive Care Units (PICU). The PIM 2 score was recalibrated and updated to PIM 3 score in 2013 to provide a better estimate of mortality risks. The objective of this study was to analyse if PIM 2 and 3 can be used to predict the length of stay in children admitted to PICU.

Methods

We performed a prospective observational study of all children admitted to the Hong Kong Children's Hospital PICU from 27th March 2019 to 5th July 2019. The admissions were divided into 2 groups, non-oncology and oncology patients. Patient epidemiological characteristics, medical information and length of stay were collected. The PIM 2 and 3 scores were calculated and the correlation of the PIM scores and the length of PICU stay were analysed using Spearman's rank correlation test.

Results

28 children were admitted during this period. There were 12 non-oncology patients and the median PIM 2 score was 0.2 (range 0.1-1-2) and PIM 3 score was 0.2 (range 0.2-1.6). There were 14 oncology patients and their median PIM 2 score was 1 (range 0.1-8.4) and PIM 3 score was 4.9 (range 1.2-9.1). The length of PICU stay in the non-oncology group was correlated with PIM 2 (rs=0.702, p=0.011) and PIM 3 (rs=0.887, p<0.05) scores, while PIM 2 (rs=0.097, p=0.720) and PIM 3 (rs=0.159, p=0.557) scores did not show any correlations with the length of PICU stay in oncology patients. PIM 2 correlates with PIM 3 scores in both non-oncology (rs=0.755, p=0.004) and oncology patients (rs=0.657, p=0.006).

Conclusion

PIM 2 and PIM 3 scores correlate with length of stay in non-oncology patients, but not in oncology patients. Further studies involving more patients will be needed to evaluate if general mortality prediction scores can be applied to oncological patients in predicting outcomes, and if there is a need to develop an oncology specific mortality and outcome prediction score.

Table: Characteristics, PIM2, PIM3 and length of stay for PICU patients

	Non-Oncology Patient (n=12)	Oncology Patient (n=16)	*p*-value
M/F	10/2	14/2	1
Age (years), median (IQR)	3.7 (0.7-7.8)	10.4 (3.8-15.8)	0.017*
LOS (days), median (range)	1 (1.0-7.8)	7.6 (1.0-53.0)	0.510
PIM2 (%), median (range)	0.2 (0.1-1.2)	1 (0.1-8.4)	0.021*
PIM3 (%), median (range)	0.2 (0.2-1.6)	4.9 (1.2-9.1)	0.062
	LOS : PIM2 = 0.702* (p=0.011)	**LOS : PIM2 = 0.097 (*p*=0.720)**	
r_s	**LOS : PIM3= 0.887* (p<0.05)**	**LOS : PIM3= 0.159 (*p*=0.557)**	
	PIM2 : PIM3= 0.755* (p=0.004)	**PIM2 : PIM3= 0.657* (*p*=0.006)**	

* *p*-value < 0.05 – statistically significant values
IQR = interquartile range, LOS = length of stay

EXPLORATION OF THE POSSIBLE LINK BETWEEN EMOTIONAL PROBLEMS AND CHOLESTEROL LEVELS AMONG CHILDREN DIAGNOSED WITH ATTENTION-DEFICIT HYPERACTIVITY DISORDER

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Objectives

Attention-deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder characterized by inattention and hyperactive-impulsive behavior. Evidence shows that ADHD and mood problems such as depression and anxiety often co-occur and yet not everyone with ADHD reported elevated emotional problems. Given that cholesterol is essential for healthy brain development including the regions governing emotion regulation, reports found lower cholesterol levels in patients with major depressive disorder and those with suicide attempt behavior compared to healthy subjects. This study explored whether ADHD adolescents experienced more emotional problems and whether emotional problems correlated with cholesterol levels in these adolescents.

Methods

This study used a portion of data from the longitudinal cohort study which was designed to investigate the long-term impact of family socioeconomic status on child development. In 2018/19, parents of 300 adolescents (average age: 12.57+/-0.49 years) were asked to rate their children's emotional problems and report whether their children had doctor-diagnosed psychiatric diseases. We further collected blood samples from 263 children to study their lipid profile (total cholesterol, high-density lipoprotein (HDL)-cholesterol, and low density lipoprotein(LDL)-cholesterol). Regression analyses were performed to test the relationships between variables of interest.

Results

Among 300 children, 27 (9%) had ADHD diagnosis. Analysis based on overall sample found no association between ADHD and emotional problems, but when investigating the relationship by gender, there was a significant interaction effect of ADHD and gender on emotional problems ($p=0.037$), with ADHD males displaying more emotional problems than ADHD females. Further analyses based on 263 children (21 with ADHD diagnosis) found significant interaction effect of ADHD and gender on total cholesterol ($p=0.038$) and low LDL-cholesterol levels ($p=0.013$) after adjusting for the child's physical disease history. Specifically, ADHD males had significantly lower total cholesterol and low lipoprotein-cholesterol levels than ADHD females. In ADHD males, more emotional problems were associated with lower LDL-cholesterol levels ($B = -4.26$, 95%CI (-7.46, -1.07), $p=0.013$).

Conclusion

We found preliminary support for the association between more emotional problems and lower cholesterol levels in ADHD children especially among males. Although larger prospective studies are needed to substantiate these claims, the evidence highlight the importance of healthy lifestyle to keep cholesterol levels in normal range which can have positive effects on physical and mental health.

A REVIEW OF THE GAME-BASED APPROACHES TO TEACHING SAFETY KNOWLEDGE AND BEHAVIOR

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Background

Children are susceptible to injuries. High curiosity may render them to engage in dangerous circumstances and thus increases their risk of being injured. Safety education such as teaching safety rules and tips is vital to prevent children from unpleasant accidents. However, traditional means may not be effective in capturing children's attention and sustaining their interest in learning safety knowledge. As a result, children may not be aware of dangerous situations or act appropriately in dreadful conditions. In recent years, with advances in mobile technology, more mobile games and applications were developed to promote health-related behaviour which makes health education more interesting. To better understand the application of gamification in health research, this review summarized the strengths and weaknesses of existing safety mobile games and applications.

