

Breastfeeding: A Cautionary Tale

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Abstract

LIST OF ABBREVIATIONS

OR - odds ratio

AAP – American Academy of Pediatrics

INTRODUCTION

Breastfeeding provides the optimal form of nutrition for almost all newborn infants, with long-lasting benefits to their health, growth and development. In addition to clear advantages for mothers, breastfeeding also offers significant social and economic benefits to the global community.

However, dehydration is relatively common in inadequately monitored and exclusively breast fed babies.

Hypernatraemic dehydration is a serious and potentially fatal but rare complication in some of these dehydrated infants.

We report the case of a 10-day old baby presenting with severe weight loss and hypernatraemic dehydration secondary to inadequate breastfeeding and discuss how this serious complication can potentially be avoided.

CASE REPORT

A 10-day old baby was referred as he had lost 1.11kg of weight, equivalent to 27% of his birth weight. He was born at term weighing 4.1kg, following a normal pregnancy to a 37-year old primiparous mother. He required no resuscitation at birth and was exclusively breast-fed. The mother-infant pair had an early discharge from hospital on day 1. He was weighed on day 3 and had lost 400g, equivalent to 10% of his birth weight. Although initially slow to breast feed, the attending midwife was confident that breastfeeding had become well established by day 4. At that stage he was feeding for 15 minutes every 3-4 hours and appeared settled after each feed. Although he was reviewed on day 7, he was not re-weighed until day 10. At 10-day review, he was noted to be sleepy, had lost 1.11kg of weight and was referred urgently to the Children's Hospital.

On arrival at hospital he was emaciated and moribund. He

had hypothermia (34.4°C), bradycardia (heart rate 80), poor perfusion (capillary refill time 6 seconds), dry mucous membranes and a sunken fontanelle. His blood pressure was 70/56 and blood glucose 2.4 mmol/L. On direct questioning, he had not passed any stools for the past nine days, after passing meconium on day 1 and had only two or three small wet nappies (diapers) every 24 hours.

He was stabilised with emergency fluid resuscitation requiring 30ml/kg of 0.9% saline. Initial investigations revealed severe dehydration with a raised urea, 13.8mmol/L (range 2.5-6.6) and raised plasma osmolality, 362mOsmol/kg (range 275-295). He also had severe hypernatraemia, serum sodium 169mmol/L (range 135-145), 24mmol/L above the upper limit of normal. Serum potassium (4.3mmol/L) and creatinine (65mmol/L) were within normal range. A full septic screen including lumbar puncture was negative. His dehydration was slowly corrected over 48 hours with a combination of intravenous fluids containing 0.9% saline and enteral feeding with breast milk and formula milk. His hypernatraemia was very gradually corrected over the next 5 days. Trained staff taught the mother to both recognise good breast attachment and to observe the baby's mouth and feeding rhythm, so allowing her to distinguish between an effective and an ineffective breast-feed. Over the next few days, her breast milk started to increase in quantity, baby was feeding well with a combination of breast feeds supplemented by formula and he started to gain weight. At discharge a week later, the baby's weight was 3.9kg and his serum sodium was 142mmol/L with a plasma osmolality of 292mOsmol/kg. Close monitoring and follow up was arranged at primary healthcare level with the health visitor and General practitioner.

DISCUSSION

Successful breastfeeding is the ideal way of providing food

for healthy growing infants in the initial few months of life. The World Health Organisation states that 'as a global health recommendation, infants should be exclusively breast fed for the first 4-6 months of life to achieve optimal growth, development and health'. In addition to many individual health benefits for the mother and baby, breastfeeding has a positive impact on the environment and global economies, including reduced health care costs and better infant nutrition and survival especially in developing countries¹.

However, dehydration is a common problem in newborn infants and 2.1 per thousand infant births require hospitalisation for further treatment². Features such as lethargy, dry mucous membranes, decreased urine output and a sunken anterior fontanelle, especially in a breast fed newborn should alert a professional to dehydration. Prompt correction of dehydration will usually result in an uneventful recovery. Hypernatraemic dehydration on the other hand, occurs more slowly and with minimal clinical signs. There is a significant risk of serious long-term sequelae in hypernatraemic dehydration, including seizures, intracranial haemorrhage, acute renal failure and even death³. Hypernatraemic dehydration in breast fed infants appears to be increasing in frequency in recent years, although there are still only 78 reported incidents since the first report in 1979⁴, out of the millions of babies who have been breast-fed.

