

Early Fresh Human Milk and Sepsis in Very Low Birth Weight Infants

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Background

Late Onset Sepsis (LOS) is the most frequent and severe morbidity in Very Low Birth Weight (VLBW) infants and the main cause of death in patients admitted to NICU.

Our hypothesis is that the early neonatal period is the critical stage for human milk (FHM) action in LOS prevention

Objectives

To evaluate the volume of FHM to reduce the risk of LOS in VLBW infants.

Material and Methods

Patients included in a randomized clinical trial designed to compare morbidity in VLBW fed with fresh or pasteurized HM during the neonatal period that showed a lower incidence of LOS in those patients who received FHM since the first day of life or later. Univariate analysis between patients who developed or not LOS was performed and those variables that showed statistical significance were included in a multivariate model. The volume of FHM administered during the first week of life and exerted a protective effect was determined.

Table 1 - Clinical Characteristics

	Not LOS (n=72)	LOS (n=24)	p
Birth Weight [g] - Median (range)	1255 (700/1930)	1040 (700/1640)	0.03
Gestational age in weeks - Median (range)	29 (25/30)	28 (25/30)	0.04
Antenatal Steroids - n (%)	61 (84.7)	21 (87.5)	0.11
Male Gender - n (%)	38 (52.8)	14 (58.3)	0.22

Table 2 - Nutritional Characteristics

	Not LOS (n=72)	LOS (n=24)	p
Age ETF started [days] - Median (range)	1 (1/5)	4 (1/15)	<0.001
Total Own Mother's Milk in the first week [ml] - Median (range)	51 (0/244)	24 (0/146)	0.002
Total Banked Human Milk in the first week [ml] - Median (range)	19 (0/167)	11 (0/86)	0.2
Total Own Mother's Milk in the first 28 days [ml] - Median (range)	568 (0/4382)	957 (0/5048)	0.08
Days of TPN - Median (range)	12 (6/38)	13.5 (8/28)	0.06

Table 3 - Clinical Outcomes

	Not LOS (n=72)	LOS (n=24)	p
Body Weight at 28 Days gestational age [g] - Median (range)	1560 (820/2260)	1322 (830/1920)	0.02
Z Score at 36 Weeks gestational age - Median (range)	-1.055 (-3.79/-0.69)	-1.7 (-3.36/-0.73)	0.12
NEC \geq II - n (%)	6 (8.3)	1 (4.2)	0.46
ROP Grade II - n (%)	11 (15.28)	4 (16.7)	0.87
Death - n (%)	7 (9.72)	3 (12.5)	0.15

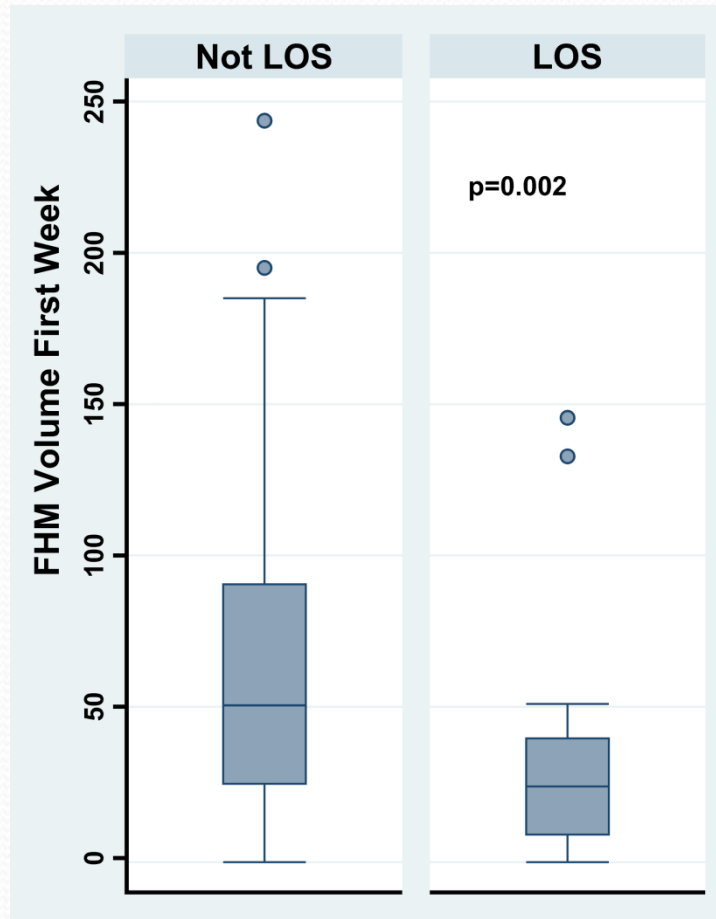
Table 4 – Quartiles of FHM intake in the first week and LOS incidence

