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PAEDIATRIC SYMPOSIUM 2023

RIPASH Paediatrics

MINISTRY OF HEALTH
BRUNEI DARUSSALAM

at the Paediatric symposium on
Sunday, 10th September 2023, at Dewan Al-'Afiah, Ministry of Health, Brunei Darussalam

Jointly organised by
The Child Development Centre and the Department of Paediatrics, RIPAS Hospital
Brunei Darussalam

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TABLE OF CONTENTS

PAEDIATRIC SYMPOSIUM 2023

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P1. Epidemiology of Paediatric Burns in Brunei Darussalam and Future Preventative Measures.

Best Poster Award

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Background: Paediatric burns have a long-term effect physically and psychologically to patients and their families. Studies globally have shown that the incidence of burn injuries is most common in children below the age of 4 years old. Factors responsible for this include, children's impulsiveness, lack of awareness, natural curiosity, and total dependency to caregivers.[1-2] Additionally, factors such as lack of supervision, cooking at a low counter/ stove, transferring hot liquids in containers without lids, leaving hot equipments/ appliances unattended are among the common causes for paediatric burns.[3-4]

Aims: The aim of this study was to provide the recent epidemiological data on paediatric burns in Brunei Darussalam and to suggest future preventative measures.

Methods: A retrospective data collection of burn patients aged less than 12 years old were obtained from BruHims medical data system and dressing change appointment books. All paediatric patients treated as in-patient and out-patient settings between July 2022 and July 2023 in Brunei Darussalam's Burn Centre in Raja Isteri Pengiran Anak Saleha (RIPAS) Hospital were included. Data such as age, gender, date of injury, mechanism of injury, the total body surface area burnt, depth of the burn injury and body parts involved were recorded.

Results: There were a total of 84 patients included in this study. Average age was found to be 2.96 years old with 60 (71.4%) of them below the age of 5 years old. There were 55 males and 29 females, giving a male to female ratio of 1.9: 1. The mean total body surface area burnt were found to be 3.51%. The mechanisms of injury included scald injury from hot water (n=49), hot coffee/ tea (n=5), hot noodle cup/porridge/soup (n=11), hot oil (n=1), thermal burns from hot surfaces/ appliances (n=13), burning flame/ ashes (n=3) and friction burns from bicycle tire/ treadmill (n=2). The most common depth of burn was superficial partial thickness burn with blistering and trunk/ upper limbs were the most common body parts involved in burn injuries. 8 out of 84 cases were treated as in-patients due to a bigger total body surface area burnt of >10%, while others were treated as out-patients.

Discussion: The results have shown that most paediatric burns were common in the younger population of children, thus making them the prime targets in prevention. This study has also highlighted that the most common cause for paediatric burns is scald injury from hot liquids. Education and awareness of

burn prevention and pre-hospital first aid for parents and caregivers are vital in protecting children from these unnecessary burn injuries and complications. Seeking medical attention as early as possible is equally important in preventing any complication.

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P2. Infantile hemispheric glioma: A case report.

Merlin Boban, Ady Thien.
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Pantai Jerudong Specialist Centre.

Background: Infantile brain tumors are a rare entity, accounting for approximately 10% of all pediatric brain tumors, with around half of them (5%) occurring within the first 6 months of life.[1] Among all infantile brain tumors, the most common histological diagnosis is glioma, particularly low-grade glioma. Infantile gliomas distinguish themselves from other infantile tumors as well as their counterparts in older children and adults due to their paradoxical clinical behavior.[2] Infantile hemispheric gliomas are driven by distinct gene fusions; subgroups with ALK gene fusion have been identified.[3] Although, in-depth knowledge of the molecular makeup provides us with leverage in targeted chemotherapy, the primary treatment is surgery aimed at achieving gross total resection. There is a direct correlation between the extent of resection and overall outcomes, and therefore prognosis.[4,5]

Aim: A discussion on infantile brain glioma in all its intricacies for academic purpose. The rarity of infantile brain tumors presents challenges in diagnosis, such as delayed symptomatic response to increased intracranial pressure due to the flexibility of the neonatal skull. The difficulty in treatment arises partly due to infant physiology where surgical resections can be inherently risky due to body size and total blood volume. Chemotherapy and radiotherapy also have potential long-term effects on the developing brain. Furthermore, conventional histological assessment of these tumors can be difficult, and the addition of molecular assessment is imperative.

