A novel immortalized hepatocyte-like cell line (imHC) supports in vitro liver stage development of the human malarial parasite Plasmodium vivax

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Malar J. 2018;17(1):50.

Impact Factor = 2.751

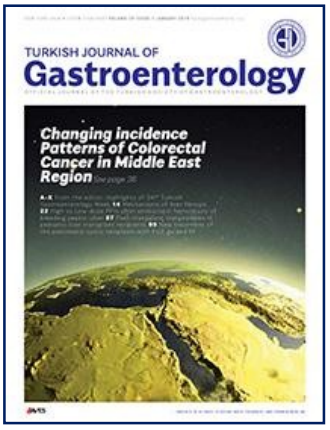
BACKGROUND: Eradication of malaria is difficult because of the ability of hypnozoite, the dormant liver-stage form of Plasmodium vivax, to cause relapse in patients. Research efforts to better understand the biology of P. vivax hypnozoite and design relapse prevention strategies have been hampered by the lack of a robust and reliable model for in vitroculture of liver-stage parasites. Although the HC-04 hepatoma cell line is used for culturing liver-stage forms of plasmodium, these cells proliferate unrestrictedly and detach from the culture dish after several days, which limits their usefulness in a long-term hypnozoite assay.

METHODS: A novel immortalized hepatocyte-like cell line (imHC) was evaluated for the capability to support P. vivaxsporozoite infection. First, expression of basic hepatocyte markers and all major malaria sporozoite-associated host receptors in imHC was investigated. Next, in vitro hepatocyte infectivity and intracellular development of sporozoites in imHC were determined using an indirect immunofluorescence assay. Cytochrome P450 isotype activity was also measured to determine the ability of imHC to metabolize drugs. Finally, the anti-liver-stage agent primaquine was used to test this model for a drug sensitivity assay.

RESULTS: imHCs maintained major hepatic functions and expressed the essential factors CD81, SR-BI and EphA2, which are required for host entry and development of the parasite in the liver. imHCs could be maintained long-term in a monolayer without overgrowth and thus served as a good, supportive substrate for the invasion and growth of P. vivaxliver stages, including hypnozoites. The observed high drug metabolism activity and potent responses in liver-stageparasites to primaquine highlight the potential use of this imHC model for antimalarial drug screening.

CONCLUSIONS: imHCs, which maintain a hepatocyte phenotype and drug-metabolizing enzyme expression, constitute an alternative host for in vitro Plasmodium liver-stage studies, particularly those addressing the biology of P. vivaxhypnozoite. They potentially offer a novel, robust model for screening drugs against liver-stage parasites.

A rare cause of multiple small bowel ulcers and strictures in a 10-year-old child



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Turk J Gastroenterol. 2018;29(1):110-3.

Impact Factor = 0.966

Enteritis and small bowel ulcers can be caused by inflammatory bowel disease, drug-induced enteritis, cytomegalovirus, tuberculosis, or intestinal lymphoma. Cryptogenic multifocal ulcerous stenosing enteritis (CMUSE) is an uncommon idiopathic cause of ulceration and stricture of the small bowel. CMUSE can occur in adults, but only few pediatric cases have been reported. Inflammatory bowel disease and other causes should be carefully sought first before the diagnosis of CMUSE can be made. Previous reports demonstrated that surgical intervention may be necessary for both diagnostic and therapeutic purposes. With regard to the management, systemic corticosteroids may help, and surgery plays a role in patients present with signs of intestinal obstruction. We report a young girl who presented with a prolonged history of refractory iron deficiency anemia with protein-losing enteropathy without other obvious gastrointestinal symptoms. She underwent several laboratory and endoscopic investigations as well as histopathology of the resected full-thickness small bowel area before a proposed diagnosis of CMUSE was made. A trial of immunosuppression (both prednisolone and azathioprine) was initiated that provided a relatively satisfactory result.

Basophil activation test in immediate-type hypersensitivity reactions to betalactams using CD63 and CCR3 in Thailand

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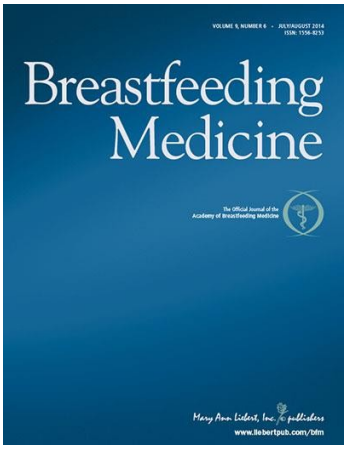
J Med Assoc Thai. 2018; 101(1):40-7

Impact Factor = N/A

Objective: To determine usefulness of basophil activation test [BAT] in diagnosis of immediate betalactam [BL] allergy, and compare the role of diagnosis BAT with standard testing, skin test [ST], and drug provocation test [DPT] in patients with history suspected of drug allergy in Thailand. Materials and Methods: Cross-sectional study of fifteen patients with an history of immediate hypersensitivity reactions to common BL drug group, at Ramathibodi Hospital between 2010 and 2012. All subjects underwent ST, and DPT if ST was negative. BAT was done in all patients. Results: Fifteen patients (10 children and 5 adult), including seven male and eight female cases with history of highly indicated immediate type allergic reactions to beta lactam were examined. Five presented with anaphylaxis and 10 with urticarial rash/ angioedema. From fifteen patients, eight patients were confirmed allergic to BL, where four had ST positivity, and four had positive DPT. The present study found one patient with severe anaphylaxis that had negative ST, but could not undergo DPT due to underlying diseases. The alternative test BAT yielded positive result. Four of the eight patients were confirmed as BL allergic patients with positive BAT (50%). None of the patients with negative drug testing had positive BAT. Estimated sensitivity of ST was similar to BAT at 50%, while specificity of BAT in the present study was 100%. The result yielded higher sensitivity, such as 62%, when we combined both tests together (ST and BAT). The authors observed BAT positive results in 75% of patients with positive ST, and 25% of patients positive DPT. Conclusion: BAT has an advantage in patients contraindicated to perform DPT. Moreover, BAT can avoid the risk of reproducible reactions from in vivo testing, especially in high-risk patients allergic to BL. BAT is a promising alternate investigation tool ensuring patients' safety.

Evaluation of fetal intestinal cell growth and antimicrobial biofunctionalities of donor human milk after preparative processes



Kanaprach P, Pongsakul N, Apiwattanakul N,
Muanprasat C, Supapannachart S, Nuntnarumit P,
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Breastfeed Med. 2018 Feb 16. [Epub ahead of print]
Impact Factor = 1.551

BACKGROUND: Donor human milk is considered the next best nutrition following mother's own milk to prevent neonatal infection and necrotizing enterocolitis in preterm infants who are admitted at neonatal intensive care unit. However, donor milk biofunctionalities after preparative processes have rarely been documented.

OBJECTIVE: To evaluate biofunctionalities preserved in donor milk after preparative processes by cell-based assays.

MATERIALS AND METHODS: Ten pools of donor milk were produced from 40 independent specimens. After preparative processes, including bacterial elimination methods (holder pasteurization and cold-sterilization microfiltration) and storage conditions (-20°C freezing storage and lyophilization) with varied duration of storage (0, 3, and 6, months), donor milk biofunctionalities were examined by fetal intestinal cell growth and antimicrobial assays.

RESULTS: At baseline, raw donor milk exhibited 193.1%±12.3% of fetal intestinal cell growth and 42.4% ± 11.8% of antimicrobial activities against Escherichia coli. After bacteria eliminating processes, growth promoting activity was better preserved in pasteurized donor milk than microfiltrated donor milk (169.5% ± 14.3% versus 146.0% ±11.8%, respectively; $p<0.005$), whereas antimicrobial activity showed no difference between groups (38.3%±14.1% versus 53.7%±17.3%, respectively; $p=0.499$). The pasteurized donor milk was further examined for the effects of storage conditions at 3 and 6 months. Freezing storage, but not lyophilization, could preserve higher growth-promoting activity during 6 months of storage (163.0%±9.4% versus 72.8%±6.2%, respectively; $p<0.005$). Nonetheless, antimicrobial activity was lost at 6 months, regardless of the storage methods.

CONCLUSIONS: This study revealed that fetal intestinal cell growth and antimicrobial assays could be applied to measure donor milk biofunctionalities and support the utilization of donor milk within 3 months after preparative processes.

Incidences, risk factors and outcomes of neonatal thromboembolism

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J Matern Fetal Neonatal Med. 2018;31(3):347-51.

Impact Factor = 1.674

BACKGROUND: The incidences of thromboembolism (TE) in neonates were reported to be around 0.51 per 10,000 live births per year for overall TE and 24 per 10,000 NICU admissions per year. As the incidences of TE in children and adults are lower in Asian populations, the incidences, risk factors, and outcomes of neonatal TE may be different to those reports from other countries.

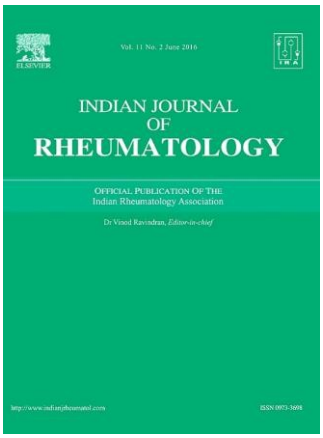
OBJECTIVES: To determine the incidences, risk factors, and outcomes of neonatal TE in a tertiary care hospital in Thailand.

MATERIALS AND METHODS: A retrospective study between the years 1998 and 2015.

RESULTS: From a total of 2463 neonatal admissions, 28 patients were diagnosed with TE. The female/male ratio was 1:1.2. The breakdown of diagnoses of neonatal TE were arterial ischemic stroke (AIS; 36%), arterial TE (ATE; 29%), deep vein thrombosis (DVT; 14%), cerebral venous sinus thrombosis (CVST; 11%), renal vein thrombosis (RVT; 3%), and purpura fulminans (2%). Underlying diseases were identified 57.1% of patients. The most common thrombophilic risk factor was protein C (PC) deficiency (14.3%). The overall mortality rate was 14.3%.

CONCLUSION: The most common TE was AIS. PC deficiency was the most prevalent inherited risk factor, especially in neonates without precipitating factors.

Long-term outcomes and predictors of biologic treatment in systemic juvenile idiopathic arthritis in a single-center experience in Thailand



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Indian J Rheumatol. 2018;13(1):26-32.

Impact Factor = N/A

Background: The outcomes of systemic juvenile idiopathic arthritis (SJIA) vary from mild disability to mortality. Due to the socioeconomic problems in Thailand, the delay in receiving some medications, especially biologic agents, might affect the outcomes of this disease. This study aimed to determine the long-term outcomes and predictors of biologic treatment in SJIA patients.

Methods: Patients with SJIA were enrolled over the study period between April 1997 and January 2015. The data were collected from medical records at the initial presentation and the most recent clinical visit. Outcomes evaluated included disease status, functional impairment, and joint destruction.

Results: Of the 68 SJIA patients, 64 (94%) were eligible. The median (interquartile range) age at disease onset and duration of follow-up were 4.4 (2.9–7.9) and 4.2 (2.3–5.9) years, respectively. Nine patients (14%) achieved complete remission, while 12 (18.8%) had persistent active disease and 3 patients died; 2 of them had macrophage activation syndrome, while the other had a severe infection. A predictor of moderate-to-severe disability (childhood health assessment questionnaire ≥0.75) was hip involvement (odds ratios [OR] 27, 95% confidence interval [CI] 3.20–228.05). In addition, the predictors of biologic treatment were female gender (OR 6.4, 95% CI 1.74–23.74), younger age of onset (OR 4.7, 95% CI 1.31–16.66), hepatosplenomegaly (OR 5.9, 95% CI 1.29–27.29), and positive antinuclear antibody (ANA) (OR 6.3, 95% CI 1.19–33.75). Bone erosion was found in 34.2% of SJIA patients.

