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EFFECT OF PROBIOTICS ON PREVENTION OF NECROTISING ENTEROCOLITIS IN PRE TERM

Paediatric Medicine

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ABSTRACT

Objective: The objective of this study is to evaluate whether prophylactic probiotics could lead to prevention or decrease severity of NEC. **Materials And Methods:** Data were collected from the preterms of age less than 32 weeks of gestation and very low birth weight infants less than 1500g admitted in SNCU of Darbhanga medical hospital. Test group received probiotic supplementation(mixture of Bifidobacteria bifidum and lactobacillus acidophilus) along with expressed breastfeed twice a day and control group received only breastfeed. **Results:** Result showed positive effect of probiotics on prevention and decreasing severity of Necrotising enterocolitis.

KEYWORDS

Probiotics, Necrotising Enterocolitis, Preterm,very Low Birth Weight

INTRODUCTION:

Necrotising enterocolitis is a serious disease that affects the bowel of premature infants in the first few weeks of life. Although the cause of NEC is not entirely known, intestinal dysbiosis and disordered immunity play a role .NEC is a significant cause of mortality and morbidity in preterm and very low birth weight newborn. It is the most common gastrointestinal emergency in newborns .NEC is a multifactorial disease that results from interaction between the loss of mucosal integrity and the host response to that injury . The newborn babies GI tract is sterile right after the birth but colonisation of bacteria starts in a short while. Colonisation delay is the result of GI tract prematurity, internal feeding restriction and wide administration of antibiotics. These factors may cause aberrant Bacterial colonisation in the preterm infant's GI tract. Recent studies have shown that administration of pro biotic components reduces the NEC incidence and mortality rate in preter who weigh less than 1500 g. Studies have shown that orally administered non-enteropathogenic bacteria can colonise the gut of the newborn and reduce colonisation with pathogenic strain.However choosing the type of best suited probiotics and effective dose is still a question. Hence in this study we tried to evaluate whether prophylactic administration of probiotics can reduce the incidence, severity and death due NEC.

OBJECTIVE:

The objective of this study is to evaluate whether prophylactic probiotics could lead to prevention or decrease severity of NEC.

METHODS:

This prospective randomised double-blind controlled trial was carried out in the neonatal care unit of Darbhanga medical College and Hospital, Bihar. Preterm infants of gestational age less than 32 weeks and very low birth weight infants less than 1500 g who fulfilled the eligibility criteria (started feed enterally and survived beyond 48 hour of life) were included in the study. Newborn babies less than 750 g and more than 1500 g and neonates with congenital heart disease congenital malformations and immune system deficiency were excluded from the studySample size of 150 were selected 75 were randomised to test group and 75 to control group by simple random sampling .Test group received probiotic supplementation(mixture of Bifidobacteria bifidum and lactobacillus acidophilus) along with expressed breastfeed twice a day and control group received only breastfeed.

Primary outcome measures were (i) feed tolerance in terms of days required to reach full entail feeding, (ii) Length of hospital stay, (iii) Morbidities such as NEC sepsis and death due to NEC.

Babies were weighed daily and monitored for daily increment in feed volume, abdominal girth, appearance of erythema of abdominal wall, loose stool with blood, vomiting and oral gastric tube section more than 50% of the previous feed.

Chi-square and t- tests were used to compare variables between the two groups. P value less than 0.05 were considered significant. The power of the study was 80%.

RESULT:

During study period total 380 preterm VLBW newborns were admitted in NICU , 150 newborn were randomly selected .Out of which 75 were given probiotics along with breastfeed and rest 75 were not.

The incidence of NEC was significantly lower in the test group with compared to control group . (3 out 75 cases developed NEC(2.7%) as compared to 12 out of 75 neonates (9.3%) of control group ;p=0.001).

Daily weight gain was significantly higher in neonates receiving probiotics along with breastfeed. The no days required to reach full enteral feeding was significantly low in babies who received probiotics.Hence feeding tolerance was better in probiotic exposed group.The severity of NEC and duration of hospital stay was significantly lower in test group.The mortality was also significantly lower in the neonates receiving probiotics 3 of 75 (4%) vs 11 of 75 (14.6%) ; p=0.032).

DISCUSSION:

Necrotising enterocolitis generally thought to be multifactorial, common risk factors include low gestational age at birth, low birth weight, chorioamnionitis, mechanical ventilation and many more. Pre term neonates are more susceptible to intestinal injury due to underdeveloped nature of their intestine, Specifically preterm neonates lack several GI defence mechanisms such as gastric acid , digestive enzymes , mucus production, peristalsis and polymeric immunoglobulin A (IgA). All these critical defences which are underdeveloped in preterm neonates increases their susceptibility to GI injury and disease.

Administration of probiotics and commensal bacteria may protect the preterm gut against inflammation and injury via a variety of mechanisms. These mechanisms are thought to include down regulation of pro-inflammatory gene expression, upregulation of cytoprotective genes, production of Butyrate, regulation of cellular immunity. These mechanisms may work to support gut barrier maturation and function, lower the pH of the gut, inhibit other microbes and nourished colonocytes.There have been few clinical trails that have reported the protective nature of probiotics against development of necrotising enterocolitis.

CONCLUSIONS:

These results showed positive effects of probiotics on prevention and treating necrotising enterocolitis. However currently available literature do not provide any definite conclusion on which probiotic strain should be used .More relevant studies are needed to validate our finding and provide the reference for clinical prevention and treat of necrotising enterocolitis.

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