Case Report: A healthy-looking term male infant born via normal vaginal delivery to a 28-year-old primigravida, with no family history of congenital defects or tumors, presented at 3 months of age (body weight 5.65 kg) with persistent vomiting. During evaluation, he had vacant stares, followed by an episode of a right-sided focal convulsion. Parents have also noticed intermittent vacant stares which started when the infant was 1 month old. The infant was intubated due to rapid deterioration of conscious level and right pupillary asymmetry. A contrast CT scan revealed a large heterogenous mass in the right temporal and parietal lobes with areas of necrosis and hemorrhage. The infant underwent emergency right parietal craniectomy, decompression and biopsy of mass. During a period of one and a half months of hospital stay, the infant underwent two further staged surgical resection of the mass (due to total blood volume concerns) and had a left ventriculoperitoneal shunt for hydrocephalus. At 9 months of age, the infant underwent a third and final surgery in Singapore to address a small residual tumor and to allow for fresh tumor samples to be sent for molecular assessment. The initial histopathology suggest-

ed Embryonal CNS tumor NOS. However, further molecular studies revealed ALK positivity, indicating Infantile hemispheric high-grade glioma. Regular follow-up with 6 monthly MRI brain showed no recurrence, and the infant did not undergo any chemotherapy or radiotherapy. At 3 years and 3 months of age, the child is active and exhibits normal physical development but has expressive language delays.

Conclusion: This case study aimed to understand one of the rare infantile brain tumors, aligning with the current understanding of the entity and addressing challenges in treatment to achieve rewarding results. Molecular studies have facilitated a better understanding of the disease's nature and enabled targeted chemotherapy.[6] Nonetheless, surgery remains the cornerstone of treatment where aggressive surgical treatment, when appropriately staged, can yield favorable outcomes.

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P3. Audit on the management of children with croup admitted to the Acute Paediatric Unit (APU).

Saung Thinzar, Wee Chun Yen.
Department of Paediatrics, RIPAS Hospital.

Introduction: Croup or acute laryngotracheitis is a common viral respiratory illness affecting children below 6 years of age.[1] Most children with croup have mild symptoms which are self-limiting and can be managed at home. However, those with moderate to severe symptoms may need hospital admission. The paediatric department of RIPAS Hospital published the "Guideline for the management of children with croup" in 2017 which was updated in 2020 to assist clinicians in decision-making and instituting appropriate treatment.[1]

Objectives: An audit of the acute croup management in children admitted to the Acute Paediatric Unit (APU) from January 2023 to June 2023 was performed. The aim was to evaluate for 100% compliance of croup diagnosis and management to the standards in the RIPAS paediatric croup guideline.

Results: A total of 26 patients with a mean age of 9.7 months diagnosed with croup were admitted to APU from January 2023 to June 2023. All but one patient had clinical features of croup assessed in the initial encounter but only 23% had documented severity grading. Majority of the patients admitted (n=10) had "severe" symptoms. None of the children received oral steroids, but all were given either intravenous or intramuscular dexamethasone, of which nearly half were not indicated. Additionally, 7 patients went on to receive repeated doses of dexamethasone. The dose of dexamethasone ranged from 0.15 to 0.6 mg/kg. Majority of the patients (69%) were given

nebulised adrenaline (1:1000) which were indicated, with doses ranging from 0.25 to 0.6ml/kg. The mean length of hospital admission was 1.7 days, and all the patients met the discharge criteria before home.

Discussion: The audit identified multiple areas for improvement. Proper assessment and severity grading of croup will improve decision making for treatment as well as ease handovers and referrals. From the audit, all children with croup received dexamethasone injections despite the guideline only reserving it for those with "severe" symptoms. The oral syrup preparation of dexamethasone which is equally effective as intramuscular dexamethasone in moderate croup is currently not available in our hospital.[2] Oral prednisolone may have been overlooked as clinicians may not be familiar with the guideline or question the efficacy of the medication. While a single dose of prednisolone is not as effective as dexamethasone and may result in re-presentation to healthcare, a longer course of oral prednisolone treatment is as efficacious as dexamethasone.[3-4] Hence, our guideline currently recommends 2 doses of prednisolone[1]. Although the majority of patients who needed nebulised adrenaline did receive it, the dose range was not consistent. The suggested intervention includes education sessions and sharing of the guideline to clinicians in the emergency department and APU to improve patient safety and reduce unnecessary admissions with a re-audit in 6 month's time to reassess criteria compliance.

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P4. X-linked adrenoleukodystrophy – A case report.

Second Best Poster Award

Khairiyah Al-Hasnaa Hassan, Wee Chun Yen.

Paediatrics Department, Raja Isteri Pengiran Anak Saleha Hospital, Brunei Darussalam.

Background: X-linked adrenoleukodystrophy (XL-ALD) is the most common peroxisomal disorder, with an estimated incidence of 1 in 17,000.[1] It is caused by mutations in the *ABCD1* gene leading to impaired peroxisomal beta-oxidation, resulting in elevated Very Long-Chain Fatty Acid (VLCFA) levels.[1-3] It primarily affects the adrenal cortex, central nervous system and Leydig cells of the testes. Affected males have one of three phenotypes, namely childhood cerebral XL-ALD (approximately 35-40 percent), adrenomyeloneuropathy (AMN) (40-45 percent) and adrenal insufficiency only (10 percent).[2]

Case: A 9-year-old boy presented to the Emergency Department with hypoglycaemic seizure along with a recent history of fever and vomiting. He also had a background of new-onset learning difficulty. He is the second of four boys to non-consanguineous parents. On clinical examination, he had hyperpigmented lips, gums, nailbeds, and the extensor surfaces of his elbows and knees but no other rashes. He was prepubertal with no signs of virilisation. He had no goitre. His height and weight were on the 50th and 25th percentile respectively. The rest of his systemic examination including blood pressure were unremarkable.

