Diarrhoea due to breast milk: case of fucose intolerance?

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SUMMARY An unusual form of diarrhoea is reported that was relieved when breast feeding was stopped. Chromatography to estimate sugars in the faeces should be performed for all infants with unexplained diarrhoea before changes are made in the diet.

Diarrhoea in breast fed infants is rare. We describe an infant who had severe diarrhoea when breast fed but who was not intolerant of lactose.

Case report

A first born baby girl was delivered normally at term weighing 3370 g. She was entirely breast fed, but passed profuse watery yellow stools up to five times a day from the age of 1 week and though weight gain was always satisfactory this necessitated admission to hospital. No bacterial or viral pathogens were isolated from the stools, but they contained a reducing substance that was subsequently identified by paper chromatography as fucose.¹ Polymers containing fucose were also seen, and the pattern of oligosaccharides was similar to that found in human milk. Breast feeding was stopped and Pregestemil was substituted for a short time; thereafter she was fed on SMA (Wyeth). The diarrhoea has not recurred, and she remains well at the time of writing. There was no relevant family history.

Discussion

Human milk is a rich source of oligosaccharides, in contrast to cows' milk that contains only the disaccharide lactose in a concentration of 46 g/l. About 25 oligosaccharides have been detected in human milk with a total concentration of about 18 g/l,² and some of their structures have been described.³ In contrast the concentration of lactose in human milk is about 70 g/l.⁴ Free fucose (6-deoxy-L-galactose) does not occur in human milk, but it is a constituent of several oligosaccharides that do occur in concentrations of about 1.3 g/l.

Unexplained diarrhoea in a new born breast fed infant in association with the finding of a reducing substance in the stools suggested a diagnosis of

congenital lactose intolerance (lactase deficiency). This is usually treated by feeding with a milk free of lactose, and the life long exclusion of cows' milk products from the diet. The avoidance of lactose would have been unnecessary for this infant. In the light of our experience with this infant, and of two others known to one of the authors (JS), we suggest that sugar chromatography should be carried out on the stools of all infants with unexplained diarrhoea before changes are made in the diet.

The mechanism of the diarrhoea is not clear. It is possible firstly that fucose liberated from oligosaccharides was not absorbed, and diarrhoea ensued in a way similar to that in glucose galactose malabsorption. Secondly, it may be that the infant lacked the appropriate enzymes to hydrolyse these oligosaccharides, again resulting in an osmolar diarrhoea. Bacterial hydrolysis of these oligosaccharides in the large bowel would release fucose, which would not be absorbed from the bowel itself, and the fucose could therefore be identified on the chromatogram. In the absence of further studies, however, it is not possible to be certain.

Counahan and Walker-Smith found oligosaccharides in the stools of five of 51 infants tested, four of whom were breast fed.⁵ These oligosaccharides were not characterised. Because oligosaccharides occur in breast milk it seems unlikely that the oligosaccharides in the stools were entirely of bacterial origin as these authors suggest.

This type of intolerance to human milk is rare, and we could find no previously published reports.

References

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