Method

Existing safety mobile games and applications were identified through google, google play store, agame.com and yahoo, with search keywords including safety for kids, safety rules and danger awareness. Approximately 20 games were investigated and referenced by our research team in this game-development process.

Results

The safety mobile games and applications being reviewed all have some weaknesses and strengths. Majority of the games lack competition components such as points and level system which make them more suitable for infants and pre-schoolers rather than older children. Furthermore, all the games are presented in English. No safety games or applications are available in Chinese version. The strengths of these games include realistic scenes, use of safety cards, and attractive graphics. For example, animation and audio are used to explain the accident which helps children understand the cause and process of accident in a realistic way, whereas safety cards are used to summarize and present the danger to children in a clear and concise way. Hints and guidelines are also provided to children to guide them to point out the dangerous reactions people made to a range of scenarios.

Conclusion

By teaching preventive methods and offering useful advice, safety mobile games and applications have good potential to equip children with essential safety knowledge and behaviour to protect themselves and be vigilant to emergencies in daily life. Application of gaming strategies could provide effective means to motivate children to learn safety rules and behaviour. Hence there is a need to develop a safety mobile game for Hong Kong Chinese children.

ASSOCIATION BETWEEN FAMILY SOCIOECONOMIC STATUS AND CHILDREN'S MOTOR PERFORMANCE IN HONG KONG

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Background and Aims

Family socioeconomic status (SES) has significant impact on child development. The type and amount of resources provided to children vary between families across SES levels. In today's society, electronic device use is prevalent making it an effective tool for academic learning and entertainments especially for young generations. The growing use of electronic device might reduce the quantity and quality of recreational parent-child activities. The question of whether these factors (electronic device use and recreational parent-child activities) play a role in children's long-term motor outcomes remain unclear. This study therefore investigated the association between family SES and motor performance among Chinese children in Hong Kong.

Methods

We used data from the longitudinal cohort study which recruited a group of Hong Kong Chinese children in Kindergarten 3 (K3) in 2012-13 and followed up these children in Form 1 (F1) in 2018-19. A total of 175 Chinese children (86 males and 89 females, average age at F1 follow-up: 12.38 years old) answered both K3 baseline and F1 follow-up survey on the duration of electronic device use and frequency of parent-child activities. In addition, family demographic data were obtained during K3 baseline. In F1 follow-up, physical fitness tests were carried out, including six-minute-walk test (6MWT), handgrip strength, and standing long jump, to assess children's motor skills. Pearson's Product-Moment Correlation Analysis between the variables of interest was carried out. Mediation analyses were also carried out to identify pathways between family SES and child motor performance.

Results

Family SES in K3 had significant effects on child 6MWT (B = 13.57, 95%CI: 0.26, 26.88, p = 0.046) and standing long jump test (B = 3.99, 95%CI: 0.57 to 7.40, p=0.022) performance in F1. Further analyses showed that 19.2 % of the effect from K3 family SES to F1 child 6MWT performance was due to the duration of electronic device usage in K3 (B = 2.61, 95%CI: 0.13, 6.94) and 19.5% was due to the duration of recreational parent-child activities in K3 (B = 2.65, 95%CI: 0.15,6.28). In addition, more time spent on TV (r=-0.196) and game consoles (r=-0.166) in K3 correlated with poorer 6MWT performance in F1, despite no association between K3 electronic device usage and other physical fitness tests (handgrip strength and long jump).

Conclusions

Family SES was found to affect children's long-term motor outcomes, partly through its effects on children's electronic device usage and play-based parent-child activities in early childhood. More efforts should be allocated to educate low SES families about the risks and benefits of these activities so as to optimize their children's long-term motor outcomes.

SURVIVAL AMONG CHILDREN WITH DOWN SYNDROME IN HONG KONG: A POPULATION-BASED COHORT STUDY FROM BIRTH

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Objectives

Using hospitalisation data, this study aimed to describe the survival patterns, comorbidities, and attendance at Accident & Emergency Department (AED) among children with Down Syndrome (DS) in Hong Kong.

Methods

A population-based, retrospective cohort study of 1010 live births with DS delivered between 1995 and 2014, as identified from territory-wide hospitalisation data in Hong Kong. Kaplan-Meier product-limit method was adopted to estimate the survival probabilities of children with DS by selected demographic and clinical characteristics. Cox regression analyses were conducted to examine associations of comorbidities and AED attendances with survival patterns.

Results

There were 1010 live births with DS in Hong Kong within the study period and the average rate of live births with DS was 8.0 per 10,000 live births [95% confidence interval (CI): 6.8, 9.3]. Among the 83 that died in this period, the overall half-, 1-, and 5-year survival probabilities were 95.8%, 94.4%, and 92.6%, respectively. Significant improvements in the survival rates were observed over the study period, particularly among those born between 2000 - 2004 and 2005 - 2009 compared to those born between 1995 and 1999 ($p < 0.05$). Moreover, those with DS who were diagnosed with congenital heart defects, congenital anomalies of the circulatory system, and low birth weight had higher mortality rates than those without these symptoms.

Conclusions

The early life survival of children born with DS has improved incrementally over the past two decades, likely due to improvements in medical treatments and enhanced coverage of prenatal DS screening programs.

