351 PAEDIATRIC ONE-DAY ADMISSION – IS IT NECESSARY AND WHY?

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10.1136/bmjpo-2021-RCPCH.190

Background Paediatric patients being admitted to the inpatient units from the emergency departments (EDs) are increasing across many developed countries. However, despite this increase in the proportion of admissions, the mean inpatient length of stay has fallen significantly.

Objectives This study aimed to assess the necessity of one-day paediatric admissions in Singapore. An unnecessary admission is defined as one with no diagnostic test ordered, intravenous medication administered, therapeutic procedure performed or specialty review made in the inpatient unit. With a better understanding, interventions can be implemented to reduce the number of unnecessary admissions.

Methods We retrospectively reviewed the medical records of paediatric patients who were admitted from a general ED of an adult tertiary hospital to a paediatric tertiary hospital within the same healthcare cluster between 1 August 2018 and 30 April 2020. Paediatric patients were defined as age less than 16 years old. One-day admission was defined as an inpatient stay of less than 24 hours from time of admission to discharge. Data fields including demographic, diagnosis, reason for admission, interventions and treatment procedures performed at both the emergency department and inpatient unit were captured in a standardised data collection form and analysed.

Results During the study period, there were 3944 paediatric attendances at the general ED. One thousand one hundred and sixty one (8.3%) paediatric patients were admitted to the inpatient unit of the paediatric tertiary hospital. Among these, 481 (41.4%) were one-day admissions. Upper respiratory tract infection (62, 12.9%), gastroenteritis (60, 12.5%) and head injury (52, 10.8%) were the three most common conditions. The three most common reasons for ED admissions were for inpatient treatment (203, 42.2%), inpatient monitoring (185, 38.5%) and inpatient diagnostic investigations (32, 12.3%). However, 96 (20.0%) one-day admissions (20.0%, n=96) were unnecessary with no diagnostic test ordered, intravenous medication administered, therapeutic procedure performed or specialty review made in the inpatient unit.

Conclusions A fifth of paediatric one-day admission in Singapore has been shown to be unnecessary and reasons behind these admissions were multifactorial. A detailed understanding of these reasons can allow us to propose interventions to safely slow down and perhaps reverse this trend.

352 OUTCOMES OF DIET CONTROL IN GESTATIONAL DIABETES DURING PREGNANCY WITH COUNSELLING AND FOOD NUTRITION MOBILE APPLICATION

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10.1136/bmjpo-2021-RCPCH.191

Background Poorly controlled Gestational Diabetes Mellitus (GDM) is associated with complications in both mother and infant. The first line of management for these women is dietary modifications but maintaining a healthy and well-balanced diet can be a huge feat to some. Together with the Dietetics

Department, we provided counselling and used a food diary mobile application to help pregnant women with GDM to track their dietary intake so as to improve their diabetic control.

Objectives Our objective is to report the clinical profiles, dietary habits, and outcomes of pregnancy of these recruited women.

Methods A prospective pilot of 30 pregnant women with GDM diagnosed after Oral Glucose Tolerance test at 26 weeks of pregnancy were recruited from April 2019 to June 2020. All received counselling by a diabetic nurse and dietitian, and their caloric and nutritious intakes were recorded in the food diary mobile application. Their infants' outcomes, birth weight and blood glucose levels were also tracked. Means were presented with standard deviations for the continuous and normally distributed data.