At presentation, his glucose level was unrecordably low with elevated blood ketones of 4.3mmol/L. He also had unmeasurably low cortisol and high adrenocorticotrophic hormone (ACTH) of 127 pg/ml (7.3-63.3), which was consistent with primary adrenal insufficiency. There were no hyponatraemia or hyperkalaemia and his renin and aldosterone levels were normal. Initial investigations excluded simple virilising congenital adrenal hyperplasia, tuberculosis adrenalitis and autoimmune causes (negative antibodies including anti-21-hydroxylase). Hence, further workup including VLCFAs analysis revealed high levels of C24/C22 ratio and C26/C22 ratio in the plasma and magnetic resonance imaging showed peri-ventricular white matter changes indicating active demyelination, confirming the diagnosis of childhood cerebral XL -ALD.

Discussion: Primary adrenal insufficiency is rare in children and can present with non-specific symptoms. Most affected individuals with XL-ALD have adrenal insufficiency, and some have hyperpigmentation due to increased ACTH secretion. Haematopoietic cell transplantation (HCT) is the treatment of choice for males with early stage of cerebral XL-ALD. Without treatment, rapid progression that leads to severe disability, dementia and death ensues over months to years.[4] As this disease has an X-linked pattern of inheritance, there is a 50 percent chance of an affected male hence his other siblings will be screened for this condition.

This case highlights the importance of excluding XL-ALD in any males with adrenal insufficiency who have negative adrenal antibodies, especially with a history of seizures, learning disabilities or behavioural problem. Subsequent brain imaging surveillance can detect early cerebral changes in imaging, even without neurologic or cognitive symptoms, as lesion development may precede symptoms.[4] Thus, allowing for appropriate timely management including arrest of cerebral disease progression.[4]

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P5. Spina Ventosa: A rare presentation of skeletal tuberculosis.

Third Best Poster Award

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[3]Department of Paediatrics, SSB Hospital, Kuala Belait.

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Background: Skeletal tuberculosis accounts for 1%–5% of all tuberculous infections. Tuberculous dactylitis or spina ventosa, is a rare skeletal manifestation of tuberculosis where the short tubular bones (i.e. phalanges, metacarpals, metatarsals) are affected. Typically, it affects children (85%) in whom multiple or consecutive bones are involved, compared to a single bone in adults.[1-3]

Case: A 5 years old Malay boy presented with

a 2 weeks history of swelling of the middle phalanx of right middle finger. Two weeks later he developed swelling of the base of right 2nd toe and left thumb. Initially he was diagnosed as having a fracture and subsequently Juvenile Rheumatoid arthritis was suspected. There was a history of weight loss and poor appetite at presentation, and no history of fever, trauma or contact with tuberculosis. A provisional diagnosis of tubercular dactylitis was made 2 months after his initial presentation, based on the clinical and radiological findings. The chest radiograph was normal. Fine Needle Aspiration Cytology from the right foot showed epitheloid granuloma and acid-fast bacilli (AFB) and culture was positive for AFB. Early morning gastric aspirate was also positive for AFB. He was treated with 4 drug AKT (Ethambutol, Pyrazinamide, Isoniazid and Rifampicin) for 2 months followed by 8 months of Isoniazid and Rifampicin. There was improvement in his appetite and weight as well as resolution of clinical and radiological changes at the end of treatment.

Discussion: The term spina ventosa is derived from "spina" meaning "short bone" and "ventosa" meaning "expanded with air". Tuberculous dactylitis lacks the typical features of fever and acute inflammatory changes of acute osteomyelitis.[1-3]

Plain radiography is the modality of choice for evaluation and follow-up. The bones distal to the tarsus and wrist tend to be affected, with the upper limb involved more often. Typically, the proximal phalanx of the index/middle fingers and middle/ring finger metacarpals are affected. Characteristic radiological features include: diaphyseal expansile lesion of the involved bone often without periosteal reaction. Sclerosis of the lesion suggests healing.[1]

The diagnostic delay in this case was attributed to lack of high index of suspicion, nonspecific clinical manifestations, simultaneous involvement of both the limbs and absence of concomitant pulmonary involvement. Other reasons reported in literature include presentation at an unusual age (uncommon beyond 6 years of age) and paucibacillary nature of the lesion.[2,3]

The differential diagnosis includes: pyogenic or fungal infections, syphilitic dactylitis, sarcoidosis, hemoglobinopathies, hyperparathyroidism and leukemia.[1]

A high index of suspicion and bacteriological confirmation is essential for early diagnosis and prompt treatment of tubercular dactylitis.[1-3]

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P6. Bone remodeling after fractures in children.