SEXUAL BEHAVIORS AND INTENTION FOR CERVICAL SCREENING AMONG HPV-VACCINATED YOUNG CHINESE FEMALES

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SKIN PRICK TESTING A BETTER PREDICTOR THAN BLOOD TESTING FOR THE DIAGNOSIS OF PEANUT ALLERGY IN CHINESE CHILDREN

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Background

Peanut allergy is common in Chinese children, yet the most predictive diagnostic cut-offs for skin prick test (SPT) and blood testing in this population are unclear.

Objectives

We aimed to determine the optimal cut-off values for whole-peanut SPT, specific IgE (sIgE) and component-resolved diagnostics (CRD) for Chinese children based on outcomes of open oral food challenges (OFC) to peanut.

Methods

We recruited ethnic-Chinese patients 1-18 years old who were suspected of having peanut allergy based on a history of reactions after exposure or sensitization although peanut naïve. Considering the AUC value of 0.8, 80% power and 5% level of significance with two tails, 26 patients were needed. Sensitivities, specificities, positive and negative predictive values, and receiver operating characteristic curves (ROCs) and their area-under-curves (AUCs) for SPT, peanut sIgE, and CRD were compared.

Results

Thirty-one subjects participated. Only SPT reached statistical significance (AUC 0.91, p=0.0001), but not the other tests. Seven retrospective data were added to optimize the power. SPT remained to be the best predictor, followed by Ara h 2 sIgE (AUC 0.72, p=0.02). An SPT wheal size of 3mm and Ara h 2 sIgE of 0.14kU(A)/L yielded the highest Youden's index. The specificity of SPT and Ara h 2 sIgE reached 94% at 6mm and 0.74kU(A)/L, respectively. Comparisons of ROCs revealed that SPT was significantly better than Ara h 2 sIgE (p=0.03) and whole-peanut sIgE (AUC 0.61, p=0.26).

Conclusion

In Chinese children, SPT appeared to be the best predictor for peanut allergy, followed by Ara h 2 sIgE.

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RETINAL HAEMORRHAGE AND ABUSIVE HEAD TRAUMA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background & Objective

Abusive head trauma (AHT) is a severe childhood injury with high mortality and morbidity rates. It is also the commonest form of fatal abuse in young children which often results in retinal haemorrhage (RH). RH is present in many cases of AHT and hence proposed as a possible diagnostic marker to differentiate cases of abusive and accidental head trauma. It is challenging to tell the difference between AHT and non-accidental injuries because symptoms such as vomiting are often non-specific, and young children may not be able to speak or express themselves in a clear way and caregivers may give inaccurate histories. To determine whether AHT predicted RH better than accidental injury, we conducted a systematic review and meta-analysis of results from relevant studies.

Method

All original studies published from 1990 to August 2018 were identified across 4 bibliographic databases, EMBASE, PubMed, CINAHL PLUS and Web of science. Articles with subjects experiencing AHT or accidental injury before the age of 18 years, with outcomes specifically related to RH were included. Summary effect sizes were generated using a random-effects meta-analytic model.

Result

44 studies fulfilled the inclusion criteria and were included in this systematic review and meta-analysis. The pooled prevalence of RH amongst abused children and injured children were 62% (95% CI = 52% –70%) and 5% (95% CI = 2% –14%), respectively. Further analyses found support for the positive association between RH and AHT (risk ratio (RR) = 16.92, 95% CI = 5.11 – 56.09).

Conclusion

AHT is found to predict RH better than accidental injury. Healthcare practitioners should be mindful about the signs of RH which may suggest non-accidental injury causes and require more targeted, high quality medical and social care for the child.

VITAMIN D STATUS OF INFANTS AND TODDLERS IN HONG KONG- A PILOT STUDY

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Introduction

Many studies found that breastfed children without vitamin D supplement are at risk of vitamin D deficiency due to low vitamin D content in breastmilk. However, vitamin D screening is not a routine test, due to its expensiveness and high manpower consumption. It is known that vitamin D level is associated with serum alkaline phosphatase (ALP) in adults but lack of similar evidence was observed in infants. This pilot study aimed to evaluate the association between ALP and vitamin D status in infants and toddlers.

Methods

A cross-sectional study was conducted. Blood samples were taken from the participants at enrolment to assess their level of serum vitamin D and other related parameters. Mother participants were asked to complete questionnaire regarding their socio- economic status and other related factors. Liquid chromatography-tandem mass spectrometry (LC-MS/MS) was used to measure serum vitamin D level.

Results

A total of 61 full term Chinese subjects (aged 2 to 23 months), 33 male and 28 female, birthweight > 2.5kg and no congenital diseases were recruited. 11.67% of infants were deficient and 18.33% of them had insufficient vitamin D level. A significant positive correlation between vitamin D and albumin was observed ($r= 0.324$, $p= 0.002$) whereas ALP demonstrated strong inverse correlation with vitamin D ($r= 0.475$, $p< 0.0001$). We also demonstrated positive correlation between infants age and vitamin D concentration ($r= 0.475$, $p< 0.0001$).

Discussion

Our pilot found ALP was negatively associated with vitamin D level in infants and toddlers. Vitamin D deficiency or insufficiency (30%) is prevalent in Hong Kong infants and toddlers. A positive trend of vitamin D with age was found, which is consistent with other studies that infants during their first 6 months of age are most vulnerable to vitamin D deficiency.

In addition, the association between albumin and ALP with vitamin D agreed with previous publications. Here, our results suggested that ALP could be a possible indicator on vitamin D deficiency, but a clearer result could be provided when more participants are involved in our future work.

Our results warrant further research in providing an effective way of using ALP to reflect and to improve the vitamin D status in breastfed infants, particularly before other diets are given.

VAGINAL BLEEDING IN AN INFANT WITH EXTREME PREMATURITY

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Background

Mini-puberty of infancy refers to the transient activation of the hypothalamic-pituitary-gonadal (HPG) axis during the first few months of life. Studies have documented a more exaggerated and prolonged gonadotrophin surge in preterm infants compared with term infants. We present a case of mini-puberty presenting with vaginal bleeding at corrected age of 3 months of life.

