



Case Report

Refractory seizure in a neonate with severe hypernatraemic dehydration – A case report

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ABSTRACT

Hypernatraemic dehydration is a common clinical condition seen in neonates especially when they lose weight by more than 10%. Such neonates should be carefully followed up for rising sodium levels and need to be encouraged adequate feeding to prevent complications. Term-appropriate neonate born to a non-consanguineous couple with an uneventful perinatal period was brought to the paediatric emergency room on day 15 of life with multiple seizures and was diagnosed with hypernatraemic dehydration. Her brain imaging demonstrated sagittal venous thrombosis with intraventricular haemorrhage and parenchymal bleeding with infarct. She was managed with respiratory support and fluid management. Parents were counselled regarding the guarded prognosis. She was discharged against medical advice.

Keywords: Neonate, Hypernatraemia, Seizure, Prognosis

INTRODUCTION

A normal serum sodium level between 135 and 145 meq/L is very crucial to maintain the integrity and function of the brain. Hypernatraemia is classified into mild (145–149), moderate (150–160) and severe (>160 meq/L) depending on the level of sodium in the blood. Moderate and severe hypernatraemia can injure the brain causing cerebral oedema, bleeding, infarctions and seizure in addition to liver and renal injury and leading to neurodevelopmental delay.^[1-4] Majority of the newborns are fed exclusively on their mother's milk with no need for supplementation. It is always good to recognise infants at risk of developing hypernatraemic dehydration and feed adequately to prevent dehydration and associated complications. The index case was born with good weight on exclusive breastfeeding and discharged home. On day 14, she developed a seizure and was brought to the paediatric emergency room with severe hypernatraemia.

CASE REPORT

A 14-day-old female term neonate born out of the non-consanguineous union to a primi mother was admitted to our neonatal intensive care unit with severe hypernatraemia. She was healthy until 2 days back. She became unwell in the form of poor feeding and not being active. She was brought to the emergency room with a seizure. On examination, she was ventilated and on intravenous infusion of Phenobarbitone and Fosphenytoin. The heart rate was 140 beats/min, the blood pressure was 60/40 mm of Hg and the temperature was 36.6°C. The capillary blood glucose level was 60 mg/dL. The baby was born by emergency lower segment caesarean section

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(LSCS) for non-progressive labour to a primigravida with gestational diabetes. She cried immediately after birth. Her birth weight was 3000 g. The postnatal period was uneventful and got discharged on day 3 of life on exclusive breastfeeding with a discharge weight of 2860 g. The weight checked at admission was 2000 g (>30% weight loss). She was managed with intravenous fluids and anticonvulsants. The serum sodium level was 189 mg/dL. Bedside ultrasound cranium demonstrated a thrombus in the dural sinus [Figure 1a] and hyperechogenic shadows in the right ventricle and brain parenchyma [Figure 1b]. The computed tomography (CT) brain showed a venous infarct in the dural sinus [Figure 2a] and a haemorrhagic infarct in the frontotemporal area [Figure 2b].

DISCUSSION

Hypernatraemic dehydration is commonly seen in neonates born through LSCS to primi mothers. It is due to either the free water deficit or the excess intake of sodium. Inadequate maternal milk supply to the exclusive breastfed can lead to high sodium and its sequel. The maternal advanced age, neonates born <39 weeks and exclusive breastfeeding also add to the cause of hypernatraemia.^[5,6] The acute rise in sodium will cause the shrinkage of the cerebral hemisphere leading to the rupture of bridging veins causing a bleed in the brain. High sodium especially more than 160 meq/L leads to high neuromorbidity and mortality. The most commonly affected regions are the superior sagittal sinus, central

sinus and lateral sinuses in hypernatraemic dehydration.^[7] Hypernatraemic dehydration is commonly seen in neonates with weight loss of more than 10%.^[8,9] The spectrum of presentations includes poor feeding, irritability, lethargy, decreased urine output, seizure and loss of consciousness. In our present case, she was presented with a seizure with sodium of 188 mm of Hg. The ultrasound and the CT brain demonstrated sagittal sinus thrombosis, intraventricular, intracerebral bleed and infarct. She was also investigated for sepsis, coagulopathy and metabolic problems and trauma but nothing was contributory. She was managed with intravenous fluids and anti-seizure medications. Despite respiratory care, fluid management and seizure medications, he continued to deteriorate. The family was counselled regarding the neuro morbidity and poor neurodevelopmental outcome. She was discharged against medical advice.

CONCLUSION

Hypernatraemic dehydration is a preventable cause of neuro morbidity and mortality. High vigilance should be kept in high-risk neonates. Daily checking of the weight in the first 3 days of life is very important for early recognition and an adequate supply of milk. Parents should be counselled by pre-discharge regarding the adequacy of milk supply and early follow-up.

Declaration of patient consent

Patient's consent not required as patient's identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

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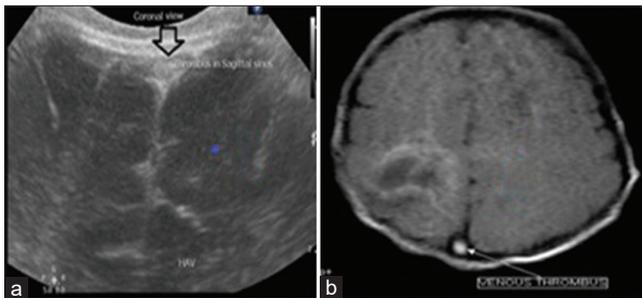


Figure 1: Ultrasound (a) and computed tomography of brain (b) demonstrating venous thrombus in the superior sagittal sinus.

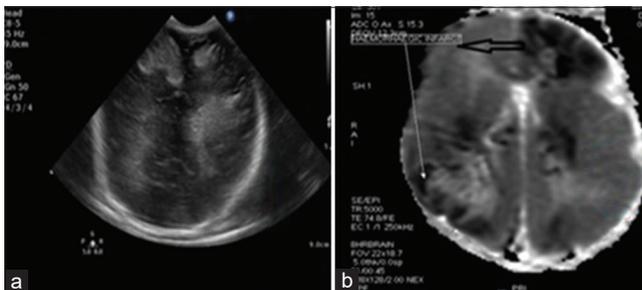


Figure 2: Ultrasound brain (a) and computed tomography brain (b) showing intraventricular and intraparenchymal bleed.

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