

HYPERNATREMIC DEHYDRATION IN EXCLUSIVELY BREAST FED NEONATES – A CLINICAL STUDY

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Abstract:

Introduction – Hyponatremic dehydration in neonates is very serious condition and there has been an increase in the incidence in breast fed infants in first week of life. Causative factor of hyponatremia dehydration in neonates is inadequate breast feeding or insufficient milk production. This study was conducted to assess the prevalence, clinical symptoms, signs and risk factors associated with hyponatremia in exclusively breast fed healthy neonates.

Methodology – A retrospective cross sectional multi centric study conducted on 21 patients with hyponatremia dehydration who were recruited during the period from December 2016 to May 2018. Healthy neonates with birth weight more than 2.5 kgs, on exclusive breast feeding were considered for study. Maternal problems regarding breast feeding were assessed, serum sodium level more than 145meq/L was considered as hyponatremia in our study.

Results – The main presenting symptoms & signs were fever (100%), poor feeding (66.6%), jaundice (57.1%). Male babies were affected more than female babies with 12 and 9 respectively. The maximum number of babies having hyponatremia dehydration presented in 45 to 60 hours of life (day 2-3). There was close relation between neonates serum sodium concentration & dehydration, indicating insufficient milk production in the mother during first few days. According to our study babies born to primiparous woman are more to be affected with dehydration than multiparous woman.

Conclusion – Special attention pertaining to antenatal care & postnatal care regarding early initiation of breast feeding and careful watch of neonates can reduce the incidence of neonatal hyponatremia.

Keywords- Neonate, dehydration, breast feeding, serum sodium, primiparous, hyponatremia.

Introduction:

Breast feeding is universally considered to be the best and safest way of feeding neonates.¹ many factors can interfere with lactation and breast feeding and thus contribute to inadequate breast feeding and complications like hyponatremic

dehydration.² adequate breast milk depends on various interdependent process– mammogenesis, lactogenesis and galactopoeisis.

It has been reported that healthy newborns even while on exclusively breast feeding developed neonatal hyponatremic

dehydration. The most important factor appears to be inadequate milk production. This condition is associated with cerebral oedema, intracranial haemorrhage, hydrocephalus and gangrene thus carries an acute mortality & morbidity.²⁻⁴

Aims and Objectives:

This study is carried out to evaluate prevalence of neonatal hypernatremic dehydration at Subharti Medical College Meerut and other tertiary care centers and to assess presenting complaints & risk factors for hypernatremic dehydration.

Inclusion criteria:

1. Healthy neonates – Gestational age > 36 weeks, birth weight > 2.5 Kgs, on exclusive breast feeding
2. Healthy mothers, who have no obstetric complications before or after delivery, given birth to single baby.

Participants – Neonates both inborn and outborn, who presented to the department of paediatrics, Subharti medical college Meerut and other tertiary care centres with hypernatremic dehydration were included in the study.

Methods:

The record of 21 neonates who were admitted with hypernatremic dehydration were analyzed. Neonatal factors like age (≤ 28 days of life), birth weight (≥ 2.5 kgs), weight loss ($> 10\%$) considered significant, fever, lethargy, irritability, seizures, urination and dehydration per day and history of poor feeding were recorded. Maternal factors like age, parity, pregnancy problem, mode of delivery, breast feeding problems were analyzed from the records. Laboratory investigations including CBC, peripheral smear (PS), CRP, RBS were done. CRP level $> 10\text{mg/L}$ was considered significant. Blood urea (> 0.8 mg/dl) was considered significant suggesting pre-renal failure as a part of dehydration. Serum sodium concentration $> 145\text{meq/L}$ was accepted as hypernatremia in our study.

Results:

The prevalence of hypernatremic dehydration among 475 deliveries from December 2016 to May 2018 found out to be 4.5%. Total 21 neonates having hypernatremia were studied.

Out of 21 neonates, 12 (57.1%) were males and 9 (42.9%) were females.

The most common preliminary complaints among those neonates were fever (100%) (n=21) followed by poor feeding 66.6% (n=14) and jaundice 57.1% (n=21), lethargy 28.5% (n=6).

Discussion:

In our study maximum number of neonates 14 (66.6%) who exclusively breastfed presented with hypernatremia dehydration within 45 to 60 hours of life. Volume of human milk consumed by neonate depends on the frequency and duration of feeds and pattern of breast use. Normally its usually on every demand every 2-3 hours, with a range of 10-17 ml per feed over a period of 5-20 minutes.⁵

Hypernatremia may be associated with decrease in fluid intake, excessive fluid loss or excessive sodium intake.³ It was showed that higher levels of sodium in breast milk are associated with lactation failure and reduction in feeding frequency is associated with a marked rise in milk sodium concentrations.^{3,7}

Lactogenesis stage II, the onset of sufficient milk production, occurs during the first 4 days after delivery.^{6,7}

Most common cause of excessive weight loss and hypernatremia is inadequate breast milk intake. If women fail to establish good breast feeding, the normal physiological decrease in breast milk sodium concentration does not occur.

However when re-lactation is successfully established, sodium returns to normal limits.^{6,8,9}

The mothers should receive practical advice in breast feeding technique.¹⁰

Out of 21 neonates 12(57.1%) of neonates had weight loss more than 10%. This is because infants with hypernatremic dehydration have better preserved extracellular volume and therefore less pronounced clinical signs of dehydration.^{11,12}

Conclusion

Neonatal hypernatremic dehydration, a potentially lethal condition can be prevented by proper antenatal care, proper initiation of breast feeding after delivery and careful follow up of feeding and weight gain in the neonates. Prompt intervention should be carried out if problems with the breast such as short nipple, crack nipple, poor technique of feeding. These will help to promote successful breast feeding.

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