Conclusion: Hip involvement was the important predictor of moderate-to-severe disability in SJIA, whereas female gender, younger age of onset, hepatosplenomegaly, and positive ANA were the predictors of biologic treatment.

Megestrol acetate-caused adrenal insufficiency and delayed puberty in a male adolescent with spinal tumour

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J Paediatr Child Health. 2018;54(2):194-6.
Impact Factor = 1.572

Megestrol acetate (MA), a progestin analogue, has been pre-scribed to promote appetite and weight gain in patients with cancer and acquired immunodeficiency syndrome. MA has been reported to cause endocrine-related problems, including adrenal insufficiency and hypogonadism in adult patients. There were only a few reports of MA-caused adrenal insufficiency and even fewer of MA-caused hypogonadism in children with cancer. We report a case of MA-caused adrenal insufficiency and delayed puberty in a male adolescent with spinal tumour.

Case Report

A 19-year-old male adolescent with epithelioid sarcoma of lum-bar vertebrae presented with fever and shock. The spinal sarcoma had been diagnosed since he was 8 years of age and was treated with surgical resection; chemotherapy, including vincristine, eto-poside, adriamycin, cyclophosphamide, ifosfamide, actinomycin D and melphalan; and radiotherapy. Recurrence of the tumour with metastases had occurred since he was 12 years of age. Palli-ative treatment was commenced because of incurable cancer. Multiple medications, including pregabalin, morphine sulphate (20 mg/day), duloxetine, clonazepam and MA, had been pre-scribed since then. MA at a dose of 160 mg daily was adminis-tered to treat cachexia and promote his appetite. The cumulative dose up until the presentation was approximately 13 440 mg. His past history revealed three previous episodes of shock with ‘uni-dentified cause’ during the past 1.5 years. Shock was successfully treated with fluid resuscitation and inotropic drugs.

Prospective research on infants with mild encephalopathy: the PRIME study

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J Perinatol. 2018;38(1):80-5.

Impact Factor = 2.313

OBJECTIVE: To determine short-term outcomes of infants with evidence of hypoxia-ischemia at birth and classified as mild neonatal encephalopathy (NE) at <6 h of age.

STUDY DESIGN: Prospective multicenter study. Mild NE was defined as □1 abnormal category in modified Sarnat score. Primary outcome was any abnormality on early amplitude integrated electroencephalogram (aEEG) or seizures, abnormal brain magnetic resonance imaging (MRI) or neurological exam at discharge.

RESULTS: A total of 54/63 (86%) of enrolled infants had data on components of the primary outcome, which was abnormal in 28/54 (52%): discontinuous aEEG (n=4), MRI (n=9) and discharge exam (n=22). Abnormal tone and/or incomplete Moro were the most common findings. MRI abnormalities were confined to cerebral cortex but two infants had basal ganglia and/or thalamus involvement. The 18 to 24 months follow-up is ongoing.

CONCLUSIONS: A larger than expected proportion of mild NE infants with abnormal outcomes was observed. Future research should evaluate safety and efficacy of neuroprotection for mild NE.

Pulse oximetry screening for critical congenital heart diseases at two different hospital settings in Thailand

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J Perinatol. 2018;38(2):181-4.

Impact Factor = 2.313

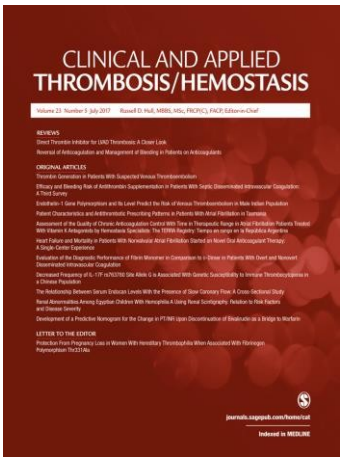
OBJECTIVE: To evaluate the predictive abilities of pulse oximetry screening (POS) for critical congenital heart disease (CRIT.CHD) at two different hospital settings in Thailand.

STUDY DESIGN: The study was conducted in healthy newborns at Ramathibodi Hospital (RH), a university hospital and Maharat Nakhon Ratchasima Hospital (MH), a regional hospital. Positive POS was defined as oxygen saturation (SpO2) <95% or difference between pre- and postductal SpO2 >3%.

RESULTS: Of 11407 live births, 10603 (92.9%) newborns were enrolled with a follow-up rate at 1 month of 78.3%. Incidence of CRIT.CHD (per 1000 live births) at RH and MH were 5.7 and 2.7, respectively. POS could detect three newborns who would have had a missed diagnosis. Sensitivity of POS for CRIT.CHD at RH was 82.3% vs 100% at MH. Overall specificity was 99.9% and false-positive rate was 0.009%. Combination of POS and physical examination (PE) enhanced detection ability to 100% at both hospitals.

CONCLUSION: POS combined with PE improved detection of CRIT.CHD. Routine POS is useful in personnel-limited settings.

R147W in PROC gene is a risk factor of thromboembolism in Thai children



***Sirachainan N**, Chuansumrit A, Sasanakul W, Yudhasompop N, Mahaklan L, Vaewpanich J, Charoenkwan P, Kanjanapongkul S, Visudtibhan A, Wongwerawattanakoon P.

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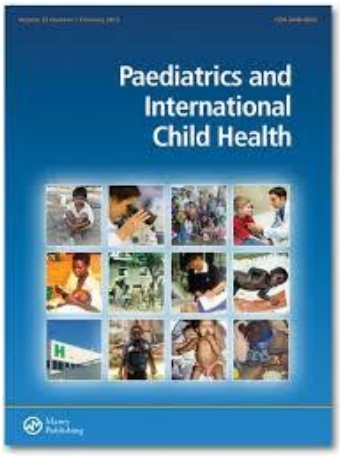
Clin Appl Thromb Hemost. 2018;24(2):263-7.

Impact Factor = 2.096

The p.R147W mutation, the c.C6152T in exon 7, causing a change in amino acid from arginine to tryptophan of the PROC gene has been reported as a common mutation in Taiwanese populations with venous thromboembolism (VTE). The present study aimed to identify the prevalence of p.R147W in the Thai population and children with TE and the risk of developing TE. Patients aged ≤18 years diagnosed with TE were enrolled. The PROC gene was amplified by polymerase chain reaction using a specific primer in exon 7. The restriction fragment length polymorphism was designed using MwoI restriction enzyme. A total of 184 patients and 690 controls were enrolled. The most common diagnosis of TE was arterial ischemic stroke (AIS), at 100 (54.3%), followed by VTE, at 38 (20.6%), and cerebral venous sinus thrombosis (CVST), at 23 (12.5%). The prevalence of heterozygous and homozygous p.R147W in patients and controls was 9.5% versus 5.8% and 2.7% versus 0.1%, respectively. Heterozygous p.R147W had odds ratios (ORs) of 1.8 (95% confidence interval [CI]: 1.0-3.2, P = .04), 3.2 (95% CI: 1.2-8.2, P = .009), and 4.5 (95% CI: 1.6-12.8, P = .002) of developing overall TE, VTE, and CVST, respectively. Homozygous p.R147W had ORs of 20.2 (95% CI: 2.3-173.7, P < .001), 21.4 (95% CI: 2.2-207.9, P < .001), and 43.3 (95% CI: 3.8-490.6, P < .001) of developing overall TE, AIS, and CVST, respectively. This study suggested that p.R147W is a common mutation and increased risk of TE in Thai children.

Testicular enlargement in a pre-pubertal boy with adrenocortical tumour



Korwutthikulrangsri M, Wattanatranon D, Teeraratkul S, Wijarn P, Mahachoklertwattana P, ***Poomthavorn P**.

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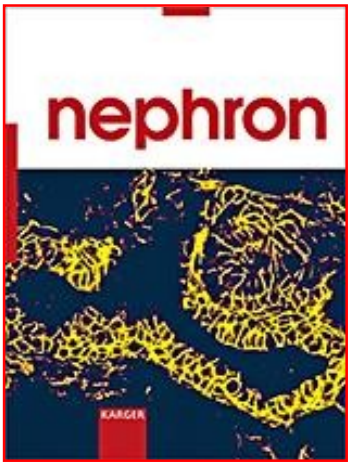
Paediatr Int Child Health. 2018;38(1):66-68.

Impact Factor = 1.103

Adrenocortical tumours are rare in children. Virilisation caused by overproduction of adrenal androgens is the most common presentation. The testes of pre-pubertal boys with this tumour are usually small or of pre-pubertal size. A 4.8-year-old boy with an adrenocortical tumour and symmetrical pubertal-sized testes is reported. The serum testosterone level was 204 nmol/L (<0.7), dehydro-epiandrosterone-sulphate 56.7 µmol/L (<1.5) and luteinizing and follicle-stimulating hormones were at suppressed levels. Histology demonstrated a diffusely increased mean tubular diameter of 90 µm (the size in a 12-year-old boy) and hyperplasia of Sertoli cells. There were no Leydig cells in the interstitial area. Prolonged exposure to an extraordinarily high testosterone level could have had stimulating effects on the seminiferous tubules and Sertoli cell growth and thus contributed to testicular enlargement.

Unravelling pathophysiology of crystalline nephropathy in ceftriaxone-associated acute kidney injury: a cellular proteomic approach



Chatchen S, Pongsakul N, Srisomsap C, Chiangjong W, Hongeng S, Svasti J, ***Chutipongtanate** S.

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Nephron. 2018 Jan 16. [Epub ahead of print]

Impact Factor = 1.939

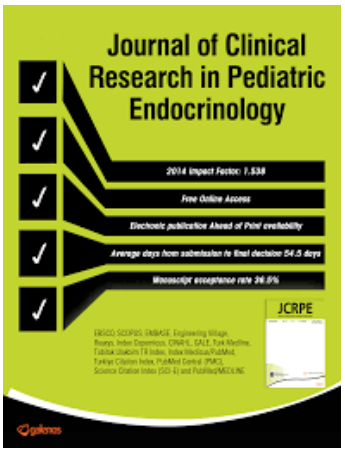
BACKGROUND: Previous studies showed that ceftriaxone can cause acute kidney injury (AKI) in the pediatric population. This study proposed a cellular model of crystalline nephropathy in ceftriaxone-associated AKI and explored the related pathophysiology by using a proteomic approach.

METHODS: Ceftriaxone was crystallized with calcium in artificial urine. Madin-Darby Canine Kidney (MDCK) cells, a model of distal renal tubular cell, were cultured in the absence (untreated control) or presence of ceftriaxone crystals for 48-h (n = 5 each). MDCK cells were harvested and subsequently analyzed by proteomic analysis. Protein bioinformatics (i.e., STRING and Reactome) was used to predict functional alterations, and subsequently validated by Western blotting and cellular studies. $p < 0.05$ was considered statistically significant.

RESULTS: Phase-contrast microscopy showed increased intracellular vesiculation and cell enlargement as a result of ceftriaxone crystal exposure. Proteome analysis revealed a total of 20 altered proteins (14 increased, 5 decreased and 1 absent) in ceftriaxone crystal-treated MDCK cells as compared to untreated cells ($p < 0.05$). Protein bioinformatics and validation studies supported heat stress response mediated by heat shock protein 70(Hsp70) and downregulation of annexin A1 as the proposed pathophysiology of crystalline nephropathy in ceftriaxone-associated AKI, in which impaired proliferation and wound healing of crystal-induced distal tubular cells were outcomes.

CONCLUSIONS: This study, for the first time, used the in vitro model of crystalline nephropathy to investigate the underlying pathophysiology of ceftriaxone-associated AKI, which should be investigated in vivo for potential clinical benefits in the future.

Acute effects of blood transfusion on insulin sensitivity and beta-cell function in children with beta-thalassemia / HbE disease



Wankanit S, Chuansumrit A, Poomthavorn P, Khlairit P, Pongratanakul S, ***Mahachoklertwattana P.**

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J Clin Res Pediatr Endocrinol. 2018;10(1):1-7

Impact Factor = 1.118

OBJECTIVE: To assess acute effects of blood transfusion on insulin sensitivity and β-cell function in thalassemia patients.