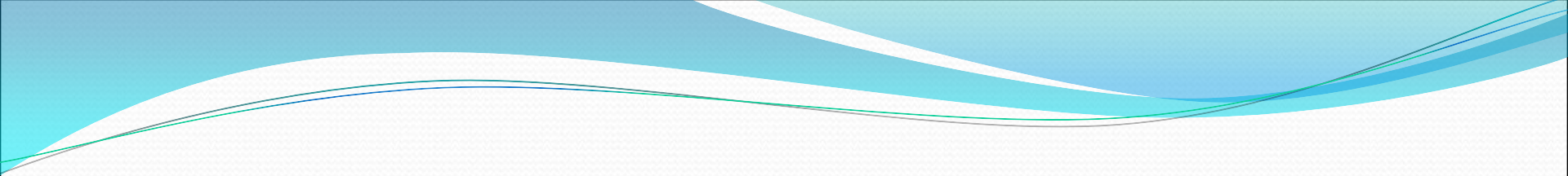
Quartile	Patients – n	LOS - n (%)	Volume [ml] - Median (Range)
1 st	24	10 (41.7)	6 (0-19)
2 nd	24	11 (45.8)	35 (21-41)
3 rd	23	1 (4.3)	54 (42-78)
4 th	23	2 (8.7)	135 (81-244)

The administered volumes according to the presence or absence of LOS.

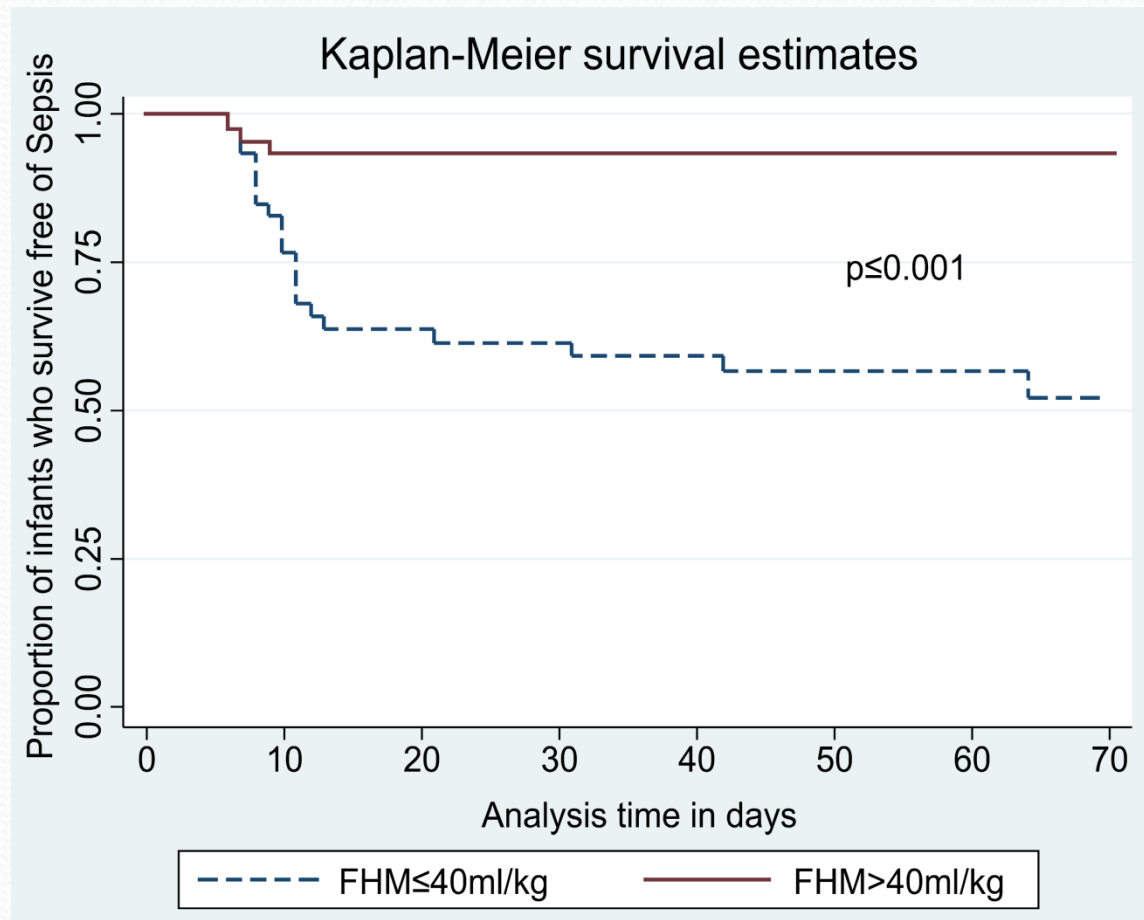
For each ml of FHM consumed in the first week of life, the occurrence of LOS diminishes an average of 2% with a 95% CI between 0.4 and 3.3%.

For every 3.5 patients (NNT) who receive more than 40 ml/kg of FHM in the first week of life, a case of LOS is prevented.

