Retinopathy of Prematurity: Future Vision and Challenges

I read with interest the paper by Chaudhari, *et al*.(1) in the March 2009 issue of *Indian Pediatrics* and would like to congratulate the authors for broaching and researching on retinopathy of prematurity (ROP). Oxygen administration, septicemia and apnea were found to be the significant risk factors reported. This is in agreement with a retrospective study from Pakistan at a tertiary care centre where sepsis, duration of supplemental oxygen therapy, mechanical ventilation and respiratory distress syndrome were found to be significantly associated with the development of ROP(2).In a study from a tertiary care centre in Nepal, oxygen supplementation was identified as an independent risk factor for ROP(3). It is important to collect more data from the developing world to quantify the true burden of this disease. This should dictate the future resources allocated for this problem. Meanwhile, the need for the development and execution of an effective and successful screening program in developing countries can not be overemphasized.

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Bovine Colostrum in those with Immunodeficiency

Pediatricians often meet the challenge of taking care of children with recurrent infections. Gastrointestinal and respiratory infections are the causes of recurrent morbidity and significant mortality among children in developing countries. IgA is important in protecting the surface tracts like digestive and respiratory tracts and IgA deficiency, even though often transient, is the most common immunodeficiency(1). The use of bovine colostrum rich in IgA is being advised in children for prevention and treatment of various conditions(2). The rationale behind this is the fact that secretory IgA (SIgA) can resist proteolytic degradation and can survive in the harsh environments of digestive and respiratory tracts. As it is abundant in secretions like tears, saliva and mucosal linings, it is also the first antibody to come in contact with different antigens(1). Bovine and human SIgA is found to be homologous and colostrum have identified as a rich source of SIgA(2). SIgA is said to act as blocking and neutralizing antibody and also inhibit potential harmful activation of proinflammatory B pathway in the epithelium and enhance stromal clearance of antigen-NF that has breached the mucosal barrier(3). However, in those with IgA deficiency, there may be potential harmful IgG antibodies against cows' milk and ruminant serum proteins and against IgA. If the anti-IgA antibodies are of the IgE type, there may be fatal anaphylactic reactions after transfusion of blood and blood products(1). Hence, only specially washed RBCs or blood from IgA deficient

individuals are advised(1). Can the use of bovine colostrum in those with suspected immunodeficiency cause such adverse effects?

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Reply

Bovine colostrum is being promoted for prevention of recurrent respiratory and gut infections. The nutrient profile of bovine colostrum includes higher amounts of immunoglobulins, growth factors, cytokines and nucleosides, than are found in milk(1). It is also rich in oligosaccharides, anti-microbials and immune regulating factors(1). The beneficial effects of supplementation of bovine colostrums in improving body composition, aspects of athletic performance, diarrhea in persons with immunedeficiency syndromes, and NSAID-induced gastrointestinal disturbances have been reviewed(1).

In a recent systematic review on the subject, no randomized controlled trials (RCT) were identified that had evaluated the role of bovine colostrum in respiratory illness in children(2). Only one study in which efficacy and tolerability of bovine colostrum was evaluated in preventing recurrent episodes of upper respiratory tract infections (URTI) and diarrhea in children was identified(3). The mean (SD) number of episodes of URTIs occurring 6 months prior to bovine colostrum therapy was 5.94 (3.88) which reportedly decreased significantly to 1.60 (1.74), 0.99 (1.20) and 0.52 (0.91) at the end of 4 wks, 8 wks and 12 wks of bovine colostrum therapy respectively ($P<0.05$). On critical appraisal of this study(3), there appear to be significant limitations. It is an intervention study. There is lack of clarity on the number of episodes in different time periods of observation used for comparison. The baseline is number of episodes in over 6 months. This data should have been converted to monthly episodes and then compared to the number of episodes at 4 weeks, 8 weeks and 12 weeks. Otherwise the number of episodes over 6 months cannot be compared with those in 4 weeks. Also, it is not clear if only children with more than 6 episodes of URTI were included as the range of episodes reported in the paper range from 0- 20(3). There are a few studies where bovine colostrum has been used in treatment of diarrheal diseases, some of which are in children(4-6).

Reviewing the literature, the routine use of bovine colostrum in care of children with recurrent infections cannot be recommended at present. More so, there are no studies in children with proven IgA deficiency. There is evidence for absorption of colostral immunoglobulins in newborn animals; this absorption significantly reduces after 24- 36 h of age(7). However, there are no studies in children to quantitate the absorption. The risk of hypersensitivity reactions with use of bovine colostrum in IgA deficient individuals is a theoretical possibility with no studies evaluating this aspect.

In the absence of convincing evidence of benefit for use of bovine colostrum and the lack of studies regarding the safety in IgA deficient individuals, caution is advised for use of bovine colostrum in these individuals.

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