METHODS: Fifty children and adolescents with β-thalassemia/HbE disease were enrolled in a prospective cohort study. Hemoglobin, serum ferritin and oral glucose tolerance test (OGTT) were performed prior to, and one week after blood transfusion. Insulin sensitivity indices [Homeostatic Model Assessment (HOMA) of Insulin Resistance (HOMA-IR), Whole Body Insulin Sensitivity Index (WBISI)] and β-cell function indices [HOMA of β-cell function (HOMA-β), Insulingenic Index (IGI), and Disposition Index (DI)] were calculated from glucose and insulin levels obtained during the OGTT.

RESULTS: Following blood transfusion, hemoglobin and serum ferritin were significantly increased [8.5 to 10.1 g/dL ($p < 0.001$) and 1764 to 2160 ng/mL ($p < 0.001$), respectively]. β-Cell function indices were significantly increased [median HOMA-β: 74.3 vs. 82.7 ($p = 0.033$); median IGI: 59.6 vs. 79.3 ($p = 0.003$); median DI: 658 vs. 794 ($p = 0.01$)]. However, insulin sensitivity index (WBISI) tended to decrease and insulin resistance index (HOMA-IR) tended to increase, but with no significance. Multivariate analysis showed that pre-transfused serum ferritin was the major factor negatively associated with WBISI and positively associated with HOMA-IR, but pre-transfused hemoglobin had no significant association with insulin sensitivity indices after transfusion.

CONCLUSION: This study demonstrated that acute increases in serum ferritin and hemoglobin following blood transfusion in patients with thalassemia may contribute to an increase in insulin secretion and a trend towards increasing insulin resistance.

High urinary iodine concentration among breastfed infants and the factors associated with iodine content in breast milk

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Biol Trace Elem Res. 2018 Mar 16.[Epub ahead of print]

Impact Factor = 2.399

Iodine deficiency in infants leads to delayed growth and development. Some studies have reported iodine deficiency among infants and lactating women. We assessed iodine status in infants and lactating women, as well as the iodine content in breast milk. A cross-sectional study enrolled mother-infant pairs (infants aged 4-6 months), who visited Well Child Clinic at Ramathibodi Hospital, Bangkok, Thailand. Infants were classified by feeding type as breastfed (BF), mixed breastfed and formula-fed (MF), and formula-fed (FF). Demographic and perinatal data were collected. The urinary iodine concentration (UIC) of infants and lactating women, and breast milk iodine concentration (BMIC) were analyzed. Seventy-one infants were enrolled. The median UIC of infants was 282 mcg/L. Breastfed infants had higher median UIC than formula-fed infants (553 vs. 192 mcg/L; $p = 0.002$). Forty-eight percent of infants had a UIC more than 300 mcg/L. The median UIC and BMIC of lactating women were 149 and 255 mcg/L, respectively. Among the BF group, the infant UIC was correlated with maternal UIC ($r_s = 0.857$, $p = 0.014$). Multiple linear regression showed the BMIC to be associated with maternal UIC ($\beta = 4.03$, 95% CI [1.34, 6.71]) and maternal weight ($\beta = 8.26$, 95%CI [2.76, 13.77]). Iodine nutrition among our study population was adequate. The median UIC of infants and lactating mothers were 282 and 149 mcg/L, respectively. Breastfed infants had a significantly higher median UIC than formula-fed infants. The BMIC was associated with maternal UIC and maternal weight.

The correlation between the childhood health assessment questionnaire and disease activity in juvenile idiopathic arthritis

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Musculoskeletal Care. 2018 Mar 24. [Epub ahead of print]

Impact Factor = N/A

BACKGROUND: The Childhood Health Assessment Questionnaire (CHAQ) has been adapted from the Stanford Health Assessment Questionnaire for assessing functional ability in children. The present study aimed to determine the correlation between CHAQ and disease activity in juvenile idiopathic arthritis (JIA) during active and inactive disease.

METHODS: JIA patients in the Pediatric Department, Ramathibodi Hospital, between January 2011 and December 2013, were included in the study. The CHAQ disability index (DI) and disease activity variables, including active and limited joint count, erythrocyte sedimentation rate, patient's global assessment (PtGA), physician's global assessment (PGA) and 27-joint Juvenile Arthritis Disease Activity Score (JADAS27), were collected from medical records for each patient over six visits. At each visit, each patient was classified as having either active or inactive disease. The correlations between CHAQ-DI and disease activity variables were analysed using Spearman's correlation.

RESULTS: The classification of 139 JIA patients consisted of enthesitis-related arthritis (30.9%), systemic JIA (28.1%), oligoarthritis (16.5%), rheumatoid factor (RF)-negative
polyarthritis (15.1%), RF-positive polyarthritis (6.5%) and undifferentiated arthritis (2.9%). Out of 812 patient visits, 606 were in active disease and 206 were in inactive disease. RF- negative polyarthritis had the highest CHAQ-DI (0.39 ± 0.66), while oligoarthritis had the lowest (0.20 ± 0.32). There was a good correlation between CHAQ-DI and JADAS27,
PGA and PtGA in all JIA subtypes ($p < 0.05$) during active disease, but a
poor correlation between CHAQ-DI and disease activity variables during inactive disease.

CONCLUSIONS: CHAQ-DI had a good correlation with disease activity during active disease but a poor correlation during inactive disease. Therefore, CHAQ is only useful for assessing functional ability during active disease.

The Thai version of the Juvenile Arthritis Multidimensional Assessment Report (JAMAR)

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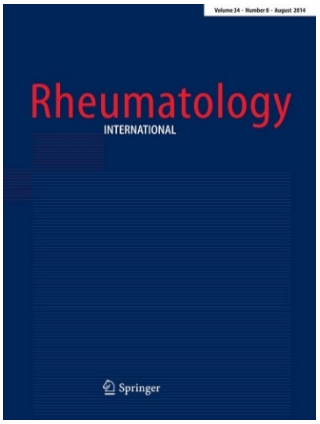

Rheumatol Int. 2018;38(Suppl 1):387-93

Impact Factor = 1.824

The Juvenile Arthritis Multidimensional Assessment Report (JAMAR) is a new parent/patient-reported outcome measure that enables a thorough assessment of the disease status in children with juvenile idiopathic arthritis (JIA). We report the results of the cross-cultural adaptation and validation of the parent and patient versions of the JAMAR in the Thai language. The reading comprehension of the questionnaire was tested in ten JIA parents and patients. Each participating centre was asked to collect demographic, clinical data and the JAMAR in 100 consecutive JIA patients or all consecutive patients seen in a 6-month period and to administer the JAMAR to 100 healthy children and their parents. The statistical validation phase explored descriptive statistics and the psychometric issues of the JAMAR: the three Likert assumptions, floor/ceiling effects, internal consistency, Cronbach's alpha, interscale correlations, test-retest reliability, and construct validity (convergent and discriminant validity). A total of 104 JIA patients (45.2% systemic JIA, 10.6% oligoarticular, 9.6% RF negative polyarthritis, 34.6% other categories) and 102 healthy children, were enrolled in one paediatric rheumatology centre. Notably, none of the enrolled JIA patients is affected with psoriatic arthritis or undifferentiated arthritis. The JAMAR components discriminated well healthy subjects from JIA patients. All JAMAR components revealed satisfactory psychometric performances. In conclusion, the Thai version of the JAMAR is a valid tool for the assessment of children with JIA and is suitable for use both in routine clinical practice and clinical research.

No association between month of birth and biliary atresia in a country with tropical climate.

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J Paediatr Child Health. 2018 Jun 4 Epub ahead of print]

Impact Factor = 1.572

AIM: Children with biliary atresia (BA) born in countries with temperate climate showed month-of-birth (MoB) predilection during cooler months. To date, no study on the MoB-BA association has been performed in a tropical country. Our aim was to define MoB variation in children with BA in a tropical country.

METHODS: We studied 150 children diagnosed with BA between January 1996 and April 2015 at a teaching hospital. MoB was defined by two categories based on the precipitation: rain and dry, and three categories based on the air temperature: high, average and low. We applied the country's population data on the number of births in each period as the expected proportions of birth.

RESULTS: A slightly higher proportion of BA children was born in the rainy months (52.7%); however, the difference was not significant compared to the general population's birth (P = 0.87). For the MoB based on the air temperature, no statistically significant difference was noted. Males with BA seemed to have a greater MoB variation compared to females, but this did not reach statistical significance.

CONCLUSION: We could not find an association between MoB and BA in a tropical country. Multinational studies may aid in understanding the MoB-BA association in the tropical countries.

Thai pediatricians' current practice toward childhood asthma

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J Asthma. 2018;55(4):402-15.

Impact Factor = 1.746

BACKGROUND: Childhood asthma is a substantial health burden in Thailand. Due to a lack of pediatric respiratory specialists (pediatric pulmonologists and allergists; RS), most Thai children are cared for by general pediatricians (pediatric primary care providers (PCP).

OBJECTIVES: We investigated whether current practices of Thai pediatricians complied with asthma guidelines and compared practices (diagnosis and treatments) provided by PCP and RS.

METHODS: A cross-sectional study was conducted using electronic surveys including four case scenarios of different asthma phenotypes distributed to Thai pediatricians. Asthma diagnosis and management were evaluated for compliance with standard guidelines. The practices of PCP and RS were compared.

RESULTS: From 800 surveys distributed, there were 405 respondents (51%). Most respondents (81%) were PCP, who preferred to use clinical diagnosis rather than laboratory investigations to diagnose asthma. For acute asthmatic attacks, 58% of the pediatricians prescribed a systemic corticosteroid. For uncontrolled asthma, 89% of the pediatricians prescribed at least one controller. For exercise-induced bronchospasm, 55% of the pediatricians chose an inhaled bronchodilator, while 38% chose a leukotriene receptor antagonist (LTRA). For virus-induced wheeze, 40% of the respondents chose an LTRA, while 15% chose inhaled corticosteroids (ICS). PCP prescribed more oral bronchodilators (31% vs. 18%, $p = 0.02$), antibiotics (20% vs. 6%, $p < 0.001$), and antihistamines (13% vs. 0%, $p = 0.02$) than RS for the management of an acute asthmatic attack.

CONCLUSIONS: Most of the Thai pediatricians' practices toward diagnosis and treatment of acute asthmatic attack and uncontrolled asthma conform to the guidelines. PCP prescribed more oral bronchodilators, antibiotics, and antihistamines than RS.

Cutaneous manifestations of nutritional deficiency

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Curr Opin Pediatr. 2018 May 15. [Epub ahead of print]

Impact Factor = 2.234

PURPOSE OF REVIEW: Childhood malnutrition is a major global health issue. It is often thought of as a developing world problem and therefore, underdiagnosed or misdiagnosed in developed countries. The delay in diagnosis and treatment can lead to increased morbidity and mortality. Cutaneous manifestations are often the initial presenting signs of nutritional deficiency. Early recognition is essential in timely initiation of the necessary interventions. This article will review pertinent cutaneous findings and systemic manifestations associated with common nutritional deficiencies.

RECENT FINDINGS: Malnutrition has historically been associated with poverty in developing countries. However, recent literatures suggest that the incidence of nutritional deficiencies continuous to rise among infants from developed countries, as a result of dietary restrictions because of perceived food allergies or intolerance. It is also an emerging finding in children with complicated medical problems.

SUMMARY: It is very important to raise awareness about cutaneous manifestations of nutritional deficiency as early and appropriate treatment results in excellent prognosis.