Case presentation

A former 23+6 weeks infant, born with birth weight of 540 grams, presented with intermittent vaginal bleeding in the diaper at corrected age of 3 months. Her neonatal history is significant for bronchopulmonary dysplasia requiring home oxygen, patent ductas arteriosus, neonatal jaundice, retinopathy of prematurity treated with laser therapy and grade 1 intraventricular haemorrhage which resolved on repeated ultrasound scan. Physical exam showed bilateral breast buds of 0.5cm-1cm with no signs of pubarche. There was no growth spurt and she was growing along the < 3rd centile. Systemic exam was otherwise unremarkable and there were no cafe-au-lait spots. Investigations showed luteinizing hormone (LH) 3.7 IU/L, follicle stimulating hormone (FSH) 18 IU/L and estradriol 167 pmol/L. Cortisol and thyroid function were normal and 17-hydroxyprogesterone was not raised. Ultrasound pelvis showed a pear-shaped uterus with uterus: cervix ratio of 1.7 and smooth endometrial echo, suggestive of hormonally stimulated uterus. There was no intrauterine mass or abnormal adnexal mass. A gonadotrophin releasing hormone (LRHR) test subsequently performed at corrected age of 4 months showed a predominant FSH response with rise of LH/FSH (IU/L) from 0.49/4.3 to 16/27 at 20mins and 13/28 at 60 mins. Magnetic resonance imaging of the brain and pituitary was unremarkable except finding of a Rathke cleft cyst. As she was impressed to have exaggerated mini-puberty due to extreme prematurity, no intervention was given. Repeated hormonal workup at corrected age of 8 months showed decreasing trend of gonadotrophin and estradiol level. Vaginal bleeding resolved and breast buds also regressed clinically.

Discussion

Activation of the HPG axis after birth is important for penile and testicular growth in boys, and for increase in mammary and uterine size and follicular development in girls. Studies have documented higher and more prolonged gonadotrophin surge, as well as estradiol level in preterm female infants compared to those at term. Our case also illustrated this phenomenon with an initial pubertal hormonal profile at corrected age of 3 months, associated with clinical breast development and uterine bleeding. Other causes of vaginal bleeding due to trauma, foreign body and infection have to be considered and it is important to investigate for causes of precocious puberty through physical examination, laboratory evaluation and imaging. As in our case, serum LH, FSH and estradiol levels will return to pre-pubertal range later and a conservative approach with careful monitoring is reasonable.

Conclusion

Our case illustrated that the robust surge of gonadotrophin in an ex-premature infant can in fact result in endometrial maturation and present as vaginal bleeding. While the mechanism of this alteration in HPG axis in prematurity is not clearly understood, pediatricians should be aware of this in the clinical setting, especially as we encounter more and more survivors of extreme prematurity now.

VALIDATION OF ELECTRONIC FOOD FREQUENCY QUESTIONNAIRE

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Background

Food frequency questionnaire (FFQ) is a classical tool for dietary assessment at the population scale. Instead of the traditional printed forms, several electronic FFQs (eFFQ) are being used as a cost-effective tool for data collection in large scale studies in western countries. Currently, the development of a local validated eFFQ is warranted for efficient processing of nutritional data.

Objective

To develop an eFFQ for the collection of dietary information in the Pregnant Women in Hong Kong and to compare it with a printed FFQ validated in the Chinese population.

Methods

The eFFQ was developed based on the Chinese population-validated printed FFQ. Of 311 commonly consumed food items among Hong Kong locals are listed and categorized into twelve food groups. Participants were recruited in the obstetrics and gynaecology clinic in a tertiary teaching hospital. Pregnant women completed the interviewer-assisted printed FFQs, and responded to the eFFQ in two week interval. Diet pattern in the past month was assessed through self-reported portion size and a set of frequency options. Trained assistants also provided guidance and instruction during the interview. Nutrient data were log-transformed. Inter-class correlations between two assessment tools were calculated. The level of agreement between printed FFQ and eFFQ was evaluated using Bland-Altman method and cross-classification into quartiles of daily intake.

Results

A total of 31 plausible reporters with a mean age of 34.2 (SD=3.5) years were included for analysis. Exact and adjacent quartiles from cross-classification ranged from 58.1% to 87.1% for intake of energy and key nutrients explored. The exponentiated limit of agreements of energy, carbohydrate, total, saturated, mono and polyunsaturated fat daily intake all range between 50%-200%, which indicates acceptable agreement.

Conclusion

The eFFA suggests satisfactory agreement with the validated paper FFQ, and is shown to be a reliable tool and option to measure the nutritional intake of Chinese subjects.

PATCH TESTING RESULTS IN CHINESE CHILDREN IN HONG KONG

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Introduction

Atopic dermatitis and allergic contact dermatitis are the most common Paediatric inflammatory skin disorders in Hong Kong and their prevalence have risen substantially in recent years. Undiagnosed allergic contact dermatitis in patients with atopic dermatitis may lead to treatment resistance thus increasing disease burden. A systematic review of over 40 studies within a 15-year period by by Dulcilea et al. in 2016 pointed out a lack of Asian studies present for review.

Objective

To evaluate the common allergens causing positive patch test results and the prevalence of allergic contact dermatitis amongst different age groups of children with atopic dermatitis in Hong Kong.

Material and methods

Twenty-six Chinese patients with atopic dermatitis from age 6 to 18 years with clinical suspicion of allergic contact dermatitis were included in this study. Their baseline demographic data and patch test results were assessed in the total group and separately in two age groups (primary school and secondary school groups), in order to identify any age-related variation in the patch test results .