Ketan Pande[1,2], Abdul Haifdz Bin Yakob[1], Hj Shafaat Faique[1], Toe Toe Aung[1].

[1]Department of Orthopaedics, RIPAS Hospital.

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Background: Remodeling is an important stage of fracture healing and follows inflammatory and reparative phases. In growing children, remodeling is pronounced and can restore the alignment of initially malunited fractures to a certain extent, making anatomic reduction less essential and allowing fractures to be treated conservatively.

Case: A 1 year 3 months old girl, a front seat passenger in a car was involved in a road

traffic accident. She was diagnosed to have fracture shaft of left femur. Below knee skin traction was applied and a decision to treat the fracture conservatively was taken based on the alignment obtained. The alignment with some overlap and translation was monitored clinically and with weekly radiographs. The traction was removed when there was clinical and radiological evidence of healing and she was followed up in the outpatient clinic after discharge. At last followup the fracture had healed well with good remodeling.

Discussion: In a malunited fracture, the angulation corrects maximally by physeal realignment (75%) and partly by appositional remodeling of the diaphysis also known as the cortical drift (25%). The overall limb and joint alignment corrects rapidly due to asymmetrical physeal growth.[1]

Remodeling can potentially correct translation (side to side displacement by periosteal correction) and axial deformity (coronal and sagittal; based on Wolff law [mechanical loading] and Hueter Volkman's law [adjacent physes tend to realign perpendicular to the forces acting through them].[2,3]

General rules to keep in mind are: i) Remodeling potential is inversely proportionate to the age and is the highest in neonates, ii) Fractures in the lower extremity have higher remodeling potential compared to the upper extremity, iii) Remodeling is most pronounced at the growing end of the bone and along the axis of the adjacent joint motion (especially in the case of hinge joints like elbow and knee), iv) A small amount of rotational malalignment correction is possible but it is negligible, hence rotational malalignment should not be accepted.[3]

Acceptability criteria for different bones are well defined and are recommended to be used as guidelines only. Over-reliance on remodeling potential may lead to permanent deformity.[3]

Good understanding of general remodeling principles, regional variations and limits of acceptance of angulation in different regions help in quick decision making. Patient's functional capacity, parents' willingness to wait until the completion of the remodeling process, and the experience of treating doctor should be considered in the final decision making. A pictorial record showing successful remodeling of the malunited fracture can help in convincing parents.

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P7. Impact of COVID-19 pandemic on circumcisions performed under general anaesthesia by Paediatric Surgery in RIPAS Hospital.

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Background: WHO declared a COVID-19 Pandemic on 11 March 2020[1]. During this First Wave of COVID 19 in Negara Brunei Darussalam, as part of the Department of Anaesthesia RIPAS Operating Theatre Business Continuity Plan (BCP), operating theatre services were reduced to trauma, emergency, cancer and labour operating theatres from 9 March 2020 to 2 August 2020. The Second Wave of COVID 19 in Negara Brunei Darussalam started on 7 August 2021 and this BCP was again implemented until 31 July 2022. As a consequence paediatric surgery elective waiting lists started to lengthen. RIPAS Oper-

ating Theatre started to reinstate some theatres from 1 April 2022 and more during 1 June 2022 with paediatric surgery utilising General Surgery lists. Paediatric Surgery Elective list was formally reinstated from 1 August 2022.

Aim: The aim of this study was to look at the impact of COVID-19 pandemic on circumcisions performed under general anaesthesia by Paediatric Surgery in RIPAS Hospital.

Methods: All circumcisions performed under general anaesthesia in RIPAS Hospital by Paediatric Surgery between 1 January 2020 to 31 December 2022 were included. There were no exclusions. Data was collected from BruHIMS records, Operating Theatre Management System and Paediatric Surgery operative logbook. For purpose of data analysis, the circumcisions were sub grouped to those below and those above the age of 12 years old. Special needs children were also analysed as a subgroup.

Results: For the calendar year 2020 (1 January 2020 to 31 December 2020) 115 circumcisions under general anaesthesia were performed by Paediatric Surgery in RIPAS Hospital. 62 were performed in the calendar year 2021 (1 January 2021 to 31 December 2021) and 114 in the calendar year 2022 (1 January 2022 to 31 December 2022). In total 291 circumcisions were done during these 3 years. Of these 54/291 (18.5%) were above the age of 12 years old. 237/291 (81.4%) were under the age of 12 years old. 58/291 (19.9%) were special needs children: 12/291 (4.1%) above 12 years old while 46/291 (15.8%) were under 12 years old.

Discussion: COVID 19 pandemic lead to a reduction in elective surgery lists in RIPAS Hospital. The number of circumcisions under general anaesthesia per calendar year were markedly reduced during the COVID 19 First and Second Wave in Negara Brunei Darussalam. Of note was the higher percentage of above 12 year olds.

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P8. Challenges of performing circumcisions under general anaesthesia in Pengiran Muda

Mahkota Pengiran Muda Haji Al-Muhtadee Billah PMMPMHAMB Hospital in December 2022.