Expression of myxovirus-resistance protein A: a possible marker of muscle disease activity and autoantibody specificities in juvenile dermatomyositis

Soponkanaporn S, Deakin CT, Schutz PW, Marshall LR, Yasin SA, Johnson CM, Sag E, Tansley SL, McHugh NJ, *Wedderburn LR, Jacques TS.
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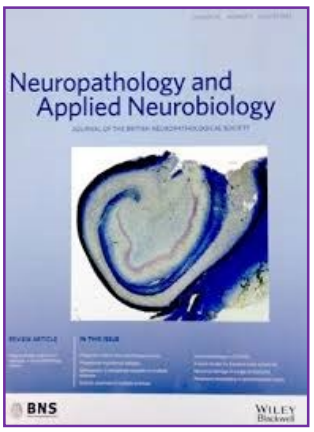

Neuropathol Appl Neurobiol. 2018 May 16. [Epub ahead of print]

Impact Factor = 5.347

AIMS: To evaluate the relationship between expression of myxovirus-resistance protein A (MxA) protein on muscle biopsies by immunohistochemistry and disease activity in juvenile dermatomyositis (JDM) patients. Also, another aim was to investigate whether the expression of MxA is related with myositis-specific autoantibodies (MSA) status in JDM patients.

METHODS: 103 patients (median aged 6.3, interquartile range 0.5-15.9) enrolled in the Juvenile Dermatomyositis Cohort and Biomarker Study (JDCBS). Muscle biopsies were stained with MxA and scored. Clinical data at initial presentation were collected and autoantibodies were analysed. Multiple linear regression analysis was performed to estimate the association between MxA expression on muscle fibres and muscle disease activity, and MSA status.

RESULTS: Expression of MxA protein on JDM samples was identified in 61.2%. There was a significant association between MxA scores and Childhood Myositis Assessment Scale (CMAS) ($P = 0.002$), and Manual Muscle Testing of Eight Muscles (MMT8) ($P = 0.026$). CMAS and MMT8 scores were significantly lower in the group of patients with strong MxA expression. MxA scores differed according to MSA subgroups ($P = 0.002$). Patients with positive nuclear matrix protein 2 autoantibodies had strong MxA expression, whereas anti-melanoma differentiation-associated gene 5 positive patients had no or weak MxA expression.

CONCLUSIONS: This study reveals the significant association between level of MxA expression on muscle fibres and clinical measures of muscular disease activity in JDM patients and MSA status. This confirms type I interferonopathies in muscle fibres of JDM patients which could help with improving treatment outcome in JDM patients and underscoring the distinct pathophysiological pathways in different MSA status.

Under-recognized hypoparathyroidism in thalassemia

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J Clin Res Pediatr Endocrinol. 2018 May 4 [Epub ahead of print]

Impact Factor = 1.118

OBJECTIVE: Symptomatic hypoparathyroidism [symptomatic hypocalcemia without elevated serum parathyroid hormone (PTH)] in patients with thalassemia is relatively rare. Asymptomatic mild hypocalcemia without elevated PTH which is considered hypoparathyroidism may be more common but under-recognized.

METHODS: Sixty-six transfusion-dependent thalassemic patients, and 28 healthy controls were enrolled. Serum calcium (Ca), phosphate (P), creatinine (Cr), albumin, intact PTH, 25-hydroxyvitamin D (25-OHD), plasma intact fibroblast growth factor-23 (FGF-23), urine Ca, P and Cr were measured. Tubular reabsorption of phosphate was calculated.

RESULTS: Thalassemic patients had significantly lower median serum Ca levels than the controls [8.7 (7.8-9.7) vs. 9.6 (8.7-10.1) mg/dL]. Hypoparathyroidism was found in 25 of 66 (38%) patients. Symptomatic hypoparathyroidism was not found. Thalassemic patients also had significantly lower median plasma FGF-23 levels than the controls [35.7 (2.1-242.8) vs. 53.2 (13.3-218.6) pg/mL]. In patients with hypoparathyroidism, median plasma FGF-23 level was significantly lower than that of patients with normoparathyroidism [34.8 (2.1-120.0) vs. 43.1 (3.2-242.8) pg/mL]. However, serum P, Cr, intact PTH and 25-OHD levels were not different.

CONCLUSION: Hypoparathyroidism was not uncommon in patients with transfusion-dependent thalassemia treated with suboptimal iron chelation. Plasma intact FGF-23 level in patients with hypoparathyroidism was lower than that of patients with normoparathyroidism.

Immune escape mechanisms and future prospects for immunotherapy in neuroblastoma

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Biomed Res Int. 2018 Feb 25;2018:1812535. eCollection 2018.

Impact Factor = 2.476

Neuroblastoma (NB) is the most common extracranial solid tumor in childhood with 5-year survival rate of 40% in high-risk patients despite intensive therapies. Recently, adoptive cell therapy, particularly chimeric antigen receptor (CAR) T cell therapy, represents a revolutionary treatment for hematological malignancies. However, there are challenges for this therapeutic strategy with solid tumors, as a result of the immunosuppressive nature of the tumor microenvironment (TME). Cancer cells have evolved multiple mechanisms to escape immune recognition or to modulate immune cell function. Several subtypes of immune cells that infiltrate tumors can foster tumor development, harbor immunosuppressive activity, and decrease an efficacy of adoptive cell therapies. Therefore, an understanding of the dual role of the immune system under the influences of the TME has been crucial for the development of effective therapeutic strategies against solid cancers. This review aims to depict key immune players and cellular pathways involved in the dynamic interplay between the TME and the immune system and also to address challenges and prospective development of adoptive T cell transfer for neuroblastoma.

Clinical pharmacokinetics and dose recommendations for posaconazole in infants and children

Boonsathorn S, Cheng I, Kloprogge F, Alonso C, Lee C, Doncheva B, Booth J, Chiesa R, Irwin A, *Standing JF.

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Clin Pharmacokinet. 2018 Apr 20. [Epub ahead of print]

Impact Factor = 5.216

OBJECTIVES: The objectives of this study were to investigate the population pharmacokinetics of posaconazole in immunocompromised children, evaluate the influence of patient characteristics on posaconazole exposure and perform simulations to recommend optimal starting doses.

METHODS: Posaconazole plasma concentrations from paediatric patients undergoing therapeutic drug monitoring were extracted from a tertiary paediatric hospital database. These were merged with covariates collected from electronic sources and case-note reviews. An allometrically scaled population-pharmacokinetic model was developed to investigate the effect of tablet and suspension relative bioavailability, nonlinear bioavailability of suspension, followed by a step-wise covariate model building exercise to identify other important sources of variability.

RESULTS: A total of 338 posaconazole plasma concentrations samples were taken from 117 children aged 5 months to 18 years. A one-compartment model was used, with tablet apparent clearance standardised to a 70-kg individual of 15 L/h. Suspension was found to have decreasing bioavailability with increasing dose; the estimated suspension dose to yield half the tablet bioavailability was 99 mg/m2. Diarrhoea and proton pump inhibitors were also associated with reduced suspension bioavailability.

CONCLUSIONS: In the largest population-pharmacokinetic study to date in children, we have found similar covariate effects to those seen in adults, but low bioavailability of suspension in patients with diarrhoea or those taking concurrent proton pump inhibitors, which may in particular limit the use of posaconazole in these patients.

Early reduction of serum interleukin-6 levels as a predictor of clinical remission in systemic juvenile idiopathic arthritis

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Asian Pac J Allergy Immunol. 2018 Jun 11. [Epub ahead of print]

Impact Factor = 1.576

BACKGROUND: Interleukin (IL)-6 is the main proinflammatory cytokine in systemic juvenile idiopathic arthritis (SJIA).

OBJECTIVE: To determine if serial changes in serum IL-6 levels can predict outcomes of SJIA patients.

METHODS: This was a retrospective cohort study. Medical records of patients aged 2-19 years with active SJIA between January 2012 and February 2014 were reviewed. Baseline characteristics were recorded at enrollment. Serum IL-6 levels were measured at enrollment and at 2-4 weeks, 6-8 weeks, 3 months, and 6 months thereafter. Treatment response and clinical remission were assessed after 2 years of follow-up.

RESULTS: Of the 35 patients with active SJIA, 16 were in remission at the end of the study. IL-6 levels in the remission group returned to normal within 6 months, whereas they remained persistently high in the non-remission group. At the 3-month follow-up, patients were assigned to groups A and B based on reductions in serum IL-6 levels of >50% and ≤50%, respectively. At the end of the study, more patients in group A (72.2%) than in group B (17.6%) achieved clinical remission ($p < 0.05$). After multivariate analysis, a >50% reduction in serum IL-6 levels at the 3-month follow-up visit was a predictor of clinical remission at 2 years (odds ratio 22.74, 95% confidence intervals 2.16-239.85,
$p < 0.01$).

CONCLUSIONS: An early reduction in serum IL-6 levels is significantly associated with clinical remission at 2 years in SJIA patients. Monitoring of serial changes in serum IL-6 levels is beneficial for predicting clinical remission.

Outcome of newly diagnosed high risk medulloblastoma treated with carboplatin, vincristine, cyclophosphamide and etoposide

Sirachainan N, Pakakasama S, Anurathapan U, Hansasuta A, Dhanachai M, Khongkhatithum C, Jinawath A, Mahachoklertwattana P, ***Hongeng S**.

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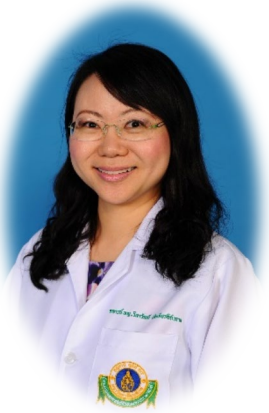
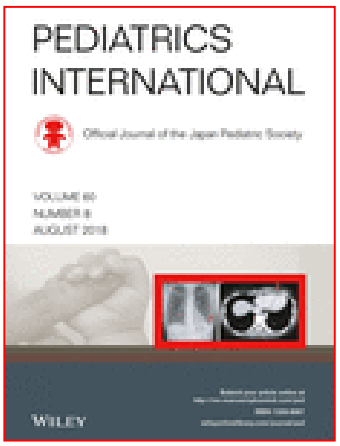
J Clin Neurosci. 2018 Jun 27. [Epub ahead of print]

Impact Factor = 1.640

Medulloblastoma is the most common malignant brain tumor among children. Although molecular study has been included in the new classification, in developing countries with limited resources the previous Chang staging system is still used. Therefore, treatment with postoperative radiation and chemotherapy remains the standard treatment. One common complication after treatment is ototoxicity, mainly due to radiation and cisplatinum. We report a revised chemotherapy protocol, replacing cisplatinum with carboplatin in newly diagnosed medulloblastoma cases. All 23 patients in this study had high risk medulloblastoma. Mean (SD) age was 9.5 ± 3.1 years. The 5-year progression free survival (PFS), 5-year overall survival (OS), and 10-year OS were 41.8 ± 12.2%, 60.0 ± 11.2%, and 48.0 ± 14.0 respectively. Most patients had grade 3-4 hematologic toxicity. Twelve patients had hearing tests, with 11 patients having grade 0 and 1 patient having grade 1 according to the Brock criteria.



Effectiveness of neurofeedback versus medication in treatment of ADHD



Sudnawa KK, ***Chirdkiatgumchai V**,

Ruangdaraganon N, Khongkhatithum C,

Udomsubpayakul U, Jirayucharoensak S, Israsena P.

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Division of Developmental and Behavioral Pediatrics

Pediatr Int. 2018 Jun 22. Epub ahead of print]

Impact Factor = 0.860

BACKGROUND: Neurofeedback (NF) is an operant conditioning procedure that trains participants for self-regulation of brain activity. Previous studies have shown that NF is a promising treatment of ADHD. However, there have been only a few RCT studies comparing effectiveness of NF with medication with various NF protocol and results. The aim of this study was to evaluate theeffectiveness of unipolar electrodeneurofeedback (NF) using theta/beta protocol compared with methylphenidate (MPH) in the treatment of ADHD.

METHODS: Children with newly diagnosed ADHD were randomly organised into NF and MPH groups. Each of children in NF group received 30 sessions of NF. Children in MPH group were prescribed methylphenidate for 12 weeks. Vanderbilt ADHD rating scales were completed by parents and teachers to evaluate ADHD symptoms pre- and post-treatment. Student's t-tests and Cohen's dwere used to compare symptoms between groups and evaluate effect size (ES) of each treatment respectively.

