BREASTFEEDING MEDICINE
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Case Study

Failure to Thrive While Breastfeeding

VERITY LIVINGSTONE

PRESENTING COMPLAINT

A 7-DAY-OLD baby boy was referred for the first time to a community breastfeeding clinic by a community nurse because of poor weight gain. At the time of the visit the hospital medical records were unavailable. The following history was obtained from the mother.

MATERNAL HISTORY

The mother was a 34-year-old, white, married woman who worked as a bank cashier. She was previously well and had not had breast surgery or infertility. It was a planned, uneventful, second pregnancy. She had a spontaneous vaginal, vertex delivery at 42 weeks following a prolonged second stage. She sustained a large, second-degree tear. Following the delivery, she required intravenous oxytocin; the estimated blood loss was 1500 cc. She felt tired and dizzy but was discharged home within 48 hours of delivery.

INFANT HISTORY

A healthy, large boy was born following a prolonged labor, with apgar scores of 7, and 9. The birth weight was 4018 g. The hospital stay was uneventful and his discharge weight was 3708 g. He was a nondemanding, sleepy infant who was voiding regularly but had had no bowel movements for over 24 hours.

BREASTFEEDING HISTORY

The mother had successfully breastfed her first son for 11 months. Her breasts grew two cup sizes during this pregnancy. She initiated breastfeeding within 60 minutes of delivery and was exclusively breastfeeding every 1 to 3 hours for 50 to 60 minutes per feed. She switched sides every 20 minutes when he became sleepy. She had not experienced breast fullness or engorgement postpartum. She had not felt a let down or seen much colostrum.

INFANT EXAMINATION

The infant appeared thin, alert, and active; he was afebrile. His naked weight was 3498 g, length 51c, head circumference 35 c. On careful physical examination, no abnormalities were detected. The fontanelle and skin turgor were normal and the mucous membranes were moist. The oral anatomy appeared normal, the apposition and alignment of the gum margins was normal, there was no frenulum, the tongue extended beyond the gum line and the infant had normal, vigorous suckling dynamics.

MATERNAL EXAMINATION

The mother looked pale and tired. Her blood pressure was 108 systolic and 65 diastolic, with a pulse rate of 85 bpm. Her breasts were of normal shape and development. On palpation, the

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breast tissue felt soft and inactive, on compression, the nipple areolar complex was easily graspable and on manual expression only a few drops of milk were obtained.

BREASTFEEDING EXAMINATION

The clothed baby was weighed on electronic scales prior to the breastfeed. Then the mother demonstrated breastfeeding. She positioned her baby at the breast using the cradle hold. The infant's head was not supported and the baby failed to latch deeply over the areola. The breastfeeding technique was corrected by positioning the infant closer to the breast and gently holding the head while tilting the chin upward. The infant grasped the teat and appeared to suckle effectively at each breast. After 20 minutes the infant was reweighed. The test feed revealed the baby had only ingested 14 mL of milk (expected 60 to 70 mL). Five minutes of pumping each breast post feeding failed to obtain any residual milk.

INITIAL ASSESSMENT

The initial assessment was solely based on the information obtained at the time of the consultation. The infant was 13% below birth weight. The differential diagnosis for this weight loss included inadequate breast milk intake, malabsorption, or other neonatal systemic illness. Based on the infant's normal history and physical examination combined with the very small test feed, the most likely cause for failure to thrive, in this case, was malnutrition caused by insufficient breast milk intake. The differential for insufficient breast milk intake included poor maternal milk synthesis, poor milk removal, or poor pattern of breastfeeding.

Based on the maternal history of previous breastfeeding success, normal fertility, normal mammogenesis followed by the absence of postpartum engorgement, lack of colostrum, combined with the lack of ongoing copious milk production by day 7, and a small test feed with lack of residual milk, the presumptive diagnosis was poor maternal milk synthesis because of lactogenesis failure.

It was hypothesized that the mother had had a difficult and prolonged vaginal delivery with a complicated tear and uterine atony, possibly resulting in a larger, unrecognized, postpartum hemorrhage. Her dizziness could have been caused by postural hypotension and her fatigue and pallor by anemia. A tentative, working diagnosis of failure of lactogenesis resulting from pituitary axis disruption such as Sheehan's syndrome was made.

INITIAL MANAGEMENT

The focus of the management was to increase the infant's daily milk intake and improve the maternal milk synthesis. The infant had lost a significant amount of weight and required urgent oral rehydration. He was given 110 mL of formula by bottle, which he drank easily. The mother was supported in her wish to breastfeed. She was taught a more effective breastfeeding technique and advised to breastfeed her infant on demand for 5 to 7 minutes per side, which would provide non-nutritive suckling and comfort. She was encouraged to pump her breasts post feeds for 15 to 20 minutes, switching sides every few minutes. This would ensure effective breast stimulation and drainage to help increase her rate of milk synthesis.

The father was taught how to bottle feed his son after every breastfeed with unlimited amounts of formula. A guideline amount of 100 mL per feed (200 mL/kg per day) was given. If the infant had difficulty tolerating the oral fluids, the parents were instructed to visit the local emergency department urgently.

Urgent infant and maternal laboratory tests were ordered at a local laboratory and a second appointment was arranged for the following day.

