NeoKare

A case report on using a novel human milk-based fortifier in a preterm infant with a large patent ductus arteriosus (PDA).

By

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Case Report

An extremely low birth weight (ELBW) baby, born at 24+1 weeks gestation weighing 605 g was admitted in NICU. Baseline parameters are mentioned in table 1. Conventional ventilation was initiated and continued until day 9, enteral feeds were initiated with expressed breast milk (EBM) on day 2. A large patent ductus arteriosus (PDA) was noted on routine day 2 echocardiogram with a watch and wait approach in view of clinical stability and the absence of significant systemic and pulmonary effects. On day 10, fluids were restricted to 120 ml/kg/day in view of a new murmur and evidence of volume loading from the PDA on echocardiogram. Baby reached the full enteral feeds of 120 ml/kg/day on day 12. PDA was treated with paracetamol (PCM) between days 23 and 30, in view of a persistent large PDA with volume loading, with reduction of PDA size and improvement of left sided loading. Baby's weight had been static since birth as and feed volume was liberalised slightly.

Sl No.	Parameter	Observation
1	Gestational Age (GA)	24+1 weeks
2	Birth weight	605 g (25th centile)
3	Occipital Frontal Circumference (OFC)	20.5 cm (9th centile)

Bovine milk-based fortification (BMF) was initiated when the enteral feeding volume reached 140 ml/kg/day but baby developed feeding intolerance with abdominal distension and BMF was discontinued. Baby developed late onset sepsis around the same time (day 35) and was intubated and ventilated for 4 days. Baby received parenteral nutrition whilst feeds were withheld and full course of antibiotics. Enteral feeds were reintroduced following clinical improvement and reached 120 ml/kg/day by day 41. Feed volume was increased gradually to 190 ml/kg/day over the next 11 days. A second trial of introducing BMF was attempted during this period but, unfortunately, baby developed abdominal distention and poor feed tolerance again. There were no clinical, biochemical or radiological evidence of NEC or sepsis at this point and addition of BMF was abandoned.

However, in view of suboptimal weight gain despite achieving feed volume of 190 ml/kg/day, the decision was made to refortify EBM but this time to trial the newly available human milk-based fortifier (NeoKare Mother's Milk Fortifier) at 190 ml/kg/day (32+5 weeks GA, day 61). There were no incidences of feed intolerance or abdominal distension and the baby tolerated the human milk-based fortifier (MMF) very well. The NeoKare MMF was prepared by mixing 1 g of fortifier in 25 ml of EBM, and was initially provided on alternate feeds for first 3 days, after which all feeds were fortified with NeoKare MMF.

The average weight gain in the first 14 days of fortification with MMF was 25.3 g/kg/day. However, baby’s feeds had to be restricted to 160 ml/kg/day and full dose diuretics was commenced in view of the PDA causing left ventricular volume loading and increased murmur intensity. Weight gain in the subsequent 13 days whilst on EBM+MMF was a modest 13.8 g/kg/day.

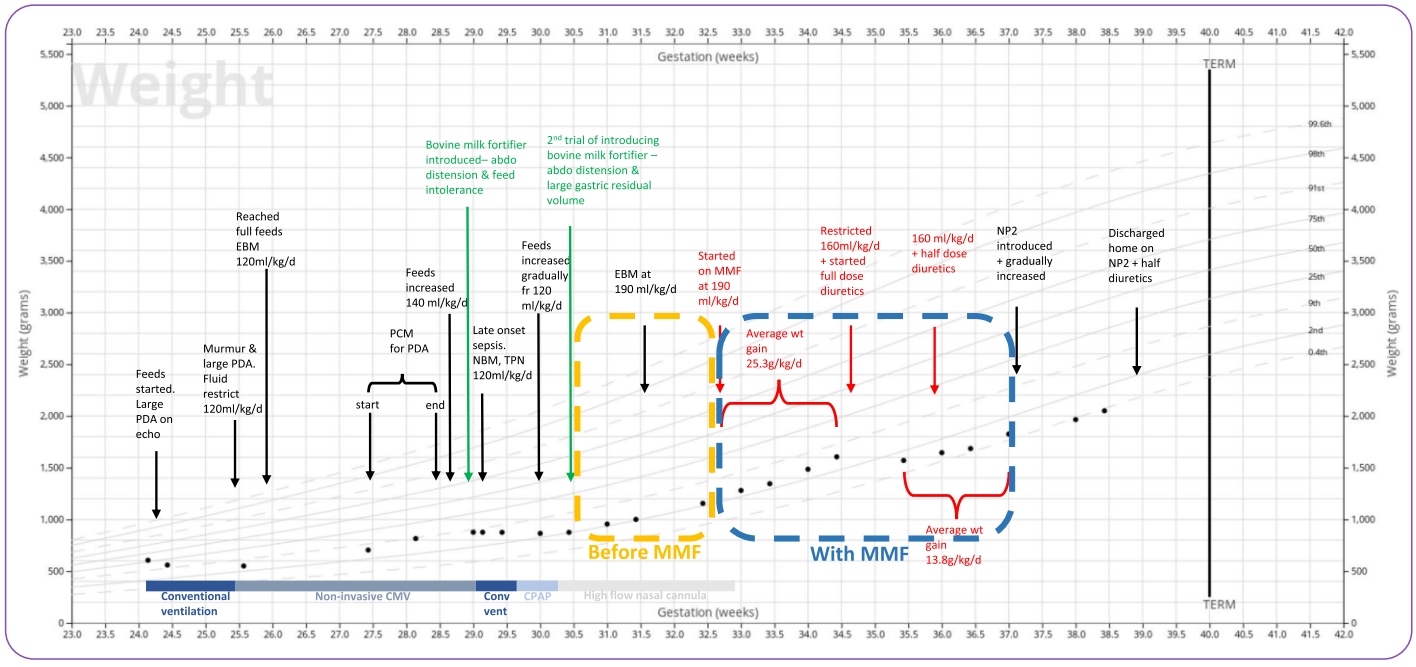
Table 2. Results from fortification with NeoKare Mother's Milk Fortifier:

Sl No.	Parameter	Observation
1	Feed volume at start of MMF	190 ml/kg/day
2	Weight (baseline) – start of MMF	1155 g
3	Weight (After 14 days on MMF)	1605 g
4	Average weight gain (14 days on MMF)	25.3 g/kg/day
Fluid restriction (160 ml/kg/day) + full dose of diuretics		
5	Average weight gain (13 days on MMF with fluid restriction)	13.8 g/kg/day
6	No. of episodes of feed intolerance	None

As baby was approaching discharge from the neonatal unit, baby's mother expressed her wish to discontinue expressing milk. Specialised bovine milk-based formula for preterm babies (Nutriprem 2) was introduced gradually and baby's MMF fortification was discontinued. Baby was discharged on formula feeds and half dose of diuretics with 38+6 weeks of GA at a weight of 2050 g.

Overview of weight gain from 23 weeks to 42 weeks of gestation

Fig 1. Case report summary overview:



Conclusion/Summary

This case represents the typical course of an extremely premature and low birth weight baby at 24 weeks gestation complicated by respiratory, cardiac, feeding and sepsis issues resulting in poor weight gain in the first 6-7 weeks of life. The reason for baby not tolerating bovine milk-based fortifier is unlikely due to cow's milk intolerance but rather multifactorial. In view of excellent maternal EBM supply, we were delighted to have the option of continuing with EBM and fortify with NeoKare MMF rather than changing to a specialised bovine formula milk. NeoKare MMF was very well tolerated. The baby's weight gain with NeoKare MMF was excellent and remained good even with feed volume restriction and diuretics.

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