RESULTS: Forty children participated in the study. No differences in ADHD baseline symptoms between groups were found. Post-treatment, teachers reported significantly lower ADHD symptoms in the MPH group ($p = 0.01$), but parents reported no differences betweenthe groups ($p = 0.55$). MPH demonstrated large ES (Cohen's d 1.30 - 1.69), while NF showed moderate ES (Cohen's d 0.49 - 0.68) for treatment of ADHD symptoms.

CONCLUSION: This study supports NF as a promising alternative treatment for ADHD in children who do not respond or experience significant adverse effects to ADHD medications.

Comparison of three non-invasive hemodynamic monitoring methods in critically ill children

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PLoS One. 2018;13(6):e0199203.

Impact Factor = 2.766

INTRODUCTION: Hemodynamic parameters measurements were widely conducted using pulmonary artery catheter (PAC) with thermodilution as a reference standard. Due to its technical difficulties in children, transthoracic echocardiography (TTE) has been widely employed instead. Nonetheless, TTE requires expertise and is time-consuming. Noninvasive cardiac output monitoring such as ultrasonic cardiac output monitor (USCOM) and electrical velocimetry (EV) can be performed rapidly with less expertise requirement. Presently, there are inconsistent evidences, variable precision, and reproducibility of EV, USCOM and TTE measurements. Our objective was to compare USCOM, EV and TTE in hemodynamic measurements in critically ill children.

MATERIALS AND METHODS: This was a single center, prospective observational study in critically ill children. Children with congenital heart diseases and unstable hemodynamics were excluded. Simultaneous measurements of hemodynamic parameters were conducted using USCOM, EV, and TTE. Inter-rater reliability was determined. Bland-Altman plots were used to analyse agreement of assessed parameters.

RESULTS: Analysis was performed in 121 patients with mean age of 4.9 years old and 56.2% of male population. Interrater reliability showed acceptable agreement in all measured parameters (stroke volume (SV), cardiac output (CO), velocity time integral (VTI), inotropy (INO), flow time corrected (FTC), aortic valve diameter (AV), systemic vascular resistance (SVR), and stroke volume variation (SVV); (Cronbach's alpha 0.76-0.98). Percentages of error in all parameters were acceptable by Bland-Altman analysis (9.2-28.8%) except SVR (30.8%) and SVV (257.1%).

CONCLUSION: Three noninvasive methods might be used interchangeably in pediatric critical care settings with stable hemodynamics. Interpretation of SVV and SVR measurements must be done with prudence.

Efficacy and safety of low-dose prophylaxis of highly purified plasma-derived factor VIII concentrate produced by the national blood centre, Thai red cross society

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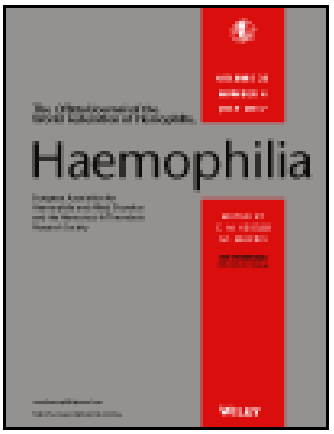

Haemophilia. 2018 Aug 17. [Epub ahead of print]

Impact Factor = 2.768

The National Blood Centre, Thai Red Cross Society (TRCS) has an essential task in preparing adequate and safe blood and blood components for replacement therapy among patients in Thailand. The pilot project of producing albumin has been established. The remaining plasma from TRCS was sent to the Green Cross Corporation (GCC), The Republic of Korea for plasma contract fractionation programme during the previous 14 years from 1999 to 2013. In 2010, the cabinet of Thai ministers agreed to set up a plasma fractionation centre to produce albumin, intravenous immunoglobulin (IVIG) and highly purified factor VIII concentrate with the aim of achieving self-reliance and reduced importation of foreign products. Her Royal Highness Princess Maha Chakri Sirindhorn offered her patronage to the centre as evident by its name,"The Thai Red Cross Plasma Fractionation Centre, Princess Maha Chakri Sirindhorn 5th Cycle Birthday Anniversary Celebration 2nd April, 2015."

Typhoidal salmonella trends in Thailand

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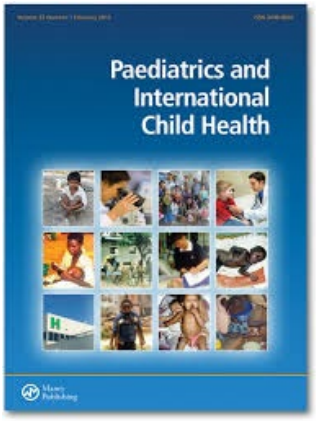
Am J Trop Med Hyg. 2018;99(3):64-71

Impact Factor = 2.710

Typhoid and paratyphoid fever remain endemic diseases in Thailand with wide variation in subnational incidence trends. We examined these trends alongside contextual factors to study potential interactions and guide control strategies for this disease. Culture-confirmed typhoid and paratyphoid fever data from 2003 to 2014 were collected from the Ministry of Public Health website. Contextual factor data were collected from various sources including World Health Organization/United Nations Children's Fund Joint Monitoring Program, United Education Statistical World Bank database, World Bank, Development Research group, and global child mortality estimates published in the Lancet. Typhoid fever exhibited a declining trend with peak incidence reported in 2003 at 8.6 cases per 100,000 persons per year. Incidence dropped to three cases per 100,000 persons in 2014. The trend in paratyphoid fever remained stable with the peak incidence of 0.77 cases per 100,000 persons observed in 2009. Subnational variations of typhoid were seen throughout the study period with the highest incidence observed in the northwestern region of Thailand. Increases in female literacy, and access to improved water and sanitation were observed with decreases in poverty head count ratio and diarrheal mortality rate per 1,000 live births. Case fatality remained consistently low at 0.4% or less in all years with reported deaths. At the national level, typhoid fever incidence has shown a notable decline; however, incidence appears to have plateaued since 2007 with access to improved water supply and sanitation above 80%. Eliminating this disease will require strong disease prevention measures in conjunction with effective treatment interventions.

Cow milk protein allergy and other common food allergies and intolerances



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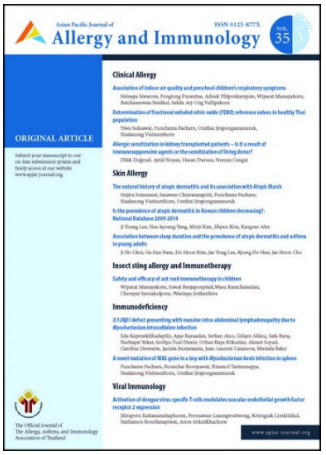
Division of Allergy and Immunology

Paediatr Int Child Health. 2018 Jul 17 [Epubahead of print]

Impact Factor = 1.528

The prevalence of food allergy and food intolerance is increasing and it is an important public health problem affecting children. Food allergy results from an immunological reaction to certain food(s) and affects numerous organs in the body. Food intolerances are non-immunological reactions including metabolic, toxic, pharmacological and undefined mechanisms. Cow milk is the most common cause of food allergy and food intolerance, especially in young children. Food intolerance can present with similar symptoms to those of food allergy. Health-care personnel, patients and their caregivers often confuse food intolerance with food allergy. This review focuses on the clinical manifestations, diagnostic evaluation, treatment and prevention of food allergy and food intolerance

The effectiveness of newly developed written asthma action plan in improvement of asthma outcome in



Lakupoch K, Manuyakorn W, Preutthipan A,

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Asian Pac J Allergy Immunol. 2018 ; 36(2):88-92

Impact Factor = 1.011

BACKGROUND: Providing asthma education about controller medication use and appropriate management of asthma exacerbation are the keys to improving the disease outcome. Many asthma guidelines recommend that physicians provide written asthma action plan (WAAP) to all of their asthmatic patients. However, the benefit of WAAP is unclear. Thus, we have created a new WAAP which is simplified in Thai and more user friendly.

OBJECTIVE: To determine the effectiveness of the newly developed asthma action plan in management of children with asthma.

METHODS: Asthmatic children who meet inclusion criteria all received the WAAP and they were followed up for 6 months with measurement of outcome variables, such as asthma exacerbation that required emergency room visit, unscheduled OPD visit, admission and school absence in order to compare with the past 6 months before receiving the WAAP.

RESULTS: The analyzed outcomes of forty-nine children show significantly reduced emergency room visit (P-value 0.005), unscheduled OPD visit (P-value 0.046), admission days (P-value 0.026) and school absence days (P-value 0.022). Well controlled group and mild severity group were not the factors that contribute to decreased emergency room visit but step up therapy may be the co-factor to decreased ER visit.

CONCLUSIONS: The results of this study suggest that the provision of newly developed
WAAP is useful for improving self-care of asthma patients and reducing asthma exacerbation.

Fetal intestinal cell growth as a measure of the comparative biofunctionality of human milk and infant formulas: an in vitro study

Pongsakul N, Kanaprach P, Chiangjong W, Supapannachart S, Nuntnarumit P2, ***Chutipongtanate S.**

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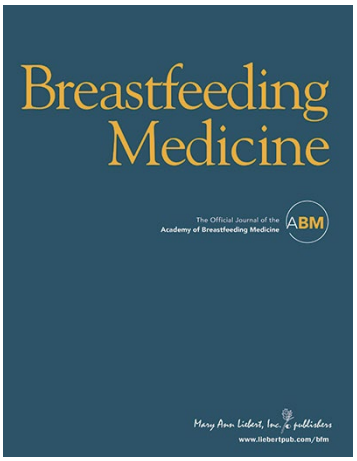


Breastfeed Med. 2018 Aug 28. [Epub ahead of print]

Impact Factor = 1.951

BACKGROUND: Infant formulas are produced to resemble human milk (HM) and to provide adequate energy and appropriate nutritional components for suitability of infant growth and development, some of which are customized for specific medical conditions. However, it has remained unclear whether formulas
contain any biofunctionality equivalent to HM, particularly fetal intestinal cell growth promotion.

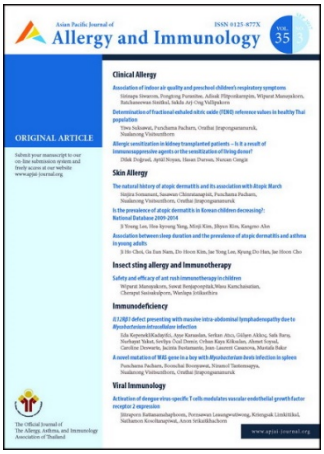
OBJECTIVE: To evaluate the biofunctionality in HM and various formulas by using an in vitro fetal intestinal cell growthassay.

MATERIALS AND METHODS: Nine specimens of HM collected from 9 milk donors and 16 formulas consisting of 5 regular formulas (RFs), 2 preterm formulas (PFs), 2 partial hydrolysate formulas (PHFs), 3 extensive hydrolysate formulas (EHFs), 2 amino acid formulas (AAFs), and 2 soy protein formulas (SPFs) were included. Fetal intestinal cellgrowth assay was performed in six replicates per milk specimen. Biofunctionality of HM digest (HMD) derived from in vitro tryptic digestion of HM was also examined. Statistical analysis was performed by ANOVA with post-hoc Tukey's Honestly Significant Difference test.

RESULTS: The fetal intestinal cell growth-promoting activity of HM and formula groups were sorted from the highest as follows: HM, 192.8% ± 16.7%; AAF, 153.5% ± 17.8%; EHF, 149.4% ± 12.5%; RF, 123.5% ± 14.2%; PHF, 111.2% ± 17.9%; PF, 110.3% ± 8.2%; and SPF, 109.3% ± 17.3%. Statistical analysis showed that growth promotion of HM was significantly higher than that of all examined formulas ($p < 0.0001$). Among formulas, EHF and AAF showed greater growth-promoting activity than the others ($p < 0.0001$). HM and HMD had a comparable growth-promoting effect
on fetalintestinal cells (198.5% ± 27.9% versus 191.2% ± 17.9%, $p = 0.724$), supporting the potential impact of HM
biofunctionality under physiologic gastrointestinal digestion.

