Differentiating milk allergy (IgE and non-IgE mediated) from lactose intolerance: understanding the underlying mechanisms and presentations

INTRODUCTION
Children with food allergy and, in particular, infants with suspected adverse reactions to cow’s milk, commonly present to primary care. It is thought that 6–8% of children aged <3 years have a food allergy and up to 4.9% have a cow’s milk allergy.1

Inconsistencies in the management of food allergy prompted the commissioning of projects such as the National Institute for Health and Care Excellence (NICE) clinical guideline on the diagnosis and assessment of food allergy in the community1 and in 2014 the NICE Clinical Knowledge Summary looking specifically at the management of milk allergy.2

It has been shown that GPs’ knowledge of these guidelines is poor. Inconsistencies remain in the management of milk allergy, with a particularly lengthy time period and multiple consultations before diagnosis.3

There is anecdotal evidence of confusion between lactose intolerance and milk allergy among both patients and physicians, which could result in unnecessary dietary restriction or avoidable reactions. Terminology such as suspected ‘milk allergy’, ‘milk intolerance’, and also ‘lactose intolerance’ are often used without a clear sense of the different meanings, understanding of the different mechanisms that underlie them, or the dietary implications of the diagnosis. The management of these conditions is distinctly different, and inappropriate recognition or management may have significant implications for the patient. In the last 15 years, there have been many discussions on the nomenclature of reactions to foods, including milk.4

Coexisting with food allergy is an estimated 2% of children with coeliac disease.5

Lactose intolerance
Lactose intolerance results from a reduced capacity to digest lactose, a sugar. It causes symptoms only in the bowel, for example, abdominal pain, bloating, flatulence, and diarrhoea. Importantly, it is not a cause of rectal bleeding.6 Congenital lactose intolerance is very rare and presents only in isolated populations, for example, some Finns and Russians.7 Primary lactose intolerance develops when levels of the enzyme lactase naturally reduce, which usually occurs after 3 years of age in some populations (for example, Africans and Asians). Secondary lactose intolerance presents as a result of mucosal damage, usually following severe gastroenteritis but also when the epithelium is damaged such as in coeliac disease and cow’s milk allergy. It is usually reversible once the epithelial lining has repaired. Expect after a gastrointestinal infection, infants with gastroenteritis may present with symptoms of non-IgE-mediated disease, which are commonly wrongly labelled as symptoms of intolerance, using either the terms ‘lactose intolerance’ or ‘milk intolerance’. See Box 1 for symptoms of food allergy.

Cow’s milk allergy
Milk allergy can be either immunoglobulin E (IgE) or non-IgE mediated. IgE-mediated reactions typically occur immediately after ingestion whereas non-IgE mediated are delayed and take up to 48 hours to develop, but still involve the immune system. It is the symptoms of non-IgE mediated disease, which are commonly wrongly labelled as symptoms of intolerance, using either the terms ‘lactose intolerance’ or ‘milk intolerance’. See Box 1 for symptoms of food allergy.

MANAGEMENT
Lactose intolerance
Children with suspected lactose intolerance do not usually require any testing and should improve within 48 hours on a low lactose diet. (It is the sugar, lactose, which needs to be reduced in the diet.) In secondary lactose intolerance, for example after severe gastroenteritis, lactose can usually be tolerated again by 6 weeks. The World

MECHANISM AND SYMPTOMS
Lactose intolerance
Lactose intolerance results from a reduced
Health Organization suggests an infection should have lasted for 2 weeks before consideration of lactose intolerance. Breast feeding should continue, despite the high lactose content of breast milk, and maternal dietary restrictions will not reduce this. Unless there is an enteropathy, with small bowel damage causing secondary lactose intolerance, most infants with cow’s milk allergy can tolerate lactose.

Cow’s milk allergy
An infant with suspected IgE-mediated milk allergy will require testing for specific IgE to milk (skin prick test or blood tests). Infants with suspected non-IgE-mediated disease do not need these tests. Dietary management involves removing the allergenic protein from the diet. All dairy products must be removed from the diet of a breastfeeding mother if milk allergy is suspected in the infant and calcium supplements given. In a formula-fed infant, choice of formula is determined by the severity of the symptoms. Most infants respond to extensively hydrolysed formulas, where the milk protein is broken down. Amino acid formulas should be reserved for severe symptoms and those not responding to an extensively hydrolysed formula.

An amino acid formula should also be used first line if top-up feeds are required in an infant who is exclusively breast fed and shows symptoms suggestive of cow’s milk allergy. Acquisition of tolerance in cow’s milk allergy should be considered after at least 6 months on a diet free from milk protein. It is likely that tolerance to extensively baked milk products will occur before that to less well cooked milk.

Box 2 summarises the differences between non-IgE-mediated cow’s milk allergy and lactose intolerance. Some other important facts on diet in milk allergy:

- soya is not recommended before 6 months of age due to it containing isoflavones, which may exert a weak oestrogenic effect. There is also a risk of cross-reactivity: up to 14% of those with IgE-mediated cow’s milk allergy also react to soya and up to 60% of those with non-IgE-mediated cow’s milk allergy.
- rice milk is not recommended in those aged <4.5 years due to the arsenic content; and
- there is cross-reaction between mammalian milks. Goat’s milk and products are not suitable for infants with cow’s milk allergy.

CONCLUSION
There are important differences between lactose intolerance and milk allergy. Knowing these differences should result in increased recognition of milk allergy.
and reduce the incorrect ‘labelling’ of children as having ‘lactose intolerance’ or ‘milk intolerance’. The appropriate tests can then be requested and appropriate diets commenced. As a result, symptoms should resolve more quickly, reducing the economic burden and giving children and their families an improved quality of life.

Further details on the appropriate management of milk allergy in primary care, along with an algorithm for assessment and diagnosis, are available in the form of the Milk Allergy in Primary Care (MAP) guideline.8

**Provenance**
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