Effect of breast feeding on intestinal flora in comparison to artificial feeding in premature neonates

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Human breast milk is the healthiest form of milk for human babies>(Picciano, 2001) and exclusive breast-feeding (EBF) to 6 months of ageis recommended because it protects against infectious morbidity,mortality, and promotes adequate growth and development. (Kramer,Kakuma, 2001).The Gut flora consists of microorganisms that live in the digestivetracts of animals, and is the largest reservoir of human flora. (Bjorksten etal 2001 and Guarner, Malagelada, 2003). The normal flora derivesfrom their host a steady supply of nutrients, a stable environment, andprotection and transport. The host obtains from the normal flora certainnutritional and digestive benefits, stimulation of the development andactivity of immune system, and protection against colonization andinfection by pathogenic microbesThe gastrointestinal tract of the premature infant has a large butfragile surface area covered by a thin monolayer of epithelial cells thatoverlies a highly immunoreactive submucosa. Interactions in the lumenamong microbes, nutrients, and the intestinal mucosa can range from ahealthy homeostasis to an uncontrolled systemic inflammatory responsesyndrome that leads to multiple organ failure and death.The benefits of breast milk for preterm infants are well documentedand include breast milk's protective effect seen in bothneurodevelopmental and physical outcomes in the preterm population.Infants fed breast milk exhibit higher developmental scores and higherIQs than do those fed formula. (Anderson et al 1999 and Lucas et al,1992) Breast milk has shown a protective effect against necrotizingenterocolitis, (Vohr et al, 2006) and sepsis. (Furman et al, 2003)Breast feeding has been associated with a lower incidence of feedingintolerance and NEC. A meta-analysis of four randomized clinical trailsof donor HM versus formula suggests that 100% HM feeding isprotective against NEC (Mc Guire, 2003).The aim of this study was to show the effect of both breast andartificial milk on intestinal flora of premature infants and the incidence ofnecrotizing enterocolities.Our study is a prospective study preformed up on 60 preterm infantswith gestational age ≤36 week which were classified into 3 groups: Thefirst group (20 infants) who was exclusively breast feeding. The secondgroup (20 infants) who was fed artificial milk only. The third group (20infants) who was fed both maternal breast milk and artificial milk indifferent proportion. And each group subdivided into 2 groups accordingto gestational age into severe preterm (28-32wks) and preterm (33-36wks).All infants in the study begun enteral feedings during the first 14days of life and if enteral

feedings were not be tolerated for more than 12h enteral feeding was stopped.Cases investigated by complete blood count (CBC), C - reactiveprotein (CRP), Stool analysis &culture.Stool samples were collected from all infants in the fist 20 days ofbirth, two samples were taken from each baby the first before or just afterbeginning feeding, and the second after 5 to 7 days of the beginning offeeding.Samples were collected under aseptic conditions in specificcontainers, and were cultured during 1 to 2 hours at maximum onMackonky agarWhen we studied the microbial composition counts in the 1st and the2nd samples there was statistically significant difference between the 1stand the 2nd samples in group (A) who fed exclusive breast milk as Pvaluewas 0.026, while there was no significant difference in group (B)who fed artificial milk or group (C) who fed mixed milk as in group (B)the P-value was 0.739 and in group (C) it was 0.459.So in our study we found that Enterobacteriaceae family andEnterococcaceae family played a major role in the intestinal bacterialcomposition of preterm infants while pseudomonads family and fungiplayed a minor role.We found also that normal E.coli was predominant in breast-fedbabies and enterococci were also important and the numbers ofpathogenic E.coli, Klebsiella and Candida were always predominant informula-fed babies and the only case of pseudomonas was reported withformula fed baby.Also we found that the risk to develop NEC is lower in infants whofed breast milk than infants who fed artificial milk.