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Background: PMMPMHAMB Hospital had general anaesthesia services from 2006 until September 2016. From September 2016 onwards, Operating Theatres catered for procedures done under local anaesthesia. The COVID-19 pandemic lead to a lengthened General Surgery Waiting List for circumcisions under general anaesthesia in RIPAS Hospital. Performing circumcisions under general anaesthesia in PMMPMHAMB Hospital in December 2022 was identified as an option to aid the reduction of the waiting list.

Aim: The aim of this study was to look at the challenges of performing circumcisions under general anaesthesia in PMMPMHAMB Hospital in December 2022.

Methods: Patients for circumcisions performed under general anaesthesia in PMMPMHAMB Hospital needed to meet the following criterias[1]: normal circumcisions, no buried penis, no high Body Mass Index, no other medical illnesses and no special needs. Patients were identified from the General Surgery Waiting List (2020 to 2022). Patients who met the above criterias were contacted to attend a Preoperative Assessment Clinic in Surgical Outpatients SOPD Clinic and in the Anaesthetic Room Operating Theatre, RIPAS Hospital. Patients who were assessed not suitable for PMMPMHAMB Hospital would have their circumcisions expedited in RIPAS Hospital.

Results: Two general anaesthesia circumcision lists were identified in PMMPMHAMB Hospital (14 December 2022 and 28 December 2022). A maximum of 6 patients per list was set. A total of 40 patients on the General Surgery Circumcision Waiting list had their BruHIMS notes reviewed. 30 patients met the criterias needed for Circumcisions in PMMPMHAMB Hospital and were contacted to attend Pre Operative Assessment Clinics in Surgical Outpatients SOPD Clinic. 12/30 were listed to have their circumcisions done in PMMPMHAMB Hospital (1 of them had to be postponed last minute due to fever and had surgery done in RIPAS Hospital). 12/30 were not suitable for PMMPMHAMB Hospital and had their circumcisions done in RIPAS Hospital. 4/30 remained on the waiting list (1 had COVID 19, 1 did not attend the preop assessment clinic, 2 were not contactable). 2/30 refused to have circumcisions and were taken off the waiting list.

Discussion: COVID 19 pandemic lead to a reduction in elective surgery lists in RIPAS Hospital. The General Surgery waiting list for circumcisions under general anaesthesia lengthened. By screening for patients to have their circumcisions done in PMMPMHAMB Hospital, double the number managed to have their circumcisions done during this period.

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P9. Hepatoblastoma cases in Brunei.

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Background: Hepatoblastoma is a rare condition with an incidence of 1.2–1.5/1,000,000 per year in children under 5 years although it is the most common form of liver cancer, accounting for 80% of the primary hepatic cancer in children.[1] The risk of hepatoblastoma is higher in ex-premature children and some genetic conditions. The recent advances in surgical techniques and adjuvant chemotherapy have markedly improved the prognosis of patients with hepatoblastoma.[2] The 5-year overall survival (OS) rate for children with hepatoblastoma is 70%. The adverse prognostic factors include higher PRETEXT groups, distant metastases at diagnosis, Low AFP level (<100ng/ml), small cell histology and older age group (> 8 years).[2]

Aim: To give an up-to-date data of occurrence of childhood hepatoblastoma in Brunei.

Method: This was a retrospective study of all patients with hepatoblastoma presented to and treated in RIPAS Hospital between 2000 and 2022. RIPAS Hospital is a tertiary hospital where all children diagnosed with cancer are treated in Brunei. The data were collected from our oncology ward registry and the patients' medical records.

Results: Total of 4 patients diagnosed with hepatoblastoma were registered between 2000 and 2022. Among them, 3 patients survived and one expired. They all are males aged 1year 3 months to 4 years and are Bruneian Malay. One patient was born preterm at 33 weeks whereas others were born at term pregnancy. The common presentation was an abdominal mass with elevated AFP (Alpha Feto protein) levels. At the time of diagnosis, their AFP levels were 1210, 4310,> 60000 and > 80000 ng/ml accordingly. One was PRETEXT (Pre- treatment Extent of tumour) stage 2, 2 patients were stage 3 and one was stage 4 with pulmonary metastasis. All patients received upfront neoadjuvant chemotherapy followed by partial hepatectomy as per Children Oncology Group's protocol AHEP 0731 except one patient who presented late with PRETEXT stage 4 and pulmonary metastasis with small cell undifferentiated histology for which he was treated with palliative chemotherapy and unfortunately, he died in a few months after being diagnosed. Most

patients responded well to chemotherapy; cisplatin, 5 fluorouracil, Vincristine and Doxorubicin. After being given 4 cycles of chemotherapy, POSTTEXT (Post Treatment Extent of Tumour) stage was 2 for all 3 patients. Among 3 patients, complete tumour resection with clear margin was found in 2 patients and 1 with microscopic involvement of resection margin. Regarding the tumour histology, one was classified as epithelial type of hepatoblastoma with mixed foetal and embryonal type and two were mixed epithelial and mesenchymal type of hepatoblastoma. Chemotherapy was continued after surgery as per protocol. Their AFP levels declined to normal levels after completion of treatment. Currently, all 3 patients (~ 3 years, 7 years, and 8 years) are in remission and regular follow-up at Paediatric Oncology Clinic.

