The role of microbiota on infantile colic

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Key messages:

- Growing scientific evidence suggests a link between the alterations in microbiota and infant colic.
- Limosilactobacillus (L) reuteri (previously known as Lactobacillus reuteri) DSM 17938 is the probiotic strain with the highest evidence of efficacy and can be recommended for breastfed infants with infant colic.
- Partially hydrolyzed formula may offer some useful alternative to intact protein in the dietary management of infant colic, but more randomized controlled trials are needed to support its efficacy.

The amount and pattern of infant crying are age-dependent and change during the first months of life. There is an increased duration of crying in the first weeks of life, reaching a maximum between 6 and 8 weeks of age and then declining to more stable levels around 12 weeks of age.

The Rome IV criteria has drastically reviewed the clinical definition of infant colic (IC). According to it, infant colic occurs if 1) an infant is less than 5 months of age when the symptoms start and stop; 2) recurrent and prolonged periods of infant crying, fussing, or irritability reported by caregivers that occur without obvious cause and cannot be prevented or resolved by caregivers; and 3) has no evidence of failure to thrive, fever, or illness. All of the above should be present to diagnose infant colic. This occurs in both breast-fed and formula-fed infants. The etiology of IC is multifactorial, such as gastrointestinal, psychosocial, and neurodevelopmental, with increasing importance of the role of intestinal microbiota. Several studies have reported an association between IC and characteristics in intestinal microbiota such as lower bacterial diversity, higher abundance of Proteobacteria and lower abundance of Bifidobacterium and Lactobacillus.

The clinical management of infant colic includes: parental education, reassurance and empathy provided by the physician; modification of infant care and environmental routines. The treatment with pharmacological agents, like simethicone or lactase, has shown that infants with colic treated with L. reuteri DSM 17938 for 30 days not only significantly decreased crying time, but also had confirmed reduction in faecal calprotectin and RORγ/FOXP3 ratio, supporting the hypothesis of probiotic induced local and systemic reduction in inflammation. More studies are needed for better understanding of the efficacy mechanism of probiotics in infant colic.

Several studies among infants have reported an association between infant colic and characteristics in intestinal microbiota, as follows:

- A study on breast-fed infants with infant colic concluded that a new probiotic strain, L. reuteri DSM 17938, was effective and can be recommended for treatment of breastfed infants with colic.
- A recent study, including 345 infants with colic, showed that infants with colic treated with L. reuteri DSM 17938 are around 12 weeks of age. The Rome IV criteria has drastically reviewed the clinical definition of infant colic (IC). According to it, infant colic occurs if 1) an infant is less than 5 months of age when the symptoms start and stop; 2) recurrent and prolonged periods of infant crying, fussing, or irritability reported by caregivers that occur without obvious cause and cannot be prevented or resolved by caregivers; and 3) has no evidence of failure to thrive, fever, or illness. All of the above should be present to diagnose infant colic. This occurs in both breast-fed and formula-fed infants. The etiology of IC is multifactorial, such as gastrointestinal, psychosocial, and neurodevelopmental, with increasing importance of the role of intestinal microbiota. Several studies have reported an association between IC and characteristics in intestinal microbiota such as lower bacterial diversity, higher abundance of Proteobacteria and lower abundance of Bifidobacterium and Lactobacillus. The clinical management of infant colic includes: parental education, reassurance and empathy provided by the physician; modification of infant care and environmental routines. The treatment with pharmacological agents, like simethicone or lactase, has shown that infants with colic treated with L. reuteri DSM 17938 for 30 days not only significantly decreased crying time, but also had confirmed reduction in faecal calprotectin and RORγ/FOXP3 ratio, supporting the hypothesis of probiotic induced local and systemic reduction in inflammation. More studies are needed for better understanding of the efficacy mechanism of probiotics in infant colic.

There is evidence suggesting that partially hydrolyzed formula (pHf) use in non-exclusively breastfed infants may be associated with decreased colic incidence compared with infants, fed intact protein infant formula. pHf may offer some useful alternative to intact protein in the dietary management of common FGIDs, although well-designed, randomized trials are needed to allow recommending the use of pHf for treatment in infants with FGIDs.

References

10. Due to reclassification of Lactobacillus genus into groups of closely related species, Lactobacillus reuteri is renamed to Limosilactobacillus reuteri (see infographics at page 9)