

Correspondence

To the Editors

Increments of feeding in preterm babies born with abnormal umbilical Doppler

Sri Lanka Journal of Child Health, 2024; **53**(2): 188-190

DOI: <https://doi.org/10.4038/slch.v53i2.10992>

(Key words: Preterm feeding, Umbilical artery doppler, Feeding intolerance, Necrotising enterocolitis)

Dear Editors,

Read with great interest the article published in the *Sri Lanka Journal of Child Health*, 2023; **52**(4): 430-436 on slow versus rapid advances feeding in newborn with abnormal umbilical Doppler. I congratulate all authors for this novel research.

I have some comments about this study.

1. There was a significant weight difference in group 1 and group 2 (Table 1) which is around 1192g vs. 1476g and 1175g vs. 1427g in slow vs fast feed groups respectively (p-value 0.0006 vs 0.0002). The point to consider here is that as the gestational age and weight increases, the gut becomes more mature and the incidences of feeding intolerance and enterocolitis decrease dramatically¹. This can be one of the reasons that the overall incidence of necrotising enterocolitis (NEC) was low in group 2 as compared to group 1.
2. The overall incidence of sepsis is high in this study; this may be due to more cases of premature rupture of membranes (PROM) and chorioamnionitis as shown in Table 1. PROM and chorioamnionitis were present in 31 patients out of 35 in group 1 and 22 patients out of 45 in group two (16 vs 12 and 18 vs 23). These two are the important risk factors for sepsis. The other infection preventive strategy we should consider is early stoppage of intravenous fluids, removing of all lines and aseptic procedures². Whether total parenteral nutrition (TPN) was used or not has not been mentioned as early nutrition in term of TPN is mostly required in preterm babies when we suspect NEC and keep them nil by mouth for a long time.
3. Twenty-eight babies out of 35 (80%) in group 1 and 41 out of 45 (91.11%) in group 2 received antenatal steroids (Table 1). The thing to wonder here is that although the maturity and the weight in the second group were much higher; still this group received more steroids doses. This point needs justification as this may be one of the influencing factors for feed intolerance and NEC. A study done by Tica OS, *et al*³ showed that dexamethasone has a significant effect on the perinatal outcome and on restoration of blood flow in the umbilical artery. They found that dexamethasone restored the flow across the umbilical artery transiently as compared to other groups where it was persistently absent³.
4. The other point to consider is the type of feeding like expressed breast milk, breast feeding, donor human milk (DHM) and formula feeding which can modify the occurrence of feed intolerance and NEC⁴. So, it would have been more informative, if authors would have also considered the type of feed.

5. The total number of deaths in group 1 was 12 (6 vs 2) while in group 2 it was 7 (5 vs 2), (p-values 0.72 and 0.23 respectively); what can be the possible explanation of the deaths in such babies when the baby is on full feed and gaining weight? Is it the NEC or some other conditions like sepsis or PDA? However, authors have already excluded these conditions as mentioned in their exclusion criteria. So, it would be better if the authors would have shed some light on the causes of death as NEC and septicaemia are inter-related.

Overall, this study guides us about feeding in preterm babies with abnormal umbilical Doppler flow. So, individualized feeding plans and methods are crucial, and neonatologists should closely monitor feeding tolerance and adjust accordingly to optimize hospital stay, outcome and neonatal mortality.

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Response by authors of article

Dear Editors,

We were very pleased, as our research was thoroughly read. And we were very thankful for your appreciation. We are really happy for your interest. As per sources, ours is one of the largest NICUs in the world, and we have a huge burden with less manpower than most of the developed countries. This research was most useful in these situations. Early, rapid breast milk will decrease the incidence of sepsis and hospital duration. It will also decrease sepsis by decreasing cannulation.

Reply to the comments

1. The mean weight in the slow incremental group was 1192g and 1175g in the fast incremental group and the incidence of NEC was higher in the slow group (39% and 31%) in the large-weight babies and in the higher mean gestational age group, if we consider the weight incidence to be increased in Group 2. As such, weight may not be the only criterion; sometimes urban mothers may have large babies. Maternal nutrition, maternal genotype and phenotype, and maternal normal saline infusion also change the baby's weight loss¹. Yes, hormones will mature early, but motility is the problem. The migratory motor complex will form around 36 weeks. Sometimes small for gestational age (SGA) babies may not experience early loss of fluids, unlike preterm babies. For example, although infants of diabetic mothers (IDM) are larger, their fat content is higher, and their motility is also lower. Weight depends on genotype and placental problems, the onset and duration of growth retardation, and Doppler abnormalities.
2. Yes, sir, the overall incidence of sepsis is high. As we mentioned already, ours is a tertiary care centre, the largest unit at a time, and we will have 300 babies. We have less manpower, though our state is helping us recruit more nurses. Most of the cases are referred not only from our state's rural areas but also from other states, where most of the babies have already been infected. We also have laminar flow and are using partial total parenteral nutrition (TPN) without lipids. We are following all aseptic precautions as suggested by you, and we are doing quality improvement cycles continuously to improve the performance.
3. Yes, sir, as you said, steroids will play a major role in feed intolerance and necrotising enterocolitis (NEC). We have a similar percentage of steroids in the 1250g category, and the fast-feeding group received more doses. Some hospitals are using betamethasone as well. When the mother comes in for emergency delivery, there is no time to give antenatal steroids, and the babies are usually very premature. Not only dose but also duration play a major role, but we observed, as in the literature, no effect after seven days³. In rural primary hospitals, there is no documentation.

Yes, but as a whole, it is a major limitation of the study. We observed that most of the primigravida mothers would deliver suddenly, which gynaecologists were not aware of.

4. We mentioned it in the method section. We have our own milk bank, which is also the largest one. We only use donor milk if mother's milk is not available. We have separate lactation counsellors. We strictly do not allow formula feeds, although we have used formula in a few instances with term babies.
5. Yes, sir, as you mentioned, neonatal mortality chances will decrease as hospital days progress, unlike in adults. As we mentioned, sepsis rates are high as our catchment area is huge. At the same time, surprisingly overall, NEC chances were lower due to rural microbiome⁴, as the majority of mothers are from rural areas. In the less than 1250 group, 6 deaths happened in the slow group, in which 3 babies died early due to intraventricular haemorrhage, one died due to NEC, and another 2 died due to hospital-acquired infections. In the fast-increment group, one case was fatal due to intraventricular haemorrhage, although the baby received antenatal steroids within 24 hours before birth. Three cases died due to late-onset sepsis; one case died due to pulmonary haemorrhage due to patent ductus arteriosus and humidification problems. One case was due to NEC. In the more than 1250g slow increment group, one case died due to fulminant NEC due to whole blood transfusion; they refused a leucodepleted blood transfusion because of financial problems. The baby died on the table in operation theatre. Three cases were due to late-onset sepsis and disseminated intravascular coagulation. One case was due to a central line-associated bloodstream infection. In the fast-increment group, two cases were reported: one case was due to aspiration, and in ventilator-associated pneumonia, one case was due to late-onset culture-positive sepsis.

We can decrease the preterm hospital duration and sepsis by rapid feeding. Not only neonatal factors but also maternal factors like urbanization, microbiome, diet, and antenatal steroids will play a role in preterm morbidity. Multicentric randomized trials are needed for generalisability.

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