

Title of Abstract:

Can Choice of Human Milk Fortifiers Influence Feeding Tolerance and Nutrition in Premature Infants?

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Abstract Description:

Background: Premature infants who receive a human milk diet without fortification are at risk for growth failure and developmental delays. Human milk diet fortified with bovine-based Human Milk Fortifier (HMF) is the standard of care for extremely preterm infants. The two most commonly used commercial liquid HMFs vary in nutritional composition and in methods used to reduce bacterial content. There is some debate about the effects of different HMF on rates of feeding tolerance, nutritional benefits, and metabolic acidosis.

Objectives: The objective of this quality improvement study was to determine if the choice of HMF influences feeding tolerance, nutritional status, and metabolic acidosis in preterm infants fed a human milk diet.

Methods: This was a prospective, single-center, QI study of preterm infants born at <35 weeks or <1800 grams whose human milk diet was fortified with either acidified liquid HMF (aLHMF) or non-acidified liquid HMF (n-aLHMF). Non-blinded assignment of HMF was done by day of birth. The study period began 1 week before HMF was started until 1 week after it was stopped. Feeding intolerance and metabolic acidosis were defined by unit protocols. Days of feeding intolerance, serum protein and albumin, pH, bicarbonate and lactate were analyzed.

Results: Eighty infants were enrolled in the study: 40 to each group. There were no significant differences between the groups in birth weight or gestational age, days of mechanical ventilation, NEC, sepsis, or length of stay. Infants who received aLHMF had higher serum albumin than infants who received n-aLHMF at 7 days (mean 3.39, SD 0.34 vs. 3.17, 0.33, $p=0.009$) and 14 days (mean 3.39, SD 0.38 vs. 3.15, 0.33, $p=0.14$) after adding HMF. Infants receiving

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aLHMF also had higher serum protein at 14 days (mean 5.04, SD 0.61 vs. 4.52, 0.56, $p=0.001$) and 21 days (mean 4.87, SD 0.61 vs. 4.56, 0.47, $p=0.041$). Serum bicarbonate levels were lower in the aLHMF group at 7, 14 and 21 days after adding HMF (means 22 vs. 25, $p=0.004$, 23 vs. 25, $p=0.04$, and 24 vs. 26, $p=0.03$). However, mean differences in feeding intolerance days (7.6 vs. 4.8, $p=0.17$), metabolic acidosis (0% vs. 5% $p=0.49$) or lactate levels (1.2 vs. 1.4, $p=0.29$) did not reach statistical significance.

Conclusion:

In this QI study of two commercial HMFs, preterm infants fed a human milk diet fortified with aLHMF were found to have significantly higher serum protein and albumin levels and lower bicarbonate levels. No significant difference in feeding tolerance was found between groups.

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