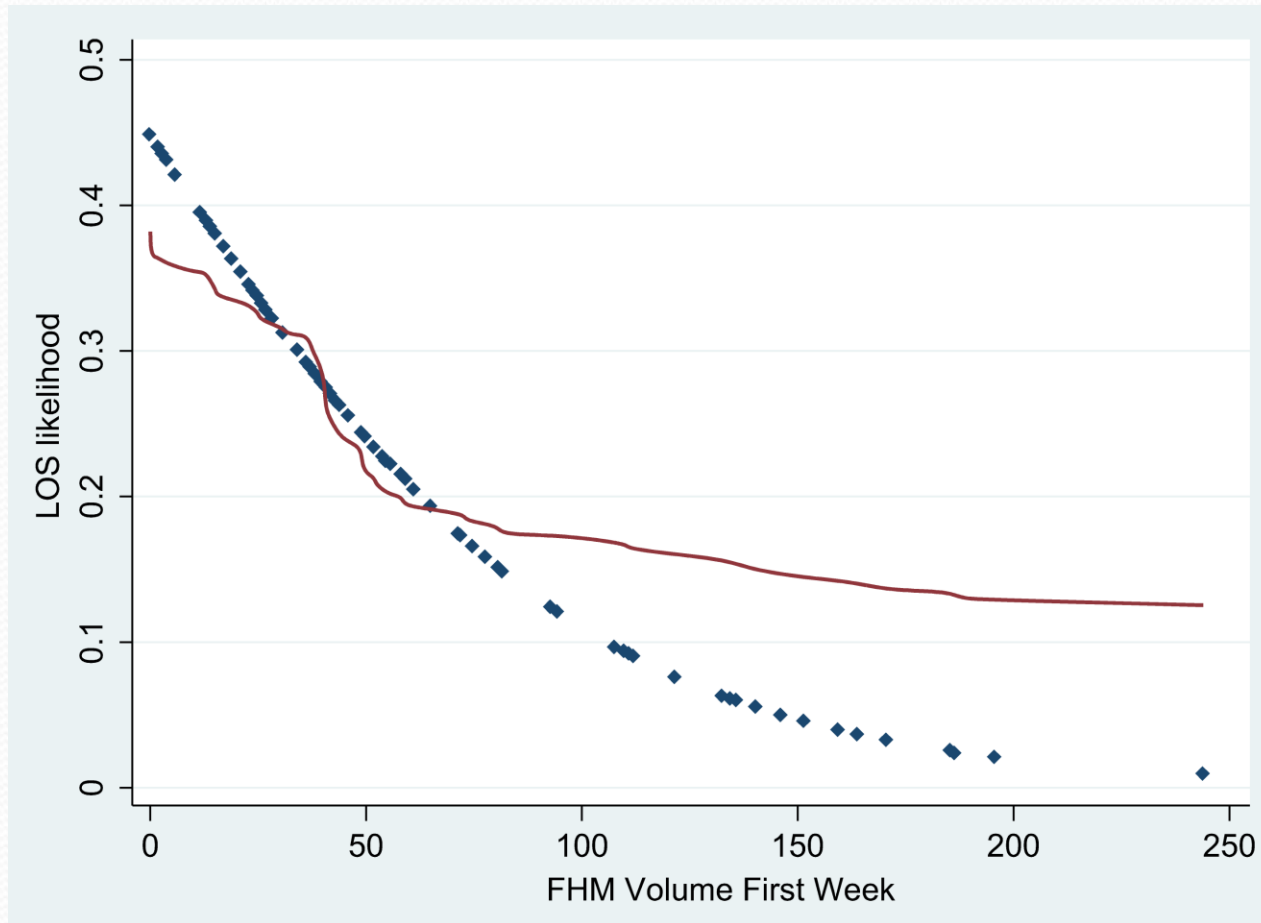


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Proportion of patients without LOS until patient discharge according to an intake greater or lower than 40ml/kg of FHM in the first week.



LOS likelihood according to the amount of FHM administered in the first week of life.



Results

Ninety six infants of whom 24 developed LOS were analyzed. Clinical characteristics between two groups are statistically significant. To feed since the first day of life had a lower incidence of LOS than those who began after the third day. A volume of FHM >40 ml/kg in the first week of life was the cutoff point that was associated with a significant reduction in the occurrence of LOS decreased 75 % (95%CI).

Conclusions

A dose-response relationship was demonstrated between FHM in the first week of life and a reduction in the occurrence of sepsis.

References

1. Am J Obstet Gynecol. 2007 Feb;196(2):147.e1-8 - Trends in neonatal morbidity and mortality for very low birthweight infants. - Fanaroff AA, Stoll BJ, Wright LL, et al; NICHD Neonatal Research Network.
2. J Perinatol. 2013 Jul;33(7):514-9. doi: 10.1038/jp.2013.2. Epub 2013 Jan 31. - Impact of early human milk on sepsis and health-care costs in very low birth weight infants. - Patel AL, Johnson TJ, Engstrom JL, et al.
3. E-PAS2013:1541.579. Early Minimal Enteral Feeding With Human Milk In Very Low Birth Weight Infants: When To Start? – Dinerstein A, Nieto R, Solana C, Ventura D, General, F.

Thank you

