The impact of irrigation of breast on colonization of breast milk

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Breast milk well-being is one of the fundamental components in taking care of untimely new-born children. For the most part in beginning of breast taking care of, various techniques for cleaning, for example, using regular cleansers like water and soaps are utilized to take out the plausible microbes. The necessity of the usage of such items has not been mentioned in some studies, and even at the time of comparison, different results have been obtained. The major evaluation of breast milk culture in mothers of premature infants in NICU. As the milk samples of mothers are collected manually using or without using pump expression with and without irrigation. The collected samples were into sterile pot and it was transported to laboratory quickly for microbial culture. The results showed that the cultured bacteria in samples collected manually with and without irrigation were Staphylococcus coagulase negative, Staphylococcus aureus, Enterococcus and Klebsiella pneumoniae. As one sample without irrigation and with irrigation four samples, therefore; lack of growth of bacteria was observed in it. In pump expression samples with and without irrigation, cultured bacteria were consisted of: Staphylococcus coagulase negative, Staphylococcus aureus, Enterococcus, Klebsiella pneumonia, Enterobacteriaceae and Pseudomonas. Among the samples, in three samples of without irrigation and two samples of with irrigation, lack of growth of bacteria was observed. The results showed that cultured bacteria in pump samples were much more than manual samples.

As they contain viable leukocytes, colostrum and breast milk differ from most other secretions. The concentration of these leukocytes is higher in colostrum and decreases during the first month of lactation, meaning that mature milk contains just 2% of the colostrum cell concentration, resulting in approximately 106 to 109 cells/mL in colostrum and 105 cells/mL in mature milk. Apart from epithelial cells, macrophages (32.6%) and neutrophils (45.1%) are present at a greater quantity in relation to lymphocytes (21.3%), the latter represented mainly by CD3+ T cells (83%), almost equally distributed between CD4+ and CD8+,65 as well as Tγδ+ cells (11%), CD16+ NK cells (3-4%), and B cells (2%). More recent studies suggest that the number of macrophages in breast milk has been overestimated, as only a small proportion of these cells contains the characteristic surface markers of macrophages, such as CD14.66 In fact, macrophages may only represent 15% of breast milk leukocytes. It has been demonstrated that SIgA has the capacity to opsonize particles and microorganisms, enhancing phagocytic and microbicide activities through increased super oxide anion production by the phagocytes in the colostrum. Breast milk T cells differ both in relative abundance and quality when compared to the T cells found in peripheral blood.68 The largest proportion of TCD8+ TCRgd compared with the blood suggests that these cytotoxic T cells (CD8+) carry out selective homing from the mucosal immune system to the mammary gland.68,69 CD4+ T cells in the breast milk are also present in an activated state and express CD45RO, a surface protein associated with immunological memory. More than 70% of the B cells in breast milk are CD27+IgA- switched memory cells primed to secrete antibodies with over representation of large-sized B cells, plasmablasts, and plasma cells, which do not express the complement receptor.

Several epidemiological and experimental studies have been conducted to investigate the effect of human milk against different organisms involved in respiratory and gastrointestinal infections. These studies have demonstrated that human milk has antibodies against Shigella, Salmonella typhimurium, Campylobacter, Vibrio cholerae, Haemophilus influenzae, Streptococcus pneumoniae, Bordetella pertussis, respiratory syncytial virus, HIV, and other pathogens. Epidemiological data indicate that exclusively breastfed children are better protected against a variety of infections76 and apparently also against celiac disease in childhood77 as well as allergies and asthma,78 although studies on the latter issue still show discrepant data.79,80 It is known that the risk of death from diarrhea can be reduced from 14 to 24 times in infants fed human milk, and that the frequency of diarrhea increases as the milk is replaced by other sources, until full weaning. This effect is illustrated in a study conducted in Brazil showing that exclusive breastfeeding reduces the risk of death from diarrhea by 14.2 times, whereas partial breastfeeding is associated with a reduction of 4.2 times, both compared to the group that was not breastfed.

Considering the importance of breastfeeding as an immune supplement for healthy term new-borns, it is even more crucial in the case of prematurity. The main causes of morbidity, mortality, and sequelae in the long term in these children are sepsis, meningitis, and necrotizing enterocolitis (NEC), but there is evidence that breast milk oligosaccharides and antibodies can help protect against these diseases. One issue to be discussed is the daily amount of breast milk ingested and its effect on the incidence of infections. Two studies on premature new-borns have addressed this issue. Furman et al. found that at least 50 mL/kg/day of human milk were needed to show a decrease in the rate of sepsis in very

low birth weight infants, while Schanler et al. demonstrated that children who received the same dose from birth to 90 days old or hospital discharge showed a reduction in both sepsis as well as NEC rates. There are many recent studies investigating a possible role of breastfeeding on the risk of developing many common diseases in which inflammation plays a central role in pathogenesis. There is a wide variety of milk components that affect the development and function of the immune system and that could exert this effect, as has already been demonstrated for allergic diseases, some showing protection, others not. Several clinical studies confirm the beneficial effects of breastfeeding on the growth, development, and anti-infective defence from infancy to adulthood. Breastfeeding not only provides an ideal nutritional composition for the new-born but also represents an extraordinary immunological integration between the mother and the infant. The expansion of knowledge about the immunological composition of breast milk reinforces the importance of many components present even in small amounts in this secretion, and food used as supplement with increasingly recognized immunological value.