FOLLOW-UP

The infant was reassessed in the office 24 hours later. He weighed 3596 g, a gain of 93 g. He was more alert and breastfeeding vigorously. He had taken 110 to 120 cc of complementary formula after every breastfeed and had had two bowel movements. The mother had

pumped twice but only obtained a few drops of milk. Her breasts still felt soft. The laboratory results reported a maternal hemoglobin 7.3 g/dL, maternal post breastfeed prolactin level 10 ng/mL (normal nonlactating range 10 to 30 ng/mL, >100 ng/mL normal lactating range), infant serum sodium 151 mmol/L (normal range 135 to 145 mmol/L), the infant urinalysis and complete blood count were normal.

DIAGNOSIS

This breastfed infant had a hypernatremic dehydration caused by starvation. The rapid increase in infant weight gain following the provision of additional calories confirmed the diagnosis that the infant was failing to thrive because of malnutrition. The low hemoglobin confirmed the mother had probably sustained a large postpartum hemorrhage and the low serum prolactin post suckling suggested anterior pituitary failure as the most likely cause for failure of lactogenesis.

ONGOING MANAGEMENT

The prognosis for exclusive breastfeeding was poor; therefore, the mother was advised to set realistic goals. She should partially breastfeed for comfort and continue to offer supplementary formula feeds. She chose a bottle rather than another feeding device. She was prescribed Ferrous Sulphate 300 mg bid ×100 for anemia. She was not encouraged to pump her breasts, nor was a galactogogue or oxytocin prescribed because of the underlying pathophysiology of the prolactin deficiency. She was advised to see her own physician for further evaluation of pituitary function. For continuity of care, a consultation report was sent to her obstetrician and family physician.

DISCUSSION

The incidence of hypernatremic dehydration in exclusively breastfeeding neonates appears to be increasing.[1–3] It is a serious condition. It is most commonly associated with lack of breast milk intake as a result of poor breastfeeding, or as a result of excessive fluid loss following gastroenteritis, or because of excessive breast milk sodium intake.[4] If lactation is not fully established and breast involution occurs, the sodium content of the milk rises and may contribute to the hypernatremia.[5] The reasons for the increased incidence are not clear, but may in part result from early hospital discharge, which returns mothers home before lactation is fully established and before they have mastered the skills of breastfeeding. Some mothers are aware of the unique characteristics of breast milk and persist with exclusive breastfeeding, not recognizing that their infant is failing to thrive.

The differential diagnosis for insufficient breast milk intake includes a lack of maternal milk synthesis resulting from primary or secondary causes, a technical problem associated with transferring milk from the breast, or infrequent or short episodes of feeding, as well as a combination of the preceding. In this case, the maternal milk synthesis was inadequate probably because of an unrecognized large postpartum hemorrhage that had caused pituitary disruption.

Postpartum hemorrhage is defined as bleeding >500 mL during the first 12 hours after delivery. It is often under-recognized. Measured blood loss is usually twice the estimated amount.[6] Sheehan's syndrome is an uncommon complication of child birth but should be considered whenever there is an obstetric complication that could cause rapid hypotension leading to avascular necrosis of the pituitary. The vulnerability of the pituitary gland to ischemia during pregnancy is thought to be caused by the twofold to threefold increase in size of the adenohypophysis during pregnancy. This physiologic enlargement of the pituitary gland increases the pressure on the vasculature. A sudden drop in blood pressure owing to hemorrhage might allow the increased tissue pressure to collapse these vessels with resultant ischemic necrosis or infarction. This can result in a failure of pituitary lactotrophs to secrete prolactin and subsequent multiendocrine deficiencies. It is characterized by lack of copious milk production.

Sheehan stated that patients may retain function of some endocrine glands while others are

inactive without any apparent reason for the difference. Schneeberg found lactation to be reduced or absent in six out of 20 women who had experienced a postpartum hemorrhage and who otherwise showed no signs of hypopituitarism on clinical or laboratory testing.[7] Livingstone found a strong correlation between mothers presenting with lactation failure and unsuspected postpartum hemorrhage.[8]

CONCLUSION

In this case a problem-solving approach was used to identify the etiology and pathophysiology of the breastfeeding infant's weight loss. It illustrates the importance of obtaining a careful history, physical and breastfeeding examination, both in the mother and infant, and the usefulness of a standardized test feed.[9]

It illustrates the importance of continuity of care and close postpartum follow-up for early detection of breastfeeding failure. Obstetricians should alert pediatricians to complications of labor and delivery such as maternal hypotension, postpartum hemorrhage, or placental difficulties, which are known to interfere with successful maternal lactation. This mother and infant had breastfeeding risk factors identifiable at the time of hospital discharge. Lack of postpartum breast changes including lack of engorgement combined with early neonatal weight loss >7% should alert clinicians to a possible delay in lactation. Neonates who have lost more than 7% of birth weight at time of discharge should be reassessed within 48 hours, and those who have lost more than 10% of birth weight should be screened for breastfeeding malnutrition and hypernatremic dehydration.[10] Early detection of maternal lactation failure may prevent subsequent infant hypernatremic dehydration, which can be devastating.

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