CONCLUSIONS: Our data suggested that formulas are not equivalent to HM in respect of fetal intestinal
cell growthbiofunctionality. Despite having less activity than HM, EHF and AAF exhibited considerable levels of growth-promoting effect that may have clinical implications, especially when HM is unavailable.

Needle length for epinephrine prefilled syringes in children and adolescents: Is it one inch?



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Asian Pac J Allergy Immunol. 2018; 36(2):113-19.

Impact Factor = 0.976

BACKGROUND: Intramuscular epinephrine is the first line drug in the treatment of anaphylaxis. This study was to identify the appropriateness of 1 inch needle length for epinephrine prefilled syringes in children.

METHODS: Children aged 1 month to 18 years were enrolled. Skin to muscle depth (STMD) and skin to bone depth (STBD) were measured using an ultrasonography at the mid-anterolateral thigh. A 1 inch needle was considered as being appropriate if the STBD was more than 1 inch and the STMD was less than 1 inch.

RESULTS: Seventy five infants, 75 pre-school aged children, 75 school aged children and 147 adolescent were enrolled: 196 (52.7%) children were male. A 1 inch needle length was appropriate for 61% of the infants, for 88% of the preschool children, for 99% of the school aged children and for 95% of the adolescents. Thigh circumference ≥23 cm, BMI ≥16 kg/m² and BW ≥6 kg in infants provided the sensitivity of 74%-96% in predicting the appropriateness of 1 inchneedle. In preschool group, thigh circumference ≥25 cm, BMI ≥13.5 kg/m² and BW ≥10 kg provided the sensitivity of 98.5-100% in predicting the appropriateness of 1 inch needle. Thigh circumference ≥49 cm in adolescents provided the sensitivity of 75% in predicting that a 1 inch needle was too short.

CONCLUSION: One inch needle length may not be appropriated for intramuscular injection at thigh in all children. Thigh circumference, BMI and body weight are useful for predictor for using the 1 inch needle.

ICT exposure in children younger than 2 years: Rates, associated factors, and health outcomes

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J Med Assoc Thai. 2018; 101(3):345-9

Impact Factor = N/A

Background: The exposure of children on information and communication technology [ICT] devices have raised concern about the potential harmful effects on children's health and development. The American Academy of Pediatrics [AAP] has recommended to limit the time children spending on ICT. In Thailand, the study regarding ICT exposure, its associated factors, and consequences among children age less than two are limited.

Objective: To investigate the prevalence, impact of associated factors that contribute to children exposing various types of ICT, and health related consequence outcomes in cognitive and language development.

Materials and Methods: The cross-sectional study of information from the parents of children younger than 2-years-old who visit Well Baby Clinic [WBC], Pediatric Department, Ramathibodi Hospital, between December 2014 and November 2015. The present study aimed to find out the information of exposure and technology devices used, time of screen-time spent, other interested factors that associated to ICT exposure, usage rate, and health related outcomes. The descriptive statistic and comparative statistics were used to analyze and summarize. Chi-square tests or Fisher exact test were used to compare among these associated factors and health related outcomes.

Results: The rates of children exposed to ICT were 98.3 percent. Mean (SD) times of ICT exposure was 16.6±12.9 minutes per day, and median time (min, max) was 14 (0, 135) minutes per day. The result showed 8.5% of children met the category of high exposure definition and 36.2% was moderate exposure. The highest rank of exposure was 95.9% to TV viewing, 78.3% exposed and used the smartphone/tablets, and 15.4% reported usage or exposure to desktop or laptop computer. Only 0.2% of exposure was reported using handheld game console. Apart from game console, most parents were not aware of the negative effects of other ICT devices. The association of ICT exposure with parental education and household income was not found to be statistically significant (p-values >0.05). Regarding developmental issues, significant associations among ICT exposure with delay cognitive (p = 0.034) and language (p = 0.004) development were found.

Conclusion: Most Thai children age younger than 2-years-old were found to be exposed to ICT devices. Most parents lack awareness of negative effects of ICT exposure. The present study found association between screen-time and level of language and cognitive developmental delay.

Environmental investigation for mass lead poisoning among children in industrial area of samut sakhon, Thailand

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J Med Assoc Thai. 2018; 101(4):433-40

Impact Factor = N/A

Background: A girl with blood lead level [BLL] of 166 mcg/dL was admitted in hospital due to status epilepticus. A high level of lead dust and contamination in environment was detected in her living area. All the children in a school that was located around 100 meters from the recycling factory were examined. Among these group of children, the prevalence of high BLL (10 mcg/dL or more) was 44.2% (75 from 165 children). Objective: To Find the associations of demographic, risk behaviors, and external or internal environmental factors in children with high BLL (10 mcg/dL or more) who lives in area of industrial community. A second objective is to study the effects of high BLL (15 mcg/dL or more) on IQ level and learning disability [LD] among these children. Materials and Methods: A case control study was conducted with 43 cases of school children (BLL of 10 mcg/dL or more), and 43 children as a control group in same school by matching of classroom and gender with 1:1 matched ratio. The baseline characteristics, behavioral, and environmental risk factors (internal and external), and collected samplings of the household environment were sent to standard laboratory to identify lead contamination and the association among the environmental risk factors with high BLL (10 mcg/dL or more) by multiple logistic regression analysis, and looking for the prevalence of low IQ and LD among children who were detected BLL of 15 mcg/dL or more. Results: The study found statistically significant association between high level of BLL and school duration (more than four academic years) (odds ratio 4.86, 95% CI 1.81 to 13.04, p-value 0.002), the distance between home and the factory (less than 500 meters) (odds ratio 2.98, 95% CI 1.12 to 7.94, p-value 0.029), and father's occupation (odds ratio 2.75, 95% CI 1.03 to 7.37, p-value 0.044). In the group of children who high BLL (15 mcg/dL or more), the studied found the prevalence of 25% in low IQ, 5% of mental retardation, and 66.7% of LD were detected. Conclusion: This study found positive association of high BLL among children living around the industrial community. The most important factors were related with the duration of living in the place related with lead contamination, father's occupation, and the distance between the housing and the factory. The prevalence of low IQ and LD among children with BLL of 15 mcg/dL or more was higher than average of Thai children. There is a need for blood lead screening for these children and prompt care and prevention if high blood levels of lead is detected.

Effect of environmental temperature on serum sodium level in hospitalized non-critically ill children

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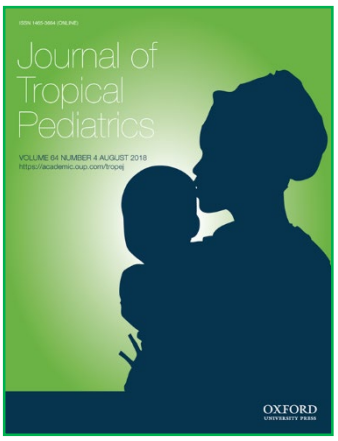
J Trop Pediatr. 2018 Sep 6 [Epub ahead of print]

Impact Factor = 1.187



Background: Intravenous hypotonic fluid administered in children is associated with an increased risk of developing hyponatremia. This finding has been reported from temperate countries where climate is relatively cold. But whether this risk also occurs in tropical countries has not been elucidated.

Objective: The objective of this study was to determine the relationship between environmental temperature and serum sodium in non-critically ill children.

Methods: A retrospective study.

Results: A total of 1061 hospitalized children were enrolled. Incidences of hyponatremia were not different between patients who received isotonic and hypotonic fluids (29% vs. 31%). Subgroup analysis showed a trend of higher incidence of hyponatremia in patients who received hypotonic fluid than isotonic fluid only in patients admitted to the air-conditioned wards (29% vs. 21%, $p = 0.08$).

Conclusion: Children admitted to the air-conditioned wards who received hypotonic fluid seemed to carry a higher risk of developing hyponatremia than those admitted to the non-air-conditioned ward

Multiplex biomarker screening assay for urinary extracellular vesicles study: a targeted label-free proteomic approach

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Impact Factor = 4.122

The recent advance in targeted label-free proteomics, SWATH-MS, can provide consistent protein detection and reproducible protein quantitation, which is a considerable advantage for biomarker study of urinary extracellular vesicles. We developed a SWATH-MS workflow with a curated spectral library of 1,145 targets. Application of the workflow across nine replicates of three sample types (exosome-like vesicles (ELVs), microvesicles (MVs) and urine proteins (UPs)) resulted in the quantitation of 888 proteins at FDR <1%. The median-coefficient of variation of the 888 proteins in the ELV sample was 7.7%, indicating excellent reproducibility. Data analysis showed common exosome markers, (i.e. CD9, CD63, ALIX, TSG101 and HSP70) were enriched in urinary ELVs as compared to MVs and UPs. The use of a multiplex biomarker screening assay focused on ELVs was investigated, and perspectives in future applications are discussed

Skewed X chromosome inactivation in girls and female adolescents with autoimmune thyroid disease

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Clin Endocrinol (Oxf).2018;89(6):863-9

Impact Factor = 3.077

OBJECTIVE: Skewed X chromosome inactivation (XCI) was associated with female predominance in adult autoimmune thyroid disease (ATD). In normal females, skewed XCI is increased with age. Whether early-onset skewed XCI is associated with childhood ATD remains unknown. This study aimed to determine XCI skewing in paediatric ATD.

DESIGN, PATIENTS AND MEASUREMENTS: Ninety-one female ATD patients, aged 3-20 years and 57 age-matched, female controls were enrolled. XCI was analysed by enzymatic digestion of DNA with methylation-sensitive enzymes followed by PCR of the polymorphic CAG repeat in the androgen receptor gene. Skewed XCI was defined as having 80% or greater of the cells preferentially inactivated on the same X chromosome. XCI pattern of the enrolled patients and parental origin of the skewed XCI were determined.

RESULTS: After exclusion of samples with homozygous CAG repeats, skewed XCI was analysed in 83 patients (57 Graves' disease and 26 Hashimoto thyroiditis) and 52 controls. There was an increased frequency of skewed XCI in ATD patients as compared with the controls (23% vs 8%, P = 0.022). Patients with Hashimoto thyroiditis had greater frequency of skewed XCI than patients with Graves' disease (38% vs 16%, P = 0.023). There were no differences in clinical parameters between patients with skewed and random XCI. Analysis of 7 patients with skewed XCI showed a preferential inactivation of paternal X chromosome in 6 patients (86%).

CONCLUSIONS: Frequency of skewed XCI was increased in childhood ATD. This observation suggests a possible association of skewed XCI in the development of paediatric ATD.

De novo food allergy in pediatric liver transplantation recipients

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Asian Pac J Allergy Immunol. 2018;36(3):166-74

Impact Factor = 0.976

Background: Food allergy (FA) prevalence is increasing in pediatric liver transplantation (LT). However, the clinical course is still limited.

Objective: This retrospective cohort study aimed to identify the prevalence, risk factors, and the natural history of de novo FA in children post LT.

Methods: Medical records of pediatric LT recipients from Jan 2001 - Dec 2014 were reviewed. De novo FA was diagnosed by symptoms after exposure to culprit food occurring after LT, and improvement after diet elimination. FA was confirmed if reproduced symptoms after re-challenge or documented sensitization or indicated gastrointestinal eosinophilia.

Results: Among 46 post LT children, 54.3% developed de novo FA at a median time of 12.2 months [Interquartile range (IQR) 6.2, 21.3 months] post LT. The confirmed FA was 39.1%. Gastrointestinal symptom was the most common manifestation followed by skin, anaphylaxis, and others. Culprit foods were cow's milk, shellfish, egg, wheat, soybean, peanut, coconut, fish and monosodium glutamate. The risk factors of FA were transplantation during age below 2 years [hazard ratio (HR), 2.62; 95% confidence interval (CI), 1.04 - 6.59; p = 0.03), atopic history in family (HR, 5.67; 95% CI, 1.33 - 24.12; p = 0.01), and Epstein-Barr (EBV) viremia (HR, 2.39; 95% CI, 1.02 - 5.63; p = 0.04).