Breastfeeding is a learned skill. Numerous breastfeeding problems can occur and many mothers struggle, especially in the initial stages to establish successful breastfeeding. Most of these problems are transient and can be overcome with practice, adequate support for the mother and careful monitoring of the mother-infant couple at primary health care level. Adequate training of all health professionals involved in this area help in the early recognition and correction of these problems before they become serious⁵. When inadequate breastfeeding is not recognised, the consequences for the infant can be serious. Enthusiastic promotion of breastfeeding at a global level is important, but if a mother is struggling to breast feed, she needs support and practical advice. Unpopular as it may be with breastfeeding advocates, giving a struggling mother 'permission' (which many mothers feel they do not have) to offer her baby artificial milk - whilst continuing to breast feed, may indeed be the safe and practical advice. Discouragement of artificial teats (bottles or pacifiers) is standard practice leaving many mothers with the impression that offering their baby a bottle will inevitably lead to the baby refusing the breast, whilst those mothers who do supplement breast

feeding with some formula feeds may feel very guilty. Whilst inadequate breast milk can be due to various associated maternal factors such as stress and fatigue, it is important to recognise that a very small proportion of mothers may have primary lactation failure as well.

Infants of certain mothers are at greater risk of developing dehydration than others. Escobar et al² have documented that infants of exclusively breast fed mothers (Odds Ratio (OR) 11.2), first time mothers (OR 5.5), and mothers aged 35 or over (OR 3.0), have an increased risk of dehydration and hospitalisation in the first 2 weeks of life. Similarly, infants of mothers who had early discharge following caesarean section are also at increased risk (OR 14.8). Identifying such high-risk mother-infant couples and offering them support can be helpful in preventing dehydration including severe and life threatening hypernatraemic dehydration.

The American Academy of Pediatrics (AAP) advocates that all babies with early discharge from hospital (<48 hours) should be seen and assessed by an experienced health professional before 4 days of age¹. In the United Kingdom, where this case presented, a trained community midwife usually does this assessment, although there is no uniform nationally agreed policy. In addition to a general infant health enquiry, the AAP recommends enquiry regarding elimination patterns, (at least 6 urinations per day and three to four stools per day), weighing all babies and observing actual breastfeeding to confirm successful breastfeeding. However, there are no studies examining the effectiveness of frequent weighing of breast fed infants. Advocates of breastfeeding have argued against routine weighing of breast fed infants, because milk production is still rising sharply at 72-96 hours and physiological weight loss can cause unnecessary concern and undermine the confidence of many mothers who are feeding well⁶.

The mother-infant couple we have described had a number of the risk factors identified by Escobar², which placed the infant at higher relative risk of developing early dehydration. If these risk factors had been appreciated and support provided, it may have resulted in a different outcome. As well as having very strong views on exclusive breast feeding and being a first time mother over the age of 35 years, our mother had recently moved into the area and had no social support network.

Following this case it is now our practice that high-risk mother-infant couples are identified and receive extra support proactively. We have also been able to alert local

primary health care workers to the increasing health problem of neonatal dehydration. They are being encouraged to provide close monitoring with actual observation of a breast feed and weighing of babies if necessary, so that inadequate breastfeeding can be identified and measures put in place to rectify the situation early on. It may be reasonable to ask all breast feeding mothers considered to be at higher risk to keep a log of both stools passed and wet nappies over the first 7 days. At this time the charts could be reviewed, allowing early initiation of appropriate remedial action, such as extra support and training to breastfeeding mothers. Such a strategy might work well in the UK as a midwife routinely visits the mother and infant each day during this interval. As a last resort offering artificial milk in a struggling mother is a safe practice to avoid dehydration in the newborn period.

In summary, better training and a greater emphasis in primary care to identify high-risk mothers, whose infants are at an increased risk of dehydration, will facilitate the recognition of this entirely preventable complication.

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