Results

The total group examined included twenty-six children with atopic dermatitis (fifteen male and eleven female). The patch test results were positive in 70% of examined subjects. The most common contact allergens were fragrance mix (30.8%), cobalt (23.1%) followed by nickel (19.2%).

Conclusions

To date this is the first local study that looks into the prevalence and incidence of contact allergens among Chinese children by using a standard European series for all subjects. Contact allergy is frequently detected in children in atopic dermatitis. Our patch test results demonstrate difference in the prevalence of common allergens in our locality, compared to the other literature available for Asian and Caucasian patients.

A COMPREHENSIVE PAEDIATRIC HOME CARE TEAM ENHANCES SAFE AND EARLY DISCHARGE OF TECHNOLOGY-DEPENDENT CHILDREN – QEH EXPERIENCE

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Introduction

With the advancement in medical technology and treatment, the numbers of young infants and children who can survive from life-threatening diseases are increasing. However, many of these patients survive with dependence on complex medical technology- like tracheostomy, non-invasive ventilator support, gastrostomy, and total parenteral nutrition. To address these impacts on family and to cater to the increasing service demands, a multi-disciplinary Paediatric Home Care Team (PHCT) was established at Queen Elizabeth Hospital in October 2013.

The Paediatric Home Care team

The Paediatric Home care team mainly composes of 4 specialty sub-teams including respirology, gastroenterology, diabetes (DM), and central venous catheter (CVC) care. The teams are led by experienced paediatric nurses in collaboration with in-charge physicians. After referral, the home care team will assess the family support and feasibility of home care. A case manager will discuss with the in- charge paediatrician for options of support and training required. A care plan will be formulated to provide relevant training, source the necessary consumables and equipment. Finally, the parents' knowledge and skills will be evaluated by using standard checklists to ensure the standard of care provided and trained. Soon after discharge, telephone follow-ups, and ward follow-ups by specialist in-charge will be arranged. A telephone hotline is available for enquiry. Specialist in-charge physicians will be referred if necessary for follow-up actions.

Results & Outcome

After the establishment of the PHCT, there were 285 referrals received, and 252 cases (88%) had been successfully discharged. The variety of home care services provided included Home Oxygen Therapy, Tracheostomy care, Suction techniques, Non-invasive ventilator support (CPAP, BiPAP), Home mechanical ventilator support (HMV), Gastrostomy/Jejunostomy feeding, Nasogastric tube/ Nasojejunostomy feeding, Home parenteral nutrition, DM home care and monitoring, Subcutaneous injection of medications and CVC line care. Some patients may require more than one category of training.

Conclusion

The PHCT enhances a better quality of life for children with special health care needs. The PHCT facilitates and empowers technology dependent patients who, otherwise, would remain medically dependent at acute hospitals to be discharged home and lead a better quality of life.

INTERPERSONAL EFFECTS OF ANXIETY BETWEEN CHILDREN WITH ECZEMA AND THEIR PARENT CAREGIVERS: ACTOR-PARTNER INTERDEPENDENCE MODEL

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The present study examined a set of longitudinal, dyadic data and used the actor- partner interdependence model to analyze if there are significant predictive relationships between the anxiety levels of children with eczema and that of their parent caregivers. The levels of anxiety of children with eczema and their parent caregivers were measured at two time points separated by six weeks (T1 and T2). At T2, the children's anxiety was only significantly predicted by their own anxiety at T1. In contrast, parents' anxiety at T2 was significantly predicted by their own anxiety at T1, their children's anxiety at T1, as well as the interaction between the children's and the parents' anxiety at T1. Further analysis of this interaction effect suggests that the children's anxiety at T1 exerted a stronger "partner" effect on the parents' anxiety at T2 when the parents' baseline anxiety at T1 was high. The present results showed that there was stability in the children's and parents' anxiety levels across time. Furthermore, the children's anxiety, as well as its interaction with the parents', exerted a synergistic "partner" effect on the parents' anxiety while the children's anxiety was not significantly influenced by their parents'. Thus, there was asymmetry in the interpersonal effects of anxiety between children with eczema and their parent caregivers, with the parents' anxiety being more influenced by their children's and was more complex and multiply determined. These findings inform practices of dyadic psychosocial interventions in addressing the interpersonal transmission of anxiety between children and parents.

IMPROVING QUALITY OF LIFE OF PARENTS OF CHILDREN WITH ECZEMA BY A CUSTOMIZED INTEGRATIVE BODY-MIND-SPIRIT PROGRAM

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Background

Parental educational programs have been developed for parents of children with eczema in the past decades. However, the results of the programs are inconclusive and the psychosocial needs of parents have not been properly addressed. Integrative Body-Mind-Spirit (IBMS) is a holistic psychosocial intervention model that has been proved effective in improving the physical, psychosocial and spiritual wellbeing of people with different kinds of illness.

Aims

Apply a customized IBMS protocol to improve the quality of life of parents of children with eczema.

Methods

The IBMS protocol was customized to include four major elements (acceptance, appreciation, support, transformation) for parents of children with eczema. Randomized Controlled Trial methodology was employed where parents in intervention group attended a six-session 3-hour weekly customized IBMS intervention. Psychosocial parameters were measured during recruitment (T0), immediately after intervention (T1), and 6 weeks after intervention (T2). General Linear Model for repeated measures was conducted to compare the outcome between intervention group and control group, and to evaluate the effectiveness of the program.

Outcome Measures

Holistic Wellbeing Scale (HWS), Perceived Stress Scale (PSS), Patient Health Questionnaire (PHQ9)

Results

Data from 91parents (48 in intervention group, 43 in control group) were successfully collected for analysis. Significant improvements were found in the scores of HWS Non-Attachment [$F(2,178)=4.427$, $p<.05$], HWS Afflictive Ideation [$F(2,178)=3.965$, $p<.05$], HWS General Vitality [$F(2,178)=3.386$, $p<.05$], PSS [$F(2,178)=4.132$, $p<.05$], and PHQ9 [$F(2,178)=8.589$, $p<.01$].

