Lactoferrin impact on gut microbiota in preterm infants with late-onset sepsis or necrotising enterocolitis: the MAGPIE mechanisms of action study

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Plain English summary

The MAGPIE mechanisms of action study

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Plain English summary

Around 8000 infants are born very preterm in the UK every year, some of whom develop serious problems, including sepsis and severe gut problems. Infants who receive breast milk have fewer problems, perhaps because it contains anti-infective proteins, such as lactoferrin. Lactoferrin supplements made from cow's milk were tested in a large trial: the Enteral LactoFerrin In Neonates (ELFIN) trial. Our study, the Mechanisms Affecting the Gut of Preterm Infants in Enteral feeding (MAGPIE) study, recruited some of the infants who had joined the ELFIN trial and aimed to find out how lactoferrin works in the gut by examining changes in the pattern of bacteria or chemicals.

We studied 479 preterm infants born at 12 hospitals and collected > 30,000 stool and urine samples so we could explore if there were more 'healthy bacteria' in the gut or changes in the pattern of chemicals in the urine or stool. We also looked at gut tissue in infants who needed an operation.

We found that lactoferrin reduced the level of one type of bacteria (*Staphylococcus*), but the overall effect was small compared with other factors, such as the age of the infant. We saw important changes in gut inflammation in infants who needed bowel operations.

Extra lactoferrin from cow's milk does change the pattern of gut bacteria, but does not reduce sepsis or gut problems in preterm infants. Chemical differences in the urine before infants became unwell can be explored in future studies to help doctors understand which infants develop disease or to provide an early warning signal. The study also shows that it is possible to collect a lot of samples from lots of hospitals without any risk to the infants. This will help doctors to improve the understanding of gut function in high-risk infants.

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