Results There were 17 Chinese, 10 Malay, and 3 Indian pregnant women with GDM reviewed. The mean maternal weight, height and BMI of these women were 67.4 kg (SD: 12.5), 1.60m (SD: 0.08), 26.1 kg/m² (SD: 4.4) at recruitment. Their mean age was 32.6 years old (SD: 3.8). Their median HbA1c was 5.4 mol/dL. The average daily caloric, protein, fat, carbohydrates, sugar and calcium intake of these women were 1056 kcal (SD: 245.8), 54.5 g (SD: 15.2), 121 g (SD: 13.2), 24 g (SD: 11.8) and 385.4 g (SD: 215.8) respectively. All of them consumed carbohydrates well below the recommended level which is 175 g and almost all of their average caloric intakes were below their estimated individualized caloric budget. There was no stillbirth, perinatal asphyxia, serious birth injuries or serious neonatal complications among the infants. The mean birth weight and gestation of the infants were 3.14 kg (SD: 0.57) and 38 completed weeks (SD: 1.5). 2 of them were delivered late premature, and 3 had a birth weight of more than 4 kg. 2 infants had hypoglycemia which responded to supplement feeds without intravenous infusion.

Conclusions These findings suggest that diet-counselling and using a food diary mobile application can encourage pregnant women with GDM to adopt a healthy and well-balanced diet during their pregnancy, which can therefore help to reduce the complications in both mother and infant.

353 WILL INCREASING THE SCREENING CUT-OFF THYROID STIMULATING HORMONE (TSH) LEVEL IN THE NEWBORN MISS CASES OF CONGENITAL HYPOTHYROIDISM?

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10.1136/bmjpo-2021-RCPCH.192

Background Newborn screening programs for congenital hypothyroidism (CH) using thyroid stimulating hormone (TSH) as a primary screening test has led to a drastic decrease in untreated CH. There is no optimum screening cut-off level of TSH to trigger investigations for diagnosis and treatment. In different health systems, the cut-off value could be a standard (fixed) TSH level (such as 10.0 mIU/L) or based on the 97.5th, 98.5th or even 99th centile of a normative TSH distribution. An informal survey of Singapore neonatologists showed that a standard 25.0 mIU/L is used as the screening cut-off. A pilot study conducted at Singapore General Hospital (SGH) in 2013 showed that umbilical cord TSH values

formed a normal distribution curve, with the 97.5th centile falling at 16.8 mIU/L. Therefore, cord TSH exceeding 16.8 mIU/L formed the basis for screening cut-off TSH values at SGH since 2013.

Objectives The objective of our study was to determine the prevalence of CH amongst newborn infants born at SGH who had umbilical cord TSH levels in the borderline range 16.8 – 25.0 mIU/L.

Methods In this retrospective cohort study, livebirths from 1 January 2015 to 31 October 2020 who had borderline cord TSH levels of 16.8 – 25.0 mIU/L were included. Neonates with raised cord TSH ≥ 16.8 mIU/L had thyroid function repeated on day 6–8 and 2-weekly thereafter. Demographic and birth data were collected, including cord free thyroxine (fT4) and TSH levels, aetiology, age at initiation of treatment, initial dose and length of outpatient follow-up.

Results Our screening program based on cord TSH cut-off ≥ 16.8 mIU/L resulted in a positive screening rate of 3.63%. A total of 276 of 10,172 neonates (2.71%) born during the study period was found to have cord TSH levels in the range 16.8–25.0 mIU/L. The mean ($\pm$ S.D.) gestational age was 38.2 (± 1.9) weeks and mean ($\pm$ S.D.) birth weight was 3040 (± 486) grams. There were three cases of congenital hypothyroidism amongst 276 livebirths, giving a prevalence rate of 1 in 92. All 3 neonates were born at term with mean birth weight 3,287 grams at a mean gestational age 38 weeks. Of the 3, one was diagnosed postnatally with trisomy 21 complicated by patent ductus and ventricular septal defect, while another was born to a mother with Graves' disease. All had thyroid dysgenesis and were given daily L-thyroxine replacement.

Conclusions Our current newborn screening program for congenital hypothyroidism based on an umbilical cord TSH cut-off ≥ 16.8 mIU/L resulted in a positive screening rate of 3.63%. Amongst 276 neonates with TSH levels of 16.8 – 25.0 mIU/L, three term infants were diagnosed with congenital hypothyroidism, giving a prevalence rate of 1 in 92. These 3 cases of CH would have been missed if the screening cut-off level were increased to 25 mIU/L. A better screening TSH cut-off at the 97.5th centile of the distribution curve appeared to be 18 mIU/L instead of 16.8 mIU/L.

