Growth and Necrotizing Enterocolitis Outcomes in Very Low Birth Weight Premature Infants Fed Sterilized Donor Breast Milk Fortified with a Bovine Based Human Milk Fortifier as a Supplement to Mother's Own Milk

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Introduction

The American Academy of Pediatrics recommends an exclusive breast milk diet for all infants < 1500 grams birth weight. Use of an exclusive breast milk diet in the neonatal intensive care unit (NICU) can significantly reduce necrotizing enterocolitis (NEC) incidence. Pasteurized Donor Breast milk is widely used to supplement Mother's own milk (MOM) in the NICU. Nutrient content of pasteurized donor breast milk can be variable, making promotion of adequate growth challenging. Poor growth rates in very low birth weight (VLBW) infants can have neurodevelopmental implications. Use of a bovine human milk fortifier (HMF) added to breast milk can increase NEC incidence when compared to a diet of exclusive human breast milk. Recently available sterilized donor breast milk (SDBM) offers a homogenized DBM option with a defined nutrient composition. Use of SDBM with a bovine HMF and its outcomes have not been well documented in literature. The objective of this Institutional Review Board approved, research study, was to document weight gain, NEC rate, late onset sepsis rates and feeding tolerance with the use of SDBM fortified with a bovine HMF, as a supplement to MOM.

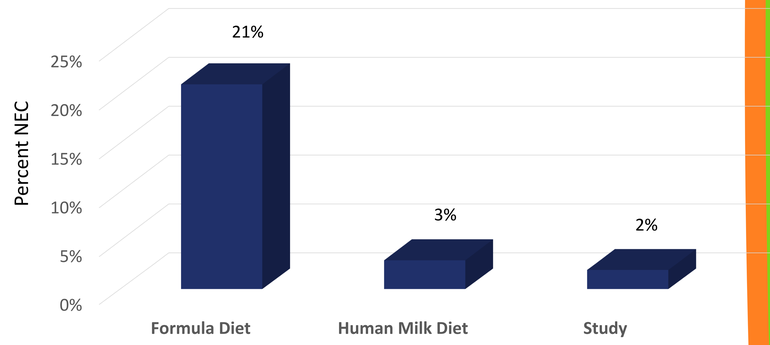
Methods

All infants admitted to the NICU between September 2015 and June 2016, with a birth weight < or = 1500 grams birth weight (BW) were eligible. Standard unit nutrition protocols were followed. All infants received a probiotic, Lactobacillus reuteri, daily. Infants were eligible to receive SDBM (Co-op Donor Human Milk, Medolac Laboratories, Lake Oswego, OR) from birth to day of life (DOL) 30. A bovine based HMF was used to fortify the breast milk. Data was collected on weight gain from DOL 7-30 in g/day, days of NPO due to feeding intolerance > 24 hours once infant had progressed past trophic feeds, number of days of parenteral support, NEC, late onset sepsis (LOS) identified by a positive blood culture at > 5 DOL, and % of infants plotting at < 10th % on the Fenton 2013 growth chart at 36 weeks gestation.

Results

Consent to use SDBM was obtained for 62 infants. Data was collected on 48 infants that received SDBM (9) or SDBM plus MOM (39), 43% were male. The average gestational age at birth was 29 5/7 weeks, with an average BW of 1192 grams. Average rate of weight gain DOL 7-30 was 23 g/day. There were three, 24 hour periods of NPO due to feeding intolerance. Average number of days of parenteral support was 10.8. The NEC rate was 2 % or 1 infant experiencing nonsurgical NEC. There were 0 episodes of LOS. Infants plotting < 10th % on the Fenton 2013 growth curve at 36 weeks was 32%.

Incidence of NEC in VLBW Infants



Conclusion

Our SDBM fed population met growth goals that mimic intrauterine growth rates for 29 week gestation infants, (23 g/day per Fenton 2013). NEC rate was not greater than that which is typical of exclusively human milk fed VLBW infants (2-3 %) with our use of a bovine HMF. LOS rates were not increased. Percent of VLBW infants with weights < 10th % at 36 weeks gestation in our NICU in the previous 2 years was 38 %. Our trial population had 32 % of infants < 10th % at 36 weeks. Although our population size is small, and further documentation of growth and NEC is needed, our trial indicates SDBM can be used with a bovine HMF to support intrauterine growth rates, without changes to established NICU enteral protocols, and no increased incidence in NEC.

References

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