Conclusion: A total of 4 patients diagnosed with hepatoblastoma were registered in our centre which accounts for 2.2 % of total childhood cancer cases from 2000 to 2022 in Brunei.

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P10. Audit on monitoring of complications in transfusion dependent thalassaemia patients in RIPAS Hospital.

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Background: Thalassaemia represents the commonest inherited haemoglobin disorders in South East Asia. It was estimated that carriers of thalassaemia or haemoglobinopathies in Brunei is approximately 5% or less of the overall population.[1] In Brunei, the best possible care is provided to thalassaemia patients by optimal regular blood transfusion and iron chelation therapy. Monitoring of complications is crucial in the management of thalassaemia.

Aim: This study was aimed to improve the quality of care received by thalassemia patients.

Method: This study recruited 53 transfusion dependent thalassaemia patients admitted to RIPAS Hospital between January and December 2022. It was a retrospective audit looking at timeliness and completeness of all the investigations and referrals that monitor the complications of thalassaemia patients as per current guideline. Data were collected from the patients' records and analysed using Microsoft Excel.

Results: Full blood counts and grouping and crossmatching were ordered in all 53 patients without delay at every visit, and annual thyroid function test (TFT) and viral serology screenings were failed to do in only one patient. However, for 3-monthly ferritin test, 58.5% of the patients (31out of 53) were compliant with the guideline whereas 30.2% (16) and 11.3% (6) were affected with testing delay of 1 month and more than 2months respectively.

Regarding 6-monthly investigations (Liver function test, Renal function tests and random blood sugar), 69.8% of the patients (37 patients) completed timely while 13.2 % one-month delay and 17% 2-month delay were noted.

90.6 %, 83% and 80.8% of the patients attended audiology, ophthalmology and echocardiography clinics respectively although all were referred for annual assessment. Puberty assessment and investigations were done for 75% of above 13-year-old girls whereas all 6 boys (> 14 years) were failed to do so.

Discussion and Recommendation: In 2022, overall, 66% of patients had at least one time delay of one month or more for their follow-up investigations.

It is recommended that clinic doctors fill in all the investigations done on the patient's record sheets to ensure they are not missed and taken in due time according to the guideline. If a patient is discharged from the general ward, the due investigations should be ordered by the ward doctors upon discharge. Clinic doctors need to order delayed puberty investigations if there are no signs of puberty by 13 years in girls and 14 years in boys. Patients and their parents should be educated regarding complications of thalassaemia and the importance of audiology, ophthalmology and cardiac function assessment for an early diagnosis and timely interventions of complications. Reaudit in 2023 is recommended to assess any improvement on current findings.

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P11. Audit on the diagnosis and management of Urinary Tract Infection (UTI) in children in the RIPAS Hospital.

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Background: Urinary Tract Infection (UTI) is a common childhood infection affecting approximately 0.7% in girls and 2.7% in uncircumcised boys, during the first year of life.[1] UTI can affect both the upper urinary tract (pyelonephritis) and the lower urinary tract (cystitis). Clinical presentation of UTI varies widely among children of different age groups, making it difficult to differentiate upper from lower UTI.[2,3] The associated morbidity and complication of UTI is of significant concern for children, parents, and clinicians. Hence, the diagnosis and management of UTI is important.[3] The RIPAS Hospital guideline on the diagnosis and management of urinary tract infections in infants and children – was developed to help clinicians treat UTI in children.[4]

Objectives: This clinical audit aims to identify the compliance of clinicians to our local guidelines. A few important points are highlighted as follows:

- A properly collected urine sample should be used as the standard for diagnosing UTI
- Children with diagnosis of first upper UTI should have an Ultrasound assessment of Kidney, Ureter and Bladder (UKUB)
- Children <3 years of age with confirmed upper UTI should have a micturating cystourethrogram (MCUG) assessment

Methods: This is a retrospective study of medical reports of all children diagnosed with UTI (ICD-10 coding N39.0), who were admitted in the Acute Paediatric Unit (APU) during the period from 1st January 2022 to 31st December 2022. The main data included were urine sampling methods, results of the urinalysis and urine cultures, and results of UKUB and MCUG. Children who fit the following definition of UTI were included: A positive urine culture, Urinalysis: Leukocyte (+) and Nitrite (+), or Urine microscopy: Bacteriuria (+) and WBC >5/hpf.