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CASE OF INFANT BOTULISM AND REVIEW OF THE USE OF HEPTAVALENT BOTULINUM ANTITOXIN FOR TREATMENT

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10.1136/bmjpo-2021-RCPCH.193

Background Infant botulism is a rare and potentially lethal condition resulting in symmetrical descending flaccid paralysis, caused by ingestion of *Clostridium botulinum* spores. Human Botulism Immune Globulin Intravenous (BIG-IV) is deemed safe and effective in reducing inpatient and intensive care unit (ICU) stay for infants with botulism. However, the high cost of BIG-IV and the time to procurement from the United States can be prohibitive. A possible alternative is the heptavalent botulinum antitoxin (HBAT), an equine-derived antitoxin licensed for use for treatment of non-infant botulism.

Objectives To present a case of infant botulism and review the use and safety of heptavalent botulinum antitoxin as treatment for infant botulism.

Methods Case report and review of literature.

Results A three-month-old female infant weighing 5.3 kg presented to our hospital with two days of reduced feeding, poor suck and lethargy. She subsequently developed acute flaccid paralysis with bulbar involvement. History revealed ingestion of 1 milliliter of raw honey about 3 weeks prior to symptom onset. She was transferred to the ICU for non-invasive respiratory support on and also required nasogastric tube feeding. Her stool botulism neurotoxin gene PCR was positive for type A and B genes. A nerve conduction study demonstrated a pre-synaptic neuromuscular junction defect consistent with the diagnosis of infant botulism.

A collaborative decision between parents and clinicians was made for HBAT over BIG-IV due to lower cost and availability in Singapore. On day 6 of admission, she was given HBAT (10% of vial, 1.6 mL once) using a slow incremental infusion rate, with close monitoring of vital signs and with diphenhydramine as premedication. She did not experience any adverse effects. Her condition improved and she was eventually discharged after 18 days of hospitalization.

Only few studies describe the use of HBAT in infant botulism and the experience in children is limited, especially in infants. This adds to the limited data available for the use of HBAT in infants, and suggests that HBAT may be safe and effective for use in infant botulism.

Conclusions Infant botulism is a rare condition that requires prompt diagnosis and treatment. In a setting where the BIG-IV is not accessible in a timely manner due to high cost or logistics, HBAT can be considered as a safe and effective alternative for the management of infant botulism.

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LOPINAVIR/RITONAVIR TREATMENT IN PAEDIATRIC PATIENTS WITH COVID-19

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10.1136/bmjpo-2021-RCPCH.194

Background Protease inhibitor lopinavir/ritonavir has been used alone or in combination with other therapeutics as treatment of COVID-19. Data on paediatric population are scarce.

Objectives To assess efficacy and safety of lopinavir/ritonavir for treating paediatric patients with COVID-19.

Methods From March to August 2020, patients aged 18 years or below with confirmed COVID-19 diagnosed by positive SARS-CoV-2 reverse transcriptase-polymerase chain reaction (RT-PCR) in their respiratory specimens in Department of Paediatrics, Queen Elizabeth Hospital and Princess Margaret Hospital, Hong Kong, were included. Patients were treated with lopinavir/ritonavir at decision of primary physician for 14 days or shorter when patient was fit for discharge or PCR in nasopharyngeal swab (NPS) turned negative. NPS viral load, which was determined by RT-qPCR targeting the RdRp-Hel gene, was obtained at different study time points. Clinical features including demographics, duration of symptom and hospitalization, time to negative PCR in NPS, need of oxygen therapy or intensive care were retrieved from medical records.

Results 80 patients admitted from March 2020 to August 2020 for COVID-19 were recruited. 27(33.8%) received