EP_P012

A RARE PAEDIATRIC CASE OF AVPR2-RELATED NEPHROGENIC SYNDROME OF INAPPROPRIATE ANTIDIURESIS IN PENANG

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INTRODUCTION
Nephrogenic syndrome of inappropriate antidiuresis (NSIAD) is an uncommon X-linked genetic condition marked by euvolemic hyponatremia, which arises from a gain-of-function mutation in the arginine vasopressin receptor type 2 (AVPR2) gene. In contrast to the classic syndrome of inappropriate antidiuretic hormone secretion (SIADH), NSIAD is characterized by urine that is inappropriately concentrated even when arginine vasopressin (AVP) levels are low or undetectable. Failure to recognize NSIAD may result in recurrent hyponatremia and neurological morbidity.

CASE
A 2-year-old male was referred to us after recurrent vomiting and subsequently developed generalized tonic-clonic seizures due to hyponatremia (with a sodium level of 115 mmol/L). He needed sodium replacement through an intravenous drip of 3% saline and was stabilized with oral sodium chloride 20%. Urine osmolality was elevated, serum osmolality remained normal, and copeptin levels were low. He was discharged after a 10-day hospital stay. During follow-up, hyponatremia recurred despite his typical fluid intake of 1,200 mL/day. He was instructed to limit his fluid intake to 600–700 mL, which successfully normalized his serum sodium levels. Serum levels of adrenocorticotropic hormone, the aldosterone-to-renin ratio, thyroid function tests, and serum cortisol were all within normal ranges. Plasma AVP was unusually low (4.0 pmol/L). Whole exome sequencing (WES) confirmed a likely pathogenic hemizygous variant in AVPR2 gene located on chromosome Xq28, which was inherited from his mother. He is the only child, born from a non-consanguineous marriage, with no other significant family medical history.

CONCLUSION
Nephrogenic syndrome of inappropriate antidiuresis (NSIAD), is an uncommon, yet clinically significant condition. This case highlights the importance of considering a broad range of differential diagnoses when a patient presents with hyponatremic seizure. Furthermore, obtaining a detailed family history is essential to identify potential hereditary factors that could contribute to the condition and for genetic counseling.

EP_P013

PARTIAL ANDROGEN INSENSITIVITY SYNDROME PRESENTING AS AMBIGUOUS GENITALIA IN A 46, XY INFANT

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INTRODUCTION
Partial androgen insensitivity syndrome is a rare X-linked 46, XY disorder caused by androgen receptor dysfunction, producing variable genital ambiguity and complex diagnostic challenges in early infancy and childhood.

CASE
We report a term infant, currently aged 9 months, who was admitted to the Neonatal Intensive Care Unit at birth for glucose-6-phosphate dehydrogenase (G6PD) deficiency and noted to have ambiguous genitalia. The infant had no hypoglycemia, feeding intolerance, or electrolyte disturbances throughout admission. She is the second child of non-consanguineous parents, with no family history of disorders of sex development. Examination of the external genitalia revealed a prominent phallus without erectile tissue with mildly pigmented and rugated labioscrotal folds. There was no labioscrotal fusion. Bilateral gonads were palpable in both labioscrotal folds with one opening seen.

Pelvic ultrasonography showed bilateral small testes within the labioscrotal folds, with absence of Müllerian structures. Karyotype analysis confirmed 46, XY genotype. Human chorionic gonadotropin stimulation (HCG) testing at day 7 of life demonstrated normal baseline testosterone 4.9 nmol/L, but minimal testosterone rise 5.4 nmol/L at day 4 post HCG. Normal testosterone to dihydrotestosterone ratio and testosterone to androstenedione ratio excluded defects in androgen synthesis, while normal adrenal steroid profile ruled out congenital adrenal hyperplasia.

Gonadotropin-releasing hormone stimulation at 2 months old revealed a peak follicle-stimulating hormone of 8 IU/L and peak LH of 4 IU/L. Anti-Müllerian hormone level was markedly elevated >328 pmol/L (normal 5.5–103 pmol/L).

Whole-exome sequencing identified a hemizygous androgen receptor gene variant, p.(Pro818Ala), classified as a variant of uncertain significance with deleterious in silico predictions, consistent with X-linked partial androgen insensitivity syndrome.