Results: A total of 49 children satisfied our UTI definition, and were included in the final audit analysis. All children (100%) had a properly collected urine sample on admission, of which 28 (57%) were catheterised urine samples and 21 (43%) were clean catch urine samples. Among these, 31 children had a positive urine culture UTI where the majority (74%) grew *Escherichia coli*. The remaining urine cultures grew *Enterococcus faecalis* (n = 1), *Klebsiella pneumoniae* (n = 3), *Klebsiella aerogenes* (n= 1), *Proteus mirabilis* (n = 2), and *Staphylococcus aureus* (n = 1). Most

children diagnosed with UTI had an UKUB assessment done prior to discharge (98%). However, only 28 (57%) were referred and proceeded to have an MCUG performed.

Discussion and Conclusion: We can conclude good compliance with our national guidelines in the collection of sterile urine samples to diagnose UTI in children. We also performed well in terms of arranging UKUB assessment for children with a confirmed UTI. However, only slightly over half of the children had an MCUG done later on. Most of the cases without MCUG were less than 2 years old. Compliance can be improved by ensuring that updated guidelines are made available to all clinicians. Discussions among clinicians are also recommended when encountered with cases that may require an MCUG.

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P12. Surgical management of thumb duplication in Brunei Darussalam.

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Background: Thumb duplication, or pre-axial polydactyly, or radial polydactyly, is one of the most common congenital upper limb anomalies.[1] It occurs in 0.08 to 1.4 per 1000 live births.[1] The most commonly used system to describe thumb duplication is the Wassel's classification, which includes seven subtypes based on the level of skeletal duplication. Type I: bifid distal phalanx, type II: duplicated distal phalanx, type III: bifid proximal phalanx, type IV: duplicated proximal phalanx, type V: bifid metacarpal, type VI: duplicated metacarpal and type VII: triphalangism.[1,2] The main objective of surgery is to create a functioning thumb with reasonable appearance. There are multiple factors to consider before surgery: size and shape of both digits, level of skeletal duplication and joint alignment, soft tissue abnormalities such as tendons, collateral ligament, skin and nail bed. The most common surgical techniques are: simple excision of the accessory thumb, excision of the hypoplastic digit with soft tissue reconstruction, Bilhaut-Cloquet technique, and on-top plasty.[3,4]

Aim: Our aim is to describe the surgical management of thumb duplication among pediatrics patients in Brunei.

Method: The data was collected through BruHIMS records retrospectively, from September 2013 to July 2023.

Results: Over 9 years and 11 months, 13 children underwent surgery for thumb duplication, and one had bilateral thumb duplications. The most common was Wassel's type IV with 7 patients, followed by 3 type II, 3 type I, and 1 type III. Their mean age during surgery was 2 years 1 month. The most common surgery done (9 out of 14) was excision of the hypoplastic thumb with soft tissue reconstruction, and 2 of them also underwent wedge osteotomy. The Bilhaut Cloquet procedure was done on 3 patients: Type I, type II and type IV. The remaining two patients, both type I, had simple excision of the extra digit with its nail bed.

Discussion: In Brunei, surgery is usually done after the age of one and before they have started school. The most common ap-

proach was to excise the smaller thumb and reconstruct any affected soft tissues such as the tendons and/or collateral ligaments, in order to achieve thumb stability and mobility. Occasionally, a wedge osteotomy was done for bony alignment. Sometimes, both the digits appear equal in size and there are no obvious dominant thumb. The Bilhaut-Cloquet technique can then be used, where the medial halves are discarded and the lateral halves are preserved to create a new thumb.[3,4] In some cases, especially in type I where the duplication is very distal, only simple excision is required without any major soft tissue reconstruction.

Conclusion: Careful consideration of surgical techniques is required for each patient in order to achieve both optimal function and appearance of the preserved thumb.

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P13. Audit of Management of Status Epilepticus in Paediatric Intensive Care Unit.

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Background: Status epilepticus (SE) is a condition resulting either from the failure of the mechanisms responsible for seizure termination or from the initiation of mechanisms, which leads to abnormally prolonged seizures.[1] SE in children is associated with mortality and morbidity.[2] Timely intervention has been shown to reduce the incidence of prolonged seizures and improve neurological outcome.[3]

Aim: The aim of the audit is to look into whether management of SE admitted to Paediatric Intensive Care Unit (PICU) in RIPAS Hospital is in keeping with the RIPAS Hospital guideline "Management of Status Epilepticus in Children".

Method: The data was collected by retrospectively analyzing cases of SE admitted in PICU from January 2021 to May 2023. We used RIPAS Hospital guideline "Management of Status Epilepticus in children" as the benchmark for our standards.

In particular, the type and dosage of anti-seizure medications (ASM) given during episode of SE (whether in Children's Emergency Department or PICU) was analyzed. We also looked into whether blood glucose was checked during each case of SE.

Inclusion criteria: Patient with seizure activity lasting 5 minutes or longer and Patient with recurrence of seizures, without recovery between seizures, lasting 5 minutes or longer

Exclusion Criteria: Patients with SE that has resolved and did not require PICU admission.