Conclusion

The customized IBMS intervention can significantly improve the holistic wellbeing, and reduce perceived stress and depression levels of the parents of children with eczema. Result of the study presents a practical guideline for future psychosocial intervention research studies, and suggests an evidence-based psychosocial therapeutic direction in addition to conventional pharmacological approaches.

NUTRIENT INTAKE IN HONG KONG LACTATING MOTHERS

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Maternal nutrition from pregnancy to lactation is important for infant growth and development, as well as the women's health in the long run. However, there is little information of the food intake or diet quality of the postpartum women in Hong Kong.

In this study, Forty nine healthy lactating women aged 19-37 who practice lactation for 2-12 months were recruited. Subjects' dietary intake were assessed using a 3-day dietary record and further analyzed using the nutritional analysis software The Food Processor Nutrition Analysis and Fitness software. Furthermore, a self-developed Food Frequency Questionnaire (FFQ) was used to determine the average dietary intakes of fatty acids of subjects in the past three months. Breast milk samples from the lactation women were collected and contents of fatty acids in their breast milk were determined by gas chromatography- flame ionization detector (GC-FID).

Based on results of 3-day dietary records, maternal intakes of vegetables, fruit and dairy products were inadequate. Subjects' mean dietary intake of the macronutrients was out of the acceptable macronutrient distribution range (AMDR) suggested by the Chinese Dietary Reference Intakes (DRI) 2013. Mean protein intake was higher than the Chinese recommended nutrient intake (RNI) for lactating women by 44% and mean maternal energy intake from fat was higher than the upper limit of the Chinese AMDR by 24%.
For the maternal mineral intake, subjects' mean dietary intake of iron, calcium and iodine was under the recommended nutrient intake (RNI) suggested by the Chinese Dietary Reference Intakes (DRI) 2013. Only 6.12 percent, 2.04 percent and 2.04 percent of the subjects fulfilled the recommended intakes of calcium, iron and iodine respectively.

The mean daily intake of fish in the subjects was higher than the recommendation of Centre for Food Safety, Hong Kong which indicated a unique dietary habit of high fish consumption in Hong Kong. Daily intake of DHA as well as DHA+EPA of the mothers also exceeds the adequate intake level recommended by the Chinese DRIs 2013. Furthermore, the mean of DHA level in the milk of the lactating mothers was approximately 0.9% of total fatty acids, which was higher than the mean DHA level in the breast milk in the world (0.32%). In samples of breast milk for infants aged 0-6 months, a positive association was found between dietary consumptions of common fish types including both sea and fresh water fish in Hong Kong, and the PUFA contents in breast milk samples. More specifically, significant correlations were shown between milk DHA percentage and dietary consumptions of salmon, croaker and mandarin fish.

The present study showed an imbalanced intake of the food groups and an inadequate intake of certain nutrients among the lactating mothers, which may compromise the health of both lactating mothers and their breast-fed infants. Therefore, it is suggested that the lactating mothers should ensure their nutrient adequacy by making healthy and balanced food choices.
Keywords: DHA, Seafood, Diet, n-3 Fatty acids, PUFA, Calcium, Iron, Zinc, Iodine, Breast milk, Postpartum diet Hong Kong

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MULTIDISCIPLINARY APPROACH FOR PEDIATRIC PATIENT WHO COMPLAINT OF EXERCISE INDUCED SHORTNESS OF BREATH

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Background

Exercise induced shortness of breath (SOB) is a common symptom experienced by many patients with respiratory disease, e.g. asthma. Asthma patients may also complain of other symptoms, e.g. chest tightness, activity limitation. These symptoms are used to assess asthma control and lung function test is performed to assess the risk for further exacerbations.

Exercise challenge test is an indirect bronchoprovocation challenge test. It can reflect the experience of dyspnoea during exercise. Recent studies suggest that exercise induced dyspnoea in asthma may due to uncontrolled asthma, dynamic lung hyperinflation, dysfunctional breathing and psychological factors. To identify the underlying causes of exercise induced SOB in pediatric patients requires different professionals for assessment, e.g. pediatric respirologists, respiratory nurses, physiotherapists (PT), clinical psychotherapist (CP) and pulmonary function technician. Since patients complain of exercise induced SOB may cause activity limitation and affecting the quality of life. Therefore it is important to identify and treat the underlying cause of exercise induced SOB for the patients with complaint of exercise induced SOB.

Objective

To preliminarily evaluate the need of multidisciplinary approach for pediatric patients with complaint of exercise induced SOB.

Aims

1) To identify the need in developing multidisciplinary approach for pediatric patient who complaint of exercise induced SOB.
2) To develop a flowchart of multidisciplinary assessment for pediatric patient with complaint of exercise induced SOB.

Result and Outcome

41 pediatric patients with complaint of exercise induced SOB performed exercise challenge test. 29.3% (n=12) patients showed positive results in exercise induced bronchoconstriction (EIB) and 70.7% (n=29) patient showed negative results in EIB.

Among the patient (n=29) with negative EIB results, there were 62.1% of patients (n=18) had psychogenic factors and 69.0% patient (n=20) had dysfunctional breathing. Both psychogenic factor and dysfunctional breathing were the possible causes to have patient complaint of exercise induced SOB.

In the preliminary analysis, most of the patients with negative EIB had dysfunctional breathing or psychogenic factors which might cause them experience exercise induced SOB. It showed that there is a need to have a multidisciplinary approach for pediatric patient who complaint of exercise induced SOB. Therefore design a flowchart and implement how to conduct the multidisciplinary assessment for patient complaint of exercise induced SOB.