CONCLUSION

This case highlights the necessity of early, systematic endocrine evaluation integrated with genomic testing in 46, XY DSD to achieve a definitive diagnosis, optimize sex assignment, and guide longitudinal, multidisciplinary management.

EP_P014

CONGENITAL TOXOPLASMOSIS WITH CRANIAL DIABETES INSIPIDUS AND HYDROCHLOROTHIAZIDE

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INTRODUCTION

Congenital toxoplasmosis (CTox) is common in Malaysia and classically presents with brain and eye involvement, causing hydrocephalus, intracranial calcifications, cataract, chorioretinitis, blindness, epilepsy, and psychomotor or mental impairment. Cranial diabetes insipidus (CDI) and panhypopituitarism rarely complicate its clinical course.

CASE

From 2024 to 2026, we had encountered three cases of CTox infants, of whom 2 (C1, C2) had a stormy neonatal period and passed away by 3 months old due to refractory seizures, while the 3rd (C3) survived. C1 (2.2 kg) was diagnosed antenatally from fetal ultrasound brain with severe ventriculomegaly, whereas C2 (2.47 kg) had multiple syndromic features, cleft lip, palate and anopthalmos. C3 (2.6 kg) was only diagnosed later by 1-month-old when she had afebrile seizures. C1 and C2 had severe hypernatremia (Na >150 mmol/L) within 1st week of life, but C3 had hypernatremia after surgical drainage of her hydrocephalus and administration of steroids. All were diagnosed with CDI and fulfilled the triad of polyuria, hypernatremia and inappropriate paired osmolality. During acute period, they were managed with IV vasopressin infusion with intensive monitoring. At low dose (0.1–0.3 mcg/kg/hour), all achieved eunatremia and euvolemia within 12 hours with no inadvertent hyponatremia. They also had central hypothyroidism and received L-thyroxine, with prior oral hydrocortisone, except C1. Their CDI persisted with highest Na 165 mmol/L in C1. They were started on tab hydrochlorothiazide (HCTZ) alongside low renal solute load formula (LRSL) and EBM. HCTZ dose was titrated gradually from 0.5 to 1.0 mg/kg/dose and further to 1.5 mg/kg/dose. In between, subcutaneous desmopressin (DDAVP) 0.02–0.04 mcg were given during breakthrough DI. All cases responded to HCTZ at 1.5 mg/kg/dose, with varying intervals (daily to TDS). C3 went home after 6 weeks with HCTZ, L-thyroxine and hydrocortisone, together with oral anti-toxoplasmosis and anticonvulsants.

CONCLUSION

CTox with CDI presents a challenge during infancy, and a combination of LRSL with thiazide diuretics is an acceptable alternative, prior to definitive DDAVP therapy later.

EP_P015

STARVED BONES, FAILING HEART: UNCOMMON YET LIFE THREATENING HYPOCALCEMIC CARDIOMYOPATHY IN NUTRITIONAL RICKETS

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INTRODUCTION

We report an insidious presentation of hypocalcemic dilated cardiomyopathy (HDCM) in an infant with nutritional rickets and severe hypocalcemia, highlighting the myocardium's strict reliance on calcium-phosphate homeostasis.

CASE

A 3-month-old, small-for-gestational-age male (birth weight: 1.93 kg), with congenital cataracts and persistent neonatal cholestasis (negative hepatopathy and congenital infection screens) presented acutely with post-feeding cyanosis, requiring intubation for aspiration pneumonia. The mother denied prior apneic episodes, seizures, feeding difficulties, or heart failure symptoms. Clinically, there was no murmur or hyperactive pericardium. Chest radiograph revealed globular cardiomegaly. Echocardiography confirmed HDCM (LVEF 41%).

Bloodwork revealed profound hypocalcemia (1.16 mmol/L; normal 2.1–2.6), hyperphosphatemia (2.97 mmol/L), and markedly elevated alkaline phosphatase (2,411 IU/L). 25(OH)D3 was deficient (34.08 nmol/L). Secondary hyperparathyroidism (iPTH 19.55 pmol/L) represented an appropriate response. The mother had introduced goat's milk instead of cow's milk due to inadequate lactation. She took no supplements during pregnancy and was also vitamin D deficient.