Results: During the period between January 2021 to May 2023, there were 26 patients admitted with SE in PICU. The youngest patient was aged 1 month and the oldest was 13 years old (median age 1 year old). Out of these, 16 cases were female.

With regards to aetiology, 31% were categorized as remote symptomatic with acute provocation, 27% were triggered by febrile illness, 15% acute symptomatic, 15% progressive encephalopathy, 8% remote symptomatic without acute provocation and 4% were cryptogenic.

Out of the 26 cases, three patients (12%) was not given any anti- seizure medication by the time they attended the hospital as seizures have resolved. All cases requiring second line anti- seizure medication were given correct doses. Four cases (15%) required mechanical ventilation and received midazolam infusion. Three (12%) of 26 patients did not have blood glucose tested.

Discussion: More than half of the cases received correct dosing of anti- seizure medications according to RIPAS SE guidelines. However, there were underdosage in 42% of patients for first dosage and 40% for second dosage of benzodiazepine. For second line anti-seizure medication, the most common medications used were IV phenytoin (60%), IV phenobarbitone (13%) and IV Levetiracetam (27%). This was administered to 15 patients. In 2 of the 15 children (13%) received both phenobarbitone and phenytoin as a combination to stop the convulsion

Of those cases, the doses given were 0.1mg/kg of benzodiazepine. It is found that patients who received lower dosage are more likely to have prolonged seizures. Our recommendation is to promote awareness and education to staff working in Children's Emergency department and PICU to ensure patients received correct doses of anti-seizure medications.

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P14. A Case Report Penetrating Nasal Foreign Body - A Near Miss.

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Introduction: In the paediatric population, foreign bodies in the nose are quite common. Between 19 and 49% of foreign objects seen in ORL clinics are nasal in origin.[1] Food, paper, or tiny toys are commonly found in the anterior nasal cavity wedge between the nasal septum and the inferior turbinate.[2] Penetrating foreign bodies are rare and can be associated with vascular, neurological injuries or eye injuries.

Clinical case: A 7-year-old school girl who presented to Children's Emergency (CE) RIPAS Hospital with a wooden foreign body (a color pencil) penetrating her left nose after a fall at school. On arrival, she was stable. On examination, part of the broken off pencil was noted fixed at her left nare. Rest of her neurological exam was normal. Upon review by the ORL team, the plain imaging was insufficient to assess the severity of injury and hence CT brain and paranasal sinus was obtained. Neurosurgeon was consulted too as clear nasal discharge was noted. It is noted that the pencil is wedged inside the sphenoid bone and neurosurgeon confirmed no sign of pneumocephalus present nor intracranial bleed.

The child was then taken to operating theatre and examined under general anaesthesia. The pencil was successfully removed after slowly decongesting her left nasal cavity. Endoscopically it was confirmed that the tip did not penetrate through her sphenoid bone and no CSF leak observed. A thin layer of bone was still present, hence confirming no brain injury sustained. Haemostasis achieved after packing bone with bone wax and nasal cavity with fibrillar and merocel. She was admitted to Paediatrics ICU and kept intubated. Her non absorbable nasal pack was removed the next day. She was successfully extubated on post-op day 2 and had an uneventful 4

days stay in the hospital to ensure no epistaxis, CSF rhinorrhea nor psychological trauma post the event. At her two weeks outpatient follow-up, patient was well and had no complications from the injury.

Discussion: Penetrating foreign body in the nasal cavity could lead to serious life-threatening injuries as vital structures are damaged. The onset of sphenoid bone pneumatisation to form sphenoid sinus approximately starts at 4 months old and completes at age of 12 to 14 years. The bone creates a boundary that separates the nasal cavity posteriorly from the cranial, laterally from the other vital neurovascular structures include the internal carotid artery, the cranial nerves II, III, IV, and VI. The nasal cavity is also bounded laterally on both sides with the orbit and anterosuperiorly by the anterior cranial fossa.

A detailed imaging using CT scans has helped to ascertain in advance and assess the potential injury the pencil could have caused. Understanding the anatomical relationship is crucial to help planned the extraction well so the appropriate multidisciplinary input can be obtained and lessens the child and the family's anxiety. Effective collaboration and timely input by all the appropriate specialty was key in minimizing the possible trauma child could undergo. Appropriate detailed imaging is essential especially when dealing with FB of this nature and magnitude. The use of plain imaging versus CT scan for penetrating foreign body has shown that CT in foreign body of nasal cavity is essential in diagnosing the extent of the injury, which can be intracranial. Reconstructed image CT scan can provide additional information to aid in management during foreign body removal. Early removal minimize the risk of infection as well.

Conclusions: Not all nasal foreign bodies require imaging. However, there is a few exceptions. One is button battery where it needs timely removal, ideally within 30 minutes. The other one is penetrating foreign bodies, where plain imaging is insufficient and detailed CT scan would be the ideal choice. For penetrating injuries management, a multidisciplinary approach is crucial. This patient had uncomplicated recovery process as a result of timely diagnosis and management.

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