Case Report

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Hypernatremic Dehydration in an Exclusively Breastfed Infant: A Case Report

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Abstract

Hypernatremic dehydration is a critical condition characterized by elevated serum sodium levels due to an imbalance between water and sodium in the body. This case report details a 40-day-old male infant, exclusively breastfed, who presented with lethargy, poor feeding, and decreased urine output. Examination revealed signs of severe dehydration, including dry mucous membranes, poor skin turgor, and a sunken fontanelle. Laboratory investigations confirmed hypernatremia with a serum sodium level of 158 mmol/L and elevated serum osmolality. Management involved careful rehydration with intravenous fluids and continued breastfeeding support. The infant responded well, with normalization of sodium levels and improvement in clinical status. This case underscores the importance of early recognition and intervention in hypernatremic dehydration, particularly in exclusively breastfed infants. It also highlights the need for comprehensive parental education on proper breastfeeding practices and monitoring of infant hydration status. Similar cases in the literature emphasize the significance of timely diagnosis and gradual correction of hypernatremia to prevent complications.

Keywords:- Hypernatremia, Dehydration, Breastfeeding, Infant.

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INTRODUCTION

Hypernatremic dehydration is a critical condition that arises when there is an imbalance between water and sodium levels in the body, leading to an elevated sodium concentration in the blood. This condition is particularly dangerous in infants due to their higher water content and greater risk of rapid fluid loss. Hypernatremic dehydration can result from insufficient fluid intake, excessive fluid loss, or a combination of both. Exclusively breastfed infants are at risk when breastfeeding practices do not meet the fluid demands of the infant, especially during periods of illness or inadequate milk supply.[1]

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The epidemiology of hypernatremic dehydration highlights its occurrence in various populations, but it is more prevalent in the neonatal period. It is often associated with breastfeeding challenges, maternal factors, and environmental conditions. The pathophysiology involves a relative deficit in free water compared to sodium, leading to cellular dehydration and potential complications such as neurological damage, seizures, and renal impairment. The condition requires prompt recognition and intervention to prevent severe morbidity and mortality.[2]

Clinically, hypernatremic dehydration presents with signs of dehydration such as dry mucous membranes, poor skin turgor, sunken fontanelles, and lethargy. Laboratory findings typically show elevated serum sodium levels (>145 mmol/L) and increased serum osmolality. Diagnosis is confirmed through a combination of clinical assessment and laboratory results. Early recognition of subtle signs and symptoms is crucial for timely management.[3]

In the case of exclusively breastfed infants, hypernatremic dehydration may be masked by the assumption that breastfeeding alone is sufficient for hydration. This highlights the importance of monitoring infant weight, urine output, and feeding patterns to ensure adequate fluid intake. Any deviation from expected growth or behavior should prompt further evaluation for potential dehydration.[4]

CASE REPORT

A 40-day-old male infant, exclusively breastfed, presented to the emergency department with lethargy, poor feeding, and decreased urine output over the past 48 hours. The infant was born full-term via vaginal delivery with a birth weight of 3.2 kg and had an uneventful perinatal period. The mother reported adequate breastfeeding with no supplementation.

Upon examination, the infant appeared lethargic with dry mucous membranes, poor skin turgor, and a sunken anterior fontanelle. Vital signs revealed a heart rate of 160 beats per minute, respiratory rate of 40 breaths per minute, and a rectal temperature of 36.8°C. The infant's weight was recorded at 3.0 kg, indicating a significant weight loss since birth.

Laboratory investigations showed a serum sodium level of 158 mmol/L, blood urea nitrogen (BUN) of 12 mg/dL, creatinine of 0.5 mg/dL, and serum osmolality of 320 mOsm/kg. A urinalysis revealed concentrated urine with a specific gravity of 1.030. These findings confirmed the diagnosis of hypernatremic dehydration.

The management included immediate rehydration with intravenous fluids. The infant received 0.9% saline solution initially, followed by gradual correction with 0.45% saline to avoid rapid shifts in sodium levels. Breastfeeding was continued with supplemental expressed breast milk to ensure adequate fluid intake. The mother was counseled on proper breastfeeding techniques and the importance of monitoring feeding frequency and infant behavior.

The infant responded well to treatment, with gradual improvement in hydration status and normalization of serum sodium levels over the next 48 hours. By the fifth day of hospitalization, the infant was alert, feeding well, and had regained weight to 3.1 kg. The family received education on recognizing signs of dehydration and ensuring adequate breastfeeding practices before discharge.

Parameter	Value
Serum Sodium	158 mmol/L
BUN	12 mg/dL
Creatinine	0.5 mg/dL
Serum Osmolality	320 mOsm/kg
Urine Specific Gravity	1.030

Table 1 : Electrolyte Profile in studied case.

DISCUSSION

Hypernatremic dehydration in exclusively breastfed infants is a serious condition that requires prompt diagnosis and management. Similar cases have been reported in the literature, emphasizing the importance of early recognition and intervention. For instance, a study by Molaschi M et al highlighted the risk factors and clinical outcomes of hypernatremic dehydration in neonates, underscoring the role of inadequate breastfeeding practices .[5]

The primary discussion points in such cases include the identification of risk factors, such as delayed initiation of breastfeeding, poor latch, and maternal factors affecting milk supply.[6] Proper education and support for breastfeeding mothers are essential to prevent dehydration. Additionally, regular monitoring of infant weight and hydration status during the early weeks of life is crucial.[7]

In this case, the infant's presentation with lethargy and poor feeding, coupled with significant weight loss, prompted immediate evaluation for

dehydration. The laboratory findings of elevated serum sodium and osmolality confirmed the diagnosis. The management focused on careful rehydration and continued breastfeeding support, which led to a favourable outcome.[8]

Previous reports have also stressed the importance of gradual correction of hypernatremia to prevent complications such as cerebral edema.[9] The success in this case reflects the importance of timely intervention and comprehensive parental education. Similar cases in the literature support the need for heightened awareness among healthcare providers regarding the signs of dehydration in exclusively breastfed infants.[10]

CONCLUSION

Hypernatremic dehydration in exclusively breastfed infants is a preventable yet serious condition that necessitates prompt recognition and management. Early intervention, coupled with effective parental education on breastfeeding practices, can significantly improve outcomes and prevent recurrence.

Conflict of interest
None

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