Conclusions: de novo FA in pediatric LT is not uncommon. Age at LT younger than 2 years, family history of atopy, and EBV viremia are associated with developing FA. Development of tolerance after elimination culprit diets for 3 years is similar to general population.

Comparison of gene expression profiles between human erythroid cells derived from fetal liver and adult peripheral blood

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PeerJ. 2018;6:e5527

Impact Factor = 2.118

BACKGROUND: A key event in human development is the establishment of erythropoietic progenitors in the bone marrow, which is accompanied by a fetal-to-adult switch in hemoglobin expression. Understanding of this event could lead to medical application, notably treatment of sickle cell disease and β-thalassemia. The changes in gene expressionof erythropoietic progenitor cells as they migrate from the fetal liver and colonize the bone marrow are still rather poorly understood, as primary fetal liver (FL) tissues are difficult to obtain.

METHODS: We obtained human FL tissue and adult peripheral blood (AB) samples from Thai subjects. Primary $CD34^+$cells were cultured *in vitro* in a fetal bovine serum-based culture medium. After 8 days of culture, erythroid cell populations were isolated by flow cytometry. Gene expression in the FL- and AB-derived cells was studied by Affymetrix microarray and reverse-transcription quantitative PCR. The microarray data were combined with that from a previous study of human FL and AB erythroid development, and meta-analysis was performed on the combined dataset.

RESULTS: FL erythroid cells showed enhanced proliferation and elevated fetal hemoglobin relative to AB cells. A total of 1,391 fetal up-regulated and 329 adult up-regulated genes were identified from microarray data generated in this study. Five hundred ninety-nine fetal up-regulated and 284 adult up-regulated genes with reproducible patterns between this and a previous study were identified by meta-analysis of the combined dataset, which constitute a core set of genes differentially expressed between FL and AB erythroid cells. In addition to these core genes, 826 and 48 novel genes were identified only from data generated in this study to be FL up- and AB up-regulated, respectively. The *in vivo*relevance for some of these novel genes was demonstrated by pathway analysis, which showed novel genes functioning in pathways known to be important in proliferation and erythropoiesis, including the mitogen-activated protein kinase (MAPK) and the phosphatidyl inositol 3 kinase (PI3K)-Akt pathways.

DISCUSSION: The genes with upregulated expression in FL cells, which include many novel genes identified from data generated in this study, suggest that cellular proliferation pathways are more active in the fetal stage. Erythroidprogenitor cells may thus undergo a reprogramming during ontogenesis in which proliferation is modulated by changes in expression of key regulators, primarily MYC, and others including insulin-like growth factor 2 mRNA-binding protein 3 (IGF2BP3), neuropilin and tolloid-like 2 (NETO2), branched chain amino acid transaminase 1 (BCAT1), tenascin XB (TNXB) and proto-oncogene, AP-1 transcription factor subunit (JUND). This reprogramming may thus be necessary for acquisition of the adult identity and switching of hemoglobin expression.

Macrophage activation syndrome: early diagnosis is key

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Open Access Rheumatol. 2018;60(9):823-34

Impact Factor = 0.860

Macrophage activation syndrome (MAS) is a life-threatening condition, and it is a subset of hemophagocytic lymphohistiocytosis (HLH). The clinical features include a persistent high-grade fever, hepatosplenomegaly, lymphadenopathy, hemorrhagic manifestations, and a sepsis-like condition. From the clinical features, it is usually difficult to differentiate between a true sepsis, disease flare-ups, or MAS. Although the laboratory abnormalities are similar to those of a disseminated intravascular coagulation, which shows pancytopenia, coagulopathy, hypofibrinogenemia, and an elevated d-dimer test, it can also be a late stage of MAS. Currently, MAS is still underrecognized and usually results in delayed in diagnosis, which leads to high morbidity and mortality. This literature review was conducted in the context of the clinical manifestations and the laboratory abnormalities in MAS, which might provide some clues for an early diagnosis. The best ways for an early recognition and a satisfactory diagnosis were based on the relative changes in the overall parameters from the baseline, together with a thorough and continuous physical examination for these kinds of patients. At present, diagnostic criteria have been proposed for HLH, MAS-associated systemic juvenile idiopathic arthritis, and an MAS-associated systemic lupus erythematosus. Therefore, selecting the proper diagnostic criteria for use is essential because not all of the criteria are suitable for every autoimmune disease

Preventable severe thalassemia among children

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Hemoglobin. 2018 Sep 12 [Epub ahead of print]

Impact Factor = 0.462

This retrospective study analyzed 27 children with preventable severe thalassemia born to 24 at-risk couples between 1997 and 2017. The couples were categorized into two groups: the prenatal diagnosis (PND) group (n = 8) and the non PND group (n = 16). In the PND group, following comprehensive counseling on having a fetus with thalassemia, six couples decided to continue the pregnancy (n = 6). Termination of the two remaining fetuses was excluded as the thalassemia status was reported at a gestational age of 24 weeks. In the non PND group, medical errors were found in the misdiagnosis of couples as non thalassemia carriers (n = 4) and not offering PND to couples with known thalassemia carrier status when attending the antenatal clinic (ANC) (n = 2). Additionally, parental ignorance was found in parents experiencing their own thalassemia, or that of their spouse or child (n = 6). The remaining couples (n = 4) with known carrier status either directly refused PND or were ineligible for it. A total of five divorces (5/24 = 20.8%) occurred in the PND (n = 2) and the non PND (n = 3) groups. Knowledge, beliefs, religion, experience of thalassemia, as well as the sex of the at-risk fetus all influenced parental decisions. Therefore, both medical personnel and parents are key in preventing new cases of thalassemia. Parents should be aware of the consequences of having children with severe thalassemia, while medical personnel should provide accurate carrier detection and PND

Novel mutation of the TINF2 gene resulting in severe phenotypic Revesz syndrome

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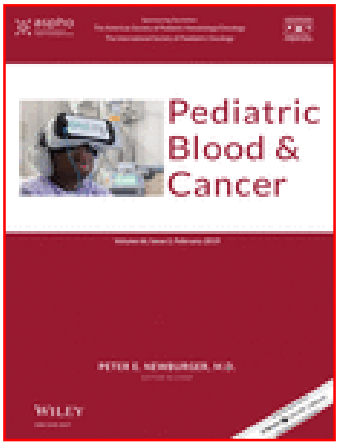

Pediatr Blood Cancer. 2018 Nov 26 [Epub ahead of print]

Impact Factor = 2.710

Characterized by intrauterine growth retardation, fine and sparse hair, reticulate skin pigmentation, bone marrow failure, bilateral exudative retinopathy, cerebral calcification, cerebellar hypoplasia, and psychomotor retardation.1-3 RS is caused by heterozygous mutations of the telomeric repeat binding factor 1-interacting nuclear factor 2 (TINF2) gene located on chromosome 14q123. It encodes TIN2, a component of the telomere-associated shelterin complex, which plays a role in the function of telomeres.4, 5 TINF2 mutations are tightly clustered in exon 6. The most common mutations are missense mutations, found at p.280-282,6 but nonsense mutations have also been reported.6-8 We describe an 11-month-old infant who presented with exotropia and leukocoria in his left eye (OS). OS showed ectropion uveae with posterior synechiae, and dense fibrovascular tissue behind the crystalline lens. Right eye (OD) showed macular edema with hard exudates, and attenuated retinal arterioles in the peripheral retina with 360 degrees of retinal nonperfusion. Multiple areas of neovascularization and preretinal hemorrhages between the vascular and avascular retina were noted (Figure 1A–C). Physical examination showed failure to thrive and mild pallor. Complete blood count (CBC) showed low hemoglobin (Hb) and reticulocyte count (9.2 g/dL and 1.2%, respectively), normal WBC and absolute neutrophil count (ANC), and low platelet count at 27 000/mm3. Bone marrow examination revealed decreased trilineage hematopoiesis with 50% cellularity.

Reference value of forced oscillation technique for healthy preschool children

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Asian Pac J Allergy Immunol. 2018 Dec 9. [Epub ahead of print]

Impact Factor = 0.976

BACKGROUND: The reference values of Forced Oscillation Technique (FOT) parameters of the inspiratory and expiratory phase for preschool children have not yet been established.

OBJECTIVE: To evaluate FOT measures in Thai healthy preschool children.

METHODS: Preschool children, aged 3-6 years, were screened. Children who were positive for the International Study of Asthma and Allergies in Childhood (ISAAC) questionnaire for asthma, positive family history of allergic diseases, recent lower respiratory tract infections, and environmental tobacco smoke were excluded. FOT parameters, including resistance (Rrs), reactance (Xrs), frequency of resonance (Fres) and area of reactance (ALX), were measured.

RESULTS: A total of 390 healthy children with the mean age of 5.1 ± 0.9 years were enrolled. FOT was successfully performed in 378 children (96.9%). The mean (SD) for the whole breath (WB) resistance at 5Hz (R5), 20 Hz (R20) and R5-20 were 11.49 (2.69) cmH2O/L/s, 9.46 (2.19) cmH2O/L/s and 2.02 (0.82) cmH2O/L/s, respectively. The median (IQR) for WB reactance at 5Hx (X5), Fres and ALX were -1.51 (-2.37 to -0.96) cmH2O/L/s, 11.17 (8.50-15.65) Hz, and 7.53 (3.72-14.32) cmH2O/L/s, respectively. Significantly difference in WB R5, R20, X5, Fres and ALX between male and female children were demonstrated. The expiratory phase R5, R20, R5-20 were significantly higher than those of the inspiratory phase ($p < 0.001$). There are significant correlations between the height and FOT parameters. Reference curve for the FOT parameters was generated based on height using the lambda-mu-sigma (LMS) method.

CONCLUSION: Reference curve of FOT parameters measured in healthy preschool children were demonstrated. Majority of preschool children could perform FOT method.

Myxoedema coma in a 2-year-old girl with untreated congenital hypothyroidism: Case report and literature review

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J Paediatr Child Health. 2018 Dec 12. [Epub ahead of print]

Impact Factor = 1.449

A 2-year-old girl who was diagnosed with acute bronchitis and respiratory failure was referred to our hospital. She was initially intubated and treated with ceftriaxone. On arrival, she was stuporous, with a body temperature of 35.1°C, heart rate 60 beats/min, blood pressure 103/76 mmHg and respiratory rate 30 times/min (ventilator-dependent with no spontaneous respiration). She was small for her age with weight and length of 8 kg (−2.7 standard deviation score (SDS)) and 68 cm (−5.1 SDS), respectively. She had a head circumference of 46 cm (−1.3 SDS) and widened anterior fontanelle of 4 × 4 cm. Puffy eyelids, macroglossia, rales on both lungs and abdominal distension with mild hepatomegaly were noted. Delayed relaxation of deep tendon reflexes and presence of Babinski sign were also demonstrated. Thyroid gland was impalpable.

Because of the presence of several clinical signs of severe hypothyroidism, retrospective questioning was undertaken. Serum thyroid-stimulating hormone (TSH) level at the time of neonatal screening was greater than 166 mU/L, but she failed to follow up for recall of positive congenital hypothyroidism screening. Subsequently, she was diagnosed with congenital primary hypothyroidism at the age of 8 months when she presented with severe constipation and global developmental delay at the other hospital. Thyroid function tests at that time demonstrated free thyroxine (T4) level of less than 9.0 pmol/L (normal, 10.3–23.2), free triiodothyronine (T3) level of less than 3.5 pmol/L (normal, 3.5–6.5) and TSH level of greater than 100 mU/L (normal, 0.3–5.5). She was non-compliant with the treatment and lost to follow-up following 2 months of treatment. Her development at this presentation was markedly delayed, approximated to that of a 2-month-old child.

