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Original Research Article

Feeding premature babies in the neonatology department of the Androva Mahajanga hospital

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ABSTRACT

Background: The initiation and progression of enteral nutrition in premature infants remains a challenge. The aim of this study was to evaluate enteral nutritional management in premature infants in the neonatology department at the mother and child complex Androva Mahajanga.
Methods: This was a retrospective descriptive study over a 7-month period, from January to July 2018. All neonates under 37SA who received enteral feeding were included.
Results: During the study period, 74 newborns were able to receive enteral feeding. The mean age of onset of enteral feeding was 10.6 hours. In 89.2% of cases, enteral feeding was started within the first 24 hours of life. On average, the initial quantity administered was 28.4ml/kg/d. Human milk was used most frequently (54.8%). The presence of residue was the most frequently encountered incident (31.5%). Ulcero-necrotizing enterocolitis occurred in 7 newborns (9.5%). Forty-five newborns had a good outcome, with an average weight gain of 9.28 g/kg/d.
Conclusions: The implementation of a nutritional management protocol for newborns, especially premature babies, in the neonatology department would be beneficial for a better outcome and growth of the baby.

Keywords: Enteral nutrition, Human milk, Prematurity, Ulcerative colitis, Weight gain

INTRODUCTION

Premature infants have a very high nutritional requirement in the neonatal period, in order to cover their basic metabolic needs and achieve satisfactory growth.[1,2] Enteral feeding is ideal, as it stimulates the development of the gastrointestinal mucosa, intestinal motility and enzyme synthesis, and reduces the risk of sepsis due to bacterial translocation. However, the initiation and progression of enteral feeding in preterm infants remains a challenge due to acute illnesses in the early neonatal period and functional immaturity of the gastrointestinal tract, which can lead to food intolerance or ulcerative colitis.[2,3] The aim of our study was to evalue the enteral nutritional management of premature infants in the neonatology department of the Androva Mahajanga mother-child complex.

METHODS

Study design, location and duration

The study was conducted at the mother and child complex (MCC) of the University, Hospital Center Professor Zafisaona Gabriel (CHU PZaGa). This is the only neonatal reference hospital in the Boeny region.

This is a descriptive retrospective study over a 7-month period from January to July 2018.

Inclusion and exclusion criteria

The recruitment was exhaustive, all neonates under 37SA who received enteral feeding were included. Neonates under 37 SA who did not receive enteral feeding were not included. The exclusion criterion was incomplete medical records.

The parameters studied were anthropometric characteristics of the newborn, type of newborn feeding, time of introduction, short-term evolution of the newborn. The data were processed with SPSS 20. Anonymity was respected in this study.

RESULTS

During the study period, 89 neonates were premature. Of these, 74 were able to receive enteral feeding. The mean age of onset of enteral feeding was 10.6 hours, with the earliest at one hour of life and less, and the latest at sixty-seven hours. The introduction of enteral feeding began within the first 24 hours of life for 66 neonates (89.2%), irrespective of birth weight and gestational age, except for neonates born between 28 and32 SA (Table 1).

Table 1: Distribution of newborns according to age of onset of enteral feeding in relation to birth weight

Parameters		Age of enteral feeding start		Total (N=74)
		24h and less	More than 24h	
Birth weight (g)	Less than 1000	2	0	2
	1000 to 1500	12	5	17
	1500 to 2000	28	3	31
	2000 to 2500	22	0	22
	More than 2500	2	0	2
Gestational age (weeks)	Less than 28 amenorrhea	2	0	2
	28 to 32 amenorrhea	4	5	9
	33 to 36 amenorrhea	60	3	63

On average, the initial quantity administered was 28.4 ml/kg/d, and three premature infants were directly breastfed exclusively. Human milk (from the mother or a donor) was the most widely used (54.8%), compared with artificial milk alone (32.9%) or in combination with human milk (12.3%). The main incidents during oral feeding were the presence of dirty or hemorrhagic residue (31.5%), abdominal bloating (5.5%), digestive hemorrhage (4.4%) and vomiting (2.7%). Ulcero-necrotizing enterocolitis was encountered in 7 neonates (9.5%). Forty-five newborns had a good outcome, with an average weight gain of 9.28 g/kg/d.

DISCUSSION

Enteral feeding was predominantly started within the first 24 hours of life for preterm infants, irrespective of gestational age and birth weight. A study by Klingenberg et al found that enteral feeding was started within the first 24 hours of life for 35%, 43% and 71% of neonates in neonatal intensive care units for neonates aged less than 25SA, 27 and 28 to 32 SA respectively.[3] The exact age at which enteral feeding should be introduced is not clearly defined, but it would be advisable to initiate it within the first 24 hours of life, up to the 72nd hour, and if possible, if the newborn's condition allows, within the first six hours of life.[2] Starting enteral feeding as early as possible would prevent intestinal villous atrophy, favorably influence the intestinal microbiome, reduce the risk of developing systemic inflammation, and decrease the risk of developing comorbidities such as retinopathy of prematurity and bronchopulmonary dysplasia.[4] On average, the initial amount administered was 28.4ml/kg/d. In current practice, many clinicians start trophic nutrition ≤24 ml/kg/d in the first 4 days of life, followed by a progressive increase of 20 ml/kg/d every day up to exclusive enteral nutrition (≥120 ml/kg/d).[5] Recent Cochrane reviews have suggested that early enteral feeding (up to 35 ml/kg/d) and rapid progression can be achieved in premature infants, without increasing the risk of ulcerative colitis or death.[6]

Human milk has been used the most in the department. In a study by Vasconselos et al one third of premature babies received human milk, and half were on a mixed diet of human milk and premature formulas, due to the unavailability of milk banks. It would be best to start enteral feeding with breast milk, the second option is milk from a milk donor; and preterm formulas should only be given if these two options are not available.[2] Several biological factors present in breast milk are absorbed by the digestive tract, and promote maturation, play an anti-inflammatory and barrier role.[7] The use of breast milk reduces the risk of ulcerative colitis.[3,8] Incidents had occurred in newborns during enteral feeding. Similarly, in a study by Vasconcelos, 29% of babies had experienced food intolerance. This is linked to the immaturity of the gastrointestinal tract.[2] The hospital prevalence of ulcerative colitis was 9.5%, and although high, it was lower than that found in Ethiopia (25.4%).[8]

Ulcero-necrotizing enterocolitis is the main gastrointestinal emergency in the neonatal period, especially in premature infants.[8] The average daily weight gain was 9.28 g/kg/d, close to that found in a study by Faye et al (7.8 g/kg/d).[9] This gain should be 20g/kg/d in very premature infants, but this will depend on their nutritional intake and pathologies.[10] Feeding preterm infants breast milk enriched with additional nutrients such as protein or fat could potentially enable them to absorb more nutrients, and thus grow faster and develop better.[11] However, this study has limitations, such as its retrospective nature and mono-centricity.

CONCLUSION

The implementation of a nutritional management protocol for newborns, especially premature infants, in the neonatal unit would be beneficial for better outcome and growth of the baby.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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