THE DESIGN OF "EMERGENCY RESPONSE BAG" WITH USER EXPERIENCE DESIGN (UX) APPROACH FOR THE HONG KONG CHILDREN'S HOSPITAL

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Background

Hong Kong Children's Hospital (HKCH) is the first children hospital to provide tertiary care and specialty referral service for complex and rare paediatric cases in Hong Kong. HKCH is very unique as such that there is no Accident and Emergency Department or physicians specialising in adult medicine. However, medical emergencies can still occur all around the hospital. The potential victim could be a child, teenager, adult or elderly. Emergency Response Team (ERT) has been established and as a tested model over 4 months to provide basic-life support to the victim under medical emergency, for at least 12 minutes, before ambulance arrival.

Methods

A special design full of mobility, flexibility and functionality "Emergency Response Bag" is necessary. This response bag required to cover wide-varied age and body weight for the potential victims, from less than 2 kilograms in children to more than 70 kilograms in an adult. Designing and developing an emergency bag became the most challenging part during the initial team establishment period. Our considerations include minimising team preparation and response time, maximising the mobility of the team, balancing between equipment availability and the weight of the bag, and integrate service feasibility. We have used User experience (UX) design approach, three elements namely: Usefulness, Desirability and Usability have been collected from end-user and experienced pre-hospital care personnel. Prototype tested with procedure based scenario in the simulation training centre. Moreover, usability approach to guide the refinement of the bag after every ERT turn out, namely: Learnability, Efficiency, Memorability, Errors and Satisfaction.

Findings

Regularly continuous stock items review and removal of redundant equipment action both are necessary, such as size, weight, portability, modifications for subsequent use.

Conclusion

With inputs from transport physicians, nursing specialists and feedback from nurses, we identified several issues in the design and put together a new multi-purpose transport pack that are light weight and portable for attending medical emergencies in the hospital. In this presentation, all considerations, development process, implementation, evaluation and modification in this 'bag development' will be stated and explained in details.

STUDY OF EFFECTIVENESS OF SCHOOL-LOCATED INFLUENZA VACCINATION (SLV-1) PROGRAM IN HONG KONG: INFLUENZA SEASON 2018-2019

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Abstract

School-based influenza vaccination program may improve coverage rate, supporting mitigation of seasonal influenza outbreak. This study evaluated the potential of a fully subsidized school outreach vaccination (SOV) program to achieve epidemic prevention potential (EPP) in the Hong Kong school population and their families. The purpose of this study was to evaluate the impact of SOV program 2018-19 on influenza vaccination rates and influenza-like illness (ILI) in the primary school students and their household members during the influenza peak period (IPP).

Method

Initial Questionnaires collected data from parents on ILI, vaccinations given to target school children and same household living individuals in both SOVS and non-SOVS before the scheduled vaccination period. The peak influenza period was noted and 1 month after, another cross-sectional survey of the primary school students and their household members in SOVS and non-SOVS was done to ascertain the vaccination status and ILI rates during IPP.

Result

The vaccination rate was significantly higher among the 2300 primary school students in SOVS (69.2% vs. 34.3%) than the 1095 students in non-SOVS ($p<0.0001$). The odds ratio of the students in SOVS to receive vaccine was four-fold higher at 4.3 (95% CI 3.7 – 5.0) compared to those in non-SOVS. The ILI rate was significantly reduced from 14.1% among non-vaccinated to 7.7% among vaccinated students ($p<0.0001$). Influenza vaccine effectiveness against ILI was 45.3%. The vaccination rate of the same household living preschool children was increased by 37% in SOVS compared to non-SOVS families (43.8% vs 32%, $p<0.0001$).

Conclusion

The Hong Kong SOV program (2018-9) significantly improved influenza vaccine coverage in the target primary school population and same household living preschoolers. Reduced ILI incidence was documented in the vaccinated children. Extension of SOV program to all primary schools as well as kindergartens in Hong Kong could achieve EPP and should be evaluated.

NEUROCOGNITIVE OUTCOMES FOLLLOWING SURGERY FOR PAEDIATRIC TEMPORAL LOBE EPILEPSIES

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Background

Temporal lobe epilepsy is a common form of focal or location related epilepsy, and surgical excision is a potentially curative form of therapy for intractable seizures. Neuropsychological data could help inform surgical decision making, and serve as important markers for treatment effectiveness and rehabilitation planning to optimize patients' post-surgical quality of life. Local clinical data was thus reviewed in the present study aiming to evaluate the neurocognitive outcomes following surgery for paediatric patients with temporal lobe epilepsies in Hong Kong.

Methods

Pre- and post-surgery neuropsychological profiles (including verbal and performance IQ as well as verbal and visual memory) of 20 paediatric patients with temporal lobe epilepsies (7 with left side and 13 with right side involvement) were analysed with paired t-test. The mean duration between the pre- and post-evaluations was 2 years.

Results

In paired t-test, post-surgery non-verbal IQ score was higher than pre-surgery non-verbal IQ score ($p<0.05$). Similarly, post-surgery verbal memory score showed statistically significant improvement when compared with pre-surgery verbal memory score ($p<0.05$).

Discussion and Conclusion

Review of local data suggested that there was no significant deterioration in neurocognitive functioning in paediatric patients following surgery for temporal lobe epilepsies. Instead, statistically significant increase in non-verbal intellectual functioning and verbal memory was indicated in the clinical sample. The improvement in processing speed which was well documented to be hampered by refractory epilepsy and antiepileptic drug use was postulated to contribute to the better post-surgery non-verbal IQ performance. Further investigation is warranted to address the clinical relevance of the improved verbal memory found in our present sample. Qualitatively, as physical condition became more stable and the need for medication was reduced upon surgery, our patients were able to resume their original schooling with reported increase in school, social and family participation and engagement, and a positive impact on their psychological well-being was observed. Taken all together, our findings support that epilepsy surgery is a viable option in enhancing the patients' holistic quality of life.