Antigen-presenting cell characteristics of human γδ T lymphocytes in chronic myeloid leukemia

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Immunol Invest. 2018 Oct 15. [Epub ahead of print]

Impact Factor = 2.588

Human γδ T lymphocytes play a role in the immune system defense against cancer. Their broad anti-cancer activity against different types of cancers makes them outstanding candidates for cancer immunotherapy. An issue of recent interest is whether their antigen presentation features are similar to mature dendritic cells. The antigen-presenting cell (APC)-like phenotype and function of γδ T lymphocytes have been confirmed in many clinical trials. In this study, to support the strong role played by Vγ9Vδ2 T cells against cancer, we provide evidence that Vγ9Vδ2 T cells activated with chronic myeloid leukemia (CML) cell lysate antigens can efficiently express an APC phenotype and function. Vγ9Vδ2 T cells derived from normal peripheral blood mononuclear cells were activated with tumor cell lysate, and the tumor-activated Vγ9Vδ2 T cells could recognize and kill CML through their cytotoxic activity. In conclusion, the Vγ9Vδ2 T cells activated by cancer cell lysate showed APC characteristics, and this may greatly increase interest in investigating their therapeutic potential in hematologic malignancies. Abbreviations: CML: chronic myeloid leukemia; APC: antigen-presenting cell; TCR: T cell receptor; MHC: major histocompatibility complex; N-BPs: nitrogen-containing bisphosphonates; IPP: isopentenyl pyrophosphate; PBMC: peripheral blood mononuclear cells; NKG2D: natural killer receptor group 2, member D; TRAIL: tumor necrosis factor-related apoptosis-inducing ligand.

Risk behaviors screening in Thai adolescents with acute and chronic illnesses

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Background Adolescence is considered as a transition period from childhood to adulthood. This transition leads to various types of risk behaviors. Ten percent of adolescents suffer from a chronic illness that can limit their daily activities and which may exhibit higher rates of risk behaviors than those without chronic illnesses. Objective To evaluate the prevalence of risk behaviors in chronically ill adolescents compared to adolescents without chronic illnesses and their associated risk factors. Methods We enrolled 312 patients aged 10-20 years who visited Ramathibodi Hospital from January 2015 to December 2017. There were 161 adolescents with chronic illnesses and 151 without a chronic illness. We used a computer-based program for the Youth Risk Behaviors Survey as well as a confidentiality interview. Statistical analyses included the chi-squared ($\chi 2$) and Student's t-tests as appropriate. Results The risk behaviors in chronically ill adolescents were the following: learning problems, 86.3%; excessive screen time, 62.3%; unintentional injuries, 60.2%; depression, 38.5%; low self-esteem, 18.1%; substance abuse, 13% and sexual behavior, 6.2%. Youths with a chronic illness were more likely to report significantly higher risk of excessive screen time (62.3% vs. 48%, $p = 0.01$), depression (38.5% vs. 15.9%, $p < 0.01$) and, also low self-esteem (18.1% vs. 8.6%, $p = 0.01$) compared to those without chronic illness. Conclusions These results indicated that adolescents with chronic illnesses engage more in health risk behaviors and are prone to mental health and learning problems. These data emphasize the importance of health risk behavior screening and preventive counseling for young patients with chronic illnesses where these risks might worsen their disease

Genotype-guided medical treatment of an arteriovenous malformation in a child

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Arteriovenous malformations (AVMs) are the most difficultto-manage congenital vascular malformations. They are often associated with significant morbidity and even mortality. Herein we report a child with an AVM that responded well to genotype-guided trametinib treatment.

Report of a Case | An 11-year-old girl presented with a congenital mass on her back that had been growing since she was 3 years old. She reported intermittent discomfort, especially when she slept and exercised. Physical examination revealed a 17 × 12-cm, compressible, warm, vascularmass overlying the left scapular region (Figure 1A). Radioimaging, including magnetic resonance imaging (MRI), and clinical evaluation were consistent with an AVM. The patient had initially been treated with systemic sirolimus, which was well tolerated with only intermittent oral ulcers. However, despite systemic treatment with sirolimus at a therapeutic dose for 8months (trough levels, 10-15 ng/dL), the AVM progressed (Figure 1B).

Abnormal red blood cell indices increase the risk of arterial ischemic stroke in children

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A high red cell distribution width (RDW) and low hemoglobin level increase the risk of arterial ischemic stroke (AIS), mostly in adults. The mechanisms related to AIS remain unknown. A total of 233 subjects (90 patients and 143 healthy controls [HC]) were enrolled. The mean(SD) age in patients and HC was 9.5(3.8) and 11.4(1.8) years, respectively. We found increased odds ratios (ORs) for large vessel and small vessel subtypes in patients without underlying diseases with a mean corpuscular volume (MCV) <80 fL (OR: 5.4, 95%CI 1.8-16.3 and 2.8, 95%CI 1.2-7.2), mean corpuscular hemoglobin levels <27 pg (OR: 2.9, 95%CI 1.0-6.7 and 2.6, 95%CI 1.0-6.7), and RDW >15% (OR: 5.5, 95%CI 1.3-24.5 and 2.7, 95%CI 1.0-7.3). RBC indices showed significant correlations with TM levels. Therefore, low MCV and MCH levels, and a high RDW were risk factors for AIS and associated with TM levels in this population.

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P-wave dispersion as a simple tool for screening childhood obstructive sleep apnea syndrome

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INTRODUCTION: The gold standard for the diagnosis of childhood obstructive sleep apnea syndrome (OSAS) diagnosis is polysomnography; however, electrocardiography (ECG) may provide a simpler alternative. P-wave dispersion (PWD), the difference between the maximum and minimum P-wave duration measured by 12-lead ECG, is increased in adult OSAS but has not been researched in childhood OSAS. The aims of this study were to determine the PWD and cut-off value for the diagnosis of childhood OSAS and its association with severity.

METHODS: A total of 77 children with confirmed OSAS and 44 control participants underwent surface 12-lead ECG. P-wave duration was measured using a digital caliper by a researcher blinded to the groups.

RESULTS: Median (interquartile range) PWD in children with OSAS (median age = 82.8 months, range = 24-194 months) was significantly higher than that in the control group (median age = 73.4 months, range = 12-156 months): 38.3 (29.7-50.5) vs 25.5 (20.5-30.5) milliseconds, respectively ($p < 0.0001$). Subgroup analysis according to OSAS severity categorized by the apnea-hypopnea index from polysomnography demonstrated that PWD in the severe OSAS group (n = 24) was significantly higher than that in the mild-to-moderate OSAS group (n = 53): 48.5 (34.7-67.4) vs 35.5 (28.2-47.8) milliseconds, respectively ($p = 0.006$). A cut-off value of PWD at 26.5 ms from the receiver operating characteristic curve for the diagnosis showed the area under the curve to be 0.839, with a sensitivity of 89.6% and a specificity of 61.4%.

CONCLUSION: PWD was significantly increased in children with OSAS, particularly in severe cases. PWD could be a useful tool for screening childhood OSAS.

Modified high-flow nasal cannula in young children with pneumonia: A 3-year retrospective study

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Objectives: We aimed to report our 3-year experience in modified HFNC (MHFNC) usage in young children with community-acquired pneumonia in infectious diseases ward and to identify factors associated with MHFNC failure.

Materials and Methods: A retrospective, cross-sectional study of pediatric patients, aged <5 years, with community-acquired pneumonia, who were treated with MHFNC at infectious diseases from August 2012 to December 2015 were recruited. MHFNC failure was defined as a need for further respiratory support within 48 h after initiating MHFNC.

Patients: Ninety-nine patients with community-acquired pneumonia were included in this study.

Setting: A tertiary care hospital.

Measurements and Results: Ninety-nine children (median age of 14 months, body weight 8.6 + 3.1 kg) were included. Ninety-two children (93%) were successfully treated with MHFNC and only seven (7%) were in the failure group. The maximal flow was 3 L/kg/min. Lower oxygen saturation (SpO_2)/fraction of inspired oxygen (FiO_2) ratio (<264) and higher FiO_2 requirement were found to be associated with failure. Maximum FiO_2requirement >0.5 had high odds ratios (22.25) to develop MHFNC failure. No serious complication from MHFNC was found.

Conclusions: MHFNC is a practical respiratory support in young children with pneumonia. SpO_2/FiO_2 ratio (<264) and FiO_2 requirement >0.5 is a risk factor for MHFNC failure.

Can auto-CPAP determine therapeutic CPAP pressure in children with OSA?

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Objective: In current standard practice the therapeutic pressure of CPAP is determined by manually titration under attended polysomnography (PSG). Since PSG is not easily accessible, auto-CPAP may be an attractive alternative. Our goal is to compare the pressure levels obtained from home auto-CPAP with overnight PSG titration in children with OSA.

Methods: We performed a prospective cohort study in 2-18 year-old children with OSA referred for CPAP titration under PSG. Children were instructed to use auto-CPAP devices at home for 8 weeks, either before or after PSG titration. One night PSG titration was performed following AASM clinical guidelines for the manual titration of positive airway pressure. Data from only those children who used auto-CPAP ≥ 4 hours per day, for >consecutive 7 days and percent days with device usage ≥ 80% were selected for analysis. Average device pressure ≤ 90% of time from auto-CPAP were obtained and compared with PSG titrating pressure.

Results: Eleven of 17 children were enrolled and completed the protocol (male 9/11, aged 9.6 ±4.2 years, BMI 31.5 ± 10.0 kg/m2). Three children refused to use auto-CPAP. Three children were non-adherence. Six of 11 children had already undergone adenotonsillectomy. There were no significant differences in the pressure levels obtained from home auto-CPAP and PSG titration (11.05 ± 3.68 vs. 11.18 ± 3.34 cm H2 O, p=0.84). However, when considering on actual values of the pressure, only 5/11 children had pressure differences <2 cm H2 O. Pressure levels obtained from auto-CPAP significantly differed from PSG titration in the group of children with history of adenotonsillectomy (p=0.036).

Conclusion: In children with OSA, the use of home auto-CPAP may not accurately determine the therapeutic CPAP pressure as compared with manually titration under attended PSG, especially in children who previously had adenotonsillectomy.

Reticulocyte hemoglobin equivalent (Ret-He) in a thalassemia-prevalent area

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INTRODUCTION: Reticulocyte hemoglobin equivalent (Ret-He), a direct measure of the hemoglobin in the young RBC, has been reported to be useful in the diagnosis of iron deficiency anemia (IDA) but may have some limitations in thalassemia trait. This study aims to evaluate the differences of Ret-He levels in a population of school-aged children and to assess the diagnostic value of Ret-He in identifying IDA in a thalassemia-prevalent area.

METHODS: Blood samples from subjects were tested for CBC including Ret-He, ferritin, serum iron and total iron binding capacity. Blood samples also underwent hemoglobin typing and a molecular study for α-thalassemia. ROC analysis was performed to determine the predictive capacity of Ret-He levels in the diagnosis of IDA.

RESULTS: Ninety-eight children with a mean age of 12.9±0.6 years were included. The Ret-He levels in the thalassemia trait group (26.7±2.4 pg), the ID group (29.0±2.9 pg), the IDA group (25.4±2.7 pg), the combined ID and thalassemia trait group (26.6±2.8 pg), and the combined IDA and thalassemia trait group (24.6±2.3 pg) showed significantly lower levels than in the NC group (30.8±1.7 pg), with P-values at <0.001, 0.01, 0.006, 0.002 and <0.001 respectively. The Ret-He had an AUC of 0.904 in diagnostic ability for IDA with a cutoff level of ≤27 pg had a sensitivity of 91.7%, a specificity of 81%.

CONCLUSION: Ret-He levels were lowest in subjects with combined IDA and thalassemia trait. A Ret-He cutoff level of ≤27 pg is suggestive of IDA in this study's population.