PHYSICAL FITNESS OF TODDLERS IN HONG KONG

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Background

Health-related physical fitness is important at all age as it contributes to good posture, ease and efficiency at daily activities, injury prevention and reduction of risk of medical disorders. Evaluating the current physical fitness level of toddlers will help identify the existing weaknesses and provide suggestions for improving health-related physical fitness among children.

Objective

To assess the physical fitness level of toddlers through standard physical fitness tests and to explore factors associated with physical fitness development of children.

Method

A cross-sectional study to assess physical fitness of subjects was conducted. Sit & reach, throwing tennis ball, continuous jump, standing long jump, walking on balancing beam, 10m shuttle run, body height and weight were performed. Subjects were recruited from the participants of Studying Impact of Nutrition on Growth (SING) Project, a nutritional cohort study with over 5000 participants which aims to follow up with children since the age of 2-3 on their growth and development. A questionnaire with questions on dietary intake in the past week and usual exercise habits was given to parents or main carers to fill while their child was having the tests.

Results

559 subjects with a mean age of 5.2-year-old completed the six tests as well as measurement of body weight and height. After adjusting for age and gender, better overall physical performance was significantly associated with having regular exercise, longer duration of regular exercise weekly as well as usual diet meeting the local recommendation of vegetables and dairy food.

Conclusion

Results indicated that both diet and exercise in early age may affect the health-related physical fitness of children. Further investigation of these associations in future studies is warranted.

RELATIONSHIPS AMONG RESILIENCE, SELF-ESTEEM, AND DEPRESSIVE SYMPTOMS IN CHINESE ADOLESCENTS

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This study explored the relationships among resilience, self-esteem, and depressive symptoms in Hong Kong Chinese adolescents. We selected a stratified random sample of 1816 Form 1 students from all 18 districts of Hong Kong. This study revealed that about 21 percent adolescents are experiencing some depressive symptoms. Our results contribute novel findings to the literature showing that resilience is a strong indicator of adolescents at a higher risk of depression and increasing adolescents' resilience to psychological distress is crucial to enhance their mental well-being. It is crucial to develop interventions that can enhance resilience and promote positive mental well-being among adolescents.

A CLINICAL GUIDELINE OF SKIN CARE MANAGEMENT FOR NEWBORNS WITH DIAPER DERMATITIS

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Introduction

Diaper dermatitis is one of the common problem caused discomfort and irritated the newborn babies. It altered the babies' vital sign, nutritional intake and quality of life, which led to prolong hospital stay, increased excessive manpower and decreased the bonding between the babies and their caregiver. Moreover, different nurses will based on their own experience to take care the babies with diaper dermatitis, therefore, the healing process will have various. As a result, developing an evidence-based guideline will be benefit to the babies, caregiver, nurses and hospital.

Objectives

1) To promote evidence-based skin care management and reduced the severity score of diaper dermatitis among the newborn babies
2) To provide a standardized practice on different intervention with diaper dermatitis
3) To enhance the staff competency on managing infants with different severity of diaper dermatitis.

Methodology

1) Form a skin care workgroup and discussed the project with senior nurses
2) Develop a flowchart and checklist to provide a standard and systematic management on newborn skin care management
3) Develop a pre- & post-test questionnaire to identify the strength and weakness of the NICU & SCBU nurses' knowledge and management on skin care management.
4) Provide small group discussion & education session to reinforce the nurses' knowledge and management
5) Implement the project. Monitor the implementation process and refine the guidelines accordingly. Monitor nurses' compliance by the member of the skin care workgroup regularly
6) Collect data of the skin condition on Day0, Day 7 and Day 14 of newborn baby with the five-point visual assessment scale, document the skin product used and analyzed the data accordingly

Result

The project was implemented in NICU and SCBU of a regional hospital in Hong Kong from October to December 2014. Serial education sessions on the new workflow, checklist and knowledge of the skin care managemen.t are provided to all NICU and SCBU nurses. From the pre-test and post-test result, the education session can improved the nurses' knowledge on newborn skin care management. After implementation, the severity score of diaper dermatitis has decreased by 41%. However, the result was not statistically significant, which may be related to small sample size and short implementation period.

Conclusion

The project can effectively improve the nurses' knowledge on newborn skin care management, and reduced the severity score of the diaper dermatitis among the babies. This project can empower nurses to prevent and manage diaper dermatitis and possibly reduced the hospital stay. In the future, it is recommended to extend the program to postnatal ward.

delivery room to NICU in order to reduce the incidence of hypothermia among preterm infants on admission.

CHILD'S HAPPINESS SURVEY

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Child's Happiness Survey was an annually survey project conducted by BGCA since 2016. The purpose of this survey was to understand the trend of local children's happiness and explore the behavioural patterns of different contributing factors. In 2016, important factors affecting children's happiness were explored and pattern of sleeping, excising and playing were explored in consecutive years. The survey collected data from children aged 6 to 17 years thru self-administered questionnaire and the respondents were BGCA's service users in communities by convenience sampling. The accumulated number of respondents was about 4000 for four years. The findings of the surveys show that, 1) the average score of overall children's happiness had no significant variation in recent years but there was a slight down trend in the happiness of children aged 6 to 8 years, 2) Things that make children happy were holiday (56.7%), playing electronic games (44.2%) and playing with friends (37.2%) in 2019, 3) 70-80% children were not enough in sleeping time and lacking 1-2 hours in average, 4) 63.1% of children cannot accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity every day, 5) 54.0% and 25.0% of children had less than one hours playing time in school days and non-school days respectively. Conclusions: Children were get stuck in lack of time. They were lack of "self-managed" time, sleeping time, excising time, and playing time. Recommendations: Review of the amount of homework and learn-life balance of children were needed.

Note

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