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COWS' MILK ALLERGY

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Cows' milk allergy can cause a variety of symptoms, particularly in young infants, as illustrated in the following case studies. These case studies illustrate the importance of health professionals recognising possible cows' milk allergy and the importance of prompt referral for expert dietetic care, as treating some of these infants and young children can be far from straightforward.

Case Study 1: Lactose/dairy intolerance and weight loss

Martin was referred to the Paediatric Dietitian with the referral simply stating 'lactose/dairy intolerance and weight loss'. He was the fifth of five children - the others were 19, 17, 15 and 13.

There was no significant family history of allergy or atopy. He had been breast fed for six months and became colicky if mum ingested lots of cows' milk. Once he was started on formula at the age of six months he stopped gaining weight and developed eczema - he was also described as having a constant cold and of being 'chesty' since birth.

At the first appointment, his weight was 7.9kg (9th-25th centile), at a length of 73.4cms (50th-75th centile) - so he was underweight for his length. Mum had tried soya formula and felt that he was a little better, but symptoms had not completely resolved. He was very delayed with weaning; he would only eat smooth food and gagged on lumps, he also was refusing finger foods.

The initial aim was to address the weight and possible allergy issues by giving an amino acid formula and also an amino acid based weaning food. I arranged to see him in six weeks; if texture was still an issue at that stage, I assured Mum that I would arrange assessment by a Speech and Language Therapist.

At follow up, the eczema had gone, his chest no longer rattled and his nose had dried up; his parents were thrilled. His weight was 8.46kg (9th-25th), length

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74.6cms (50th-75th centile), so his weight had improved, but not dramatically in relation to his length. In addition, there was some improvement in feeding behaviour. They had found the amino acid based weaning food very useful as it provided an appropriate breakfast and could also be used as a nutrient-dense base for puddings with the addition of fruit purees. The family were advised to follow a milk-free diet for at least six months before challenging with cows' milk.

At 16 months of age the family were advised to challenge with milk - the chest and nasal symptoms returned, so he went back on to a milk-free diet. The family were advised to stop the amino acid weaning food as he was now on a varied diet. It was suggested that the family try the new 1+ liquid soya drink, particularly as he still would not drink the amino acid formula. He refused the soya drink and was, therefore, started on calcium supplements.

When Martin came back at 19 months, he was having cows' milk on breakfast and milk containing foods (e.g. biscuits, crisps) without problems. He was not having any amino acid formula and wouldn't drink soya. His weight was 10.7kg (25th-50th), height 82.6cms (50th). There was a slight dip in his weight centile, which led to concerns that this was due to dairy in the diet. Mum was encouraged to try increasing full fat dairy in diet to assess the effects on his symptoms and weight.

It was planned to see Martin one last time to check his weight. When he came to clinic aged 22 he was 11.3kg (50th centile), at an approximate height (he was not very co-operative!) of 84.5cms (25th-50th centile). He was on a normal diet and, apart from a snotty nose, he was symptom free. I advised Mum to stop the calcium supplements and to try and ensure that he had three portions of dairy foods in the diet per day. I congratulated Mum on completing this part of her child's journey and discharged.

Case study 2: Amino acid formula

Penny and Clare were born by caesarean section. Mum was unwell after the birth and so they were bottle fed from birth. They always vomited, but this probably got worse after a week when they were changed from ready-to-feed liquid formula to powdered formula. They were projectile vomiting after feeds and in between feeds.

They were unsettled, passing painful wind, colicky, snuffly and wheezy. They struggled to pass a stool, but then it would be liquid, mucousy and offensive. Parents tried colic drops and gripe water but they made no difference. At eight weeks the parents tried a Comfort type formula but it made the symptoms worse. At 12 weeks they tried a lactose-free formula - the twins were more unhappy and still vomiting but their stools improved.

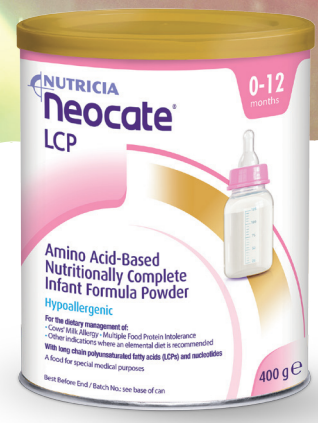
The girls were first seen at four months and the parents were advised to try an extensively hydrolysed formula and to delay weaning to as near to six months as possible. A progress call after a week revealed worsening symptoms of loose stools and reflux, but they did seem more settled. However, as the other symptoms did not improve, the girls were changed to an amino acid based formula after about a fortnight.

After a further week, their symptoms had started to resolve. They were screaming and crying less. They were less miserable and were only opening their bowels once a day. Weight and length centiles improved and hair growth improved - even though weight gain hadn't been given as an initial concern.

Once they started weaning, they seemed to react to many of the foods with colic type symptoms, so the family were given the amino acid based weaning food which helped to improve the nutritional adequacy of the diet. Parents were advised to leave foods that caused colic for a few weeks and then try again. Parents were reluctant to try new foods

Cow's Milk Allergy

Management



No.1 Amino Acid Formula in the UK

- Fast and effective **resolution of symptoms** in 3 to 14 days[1,2]
- Enables **growth**[3,4]
- Optimal **nutrient** profile[5,6]
- Superior **palatability**[7]

6 months +

1-10 years

1-10 years

NUTRICIA
Neocate
from birth to ten years

1. De Boissieu D, Matarazzo P, Dupont C.J Pediatr 1997;131(5):744-747. 2. Vanderhoof JA, Murray MD, Kaufman S et al. Jpediatr 1997;131 (5): 741-744. 3. Niggemann B, Binder C, Dupont C et al. Pediatr allergy immunol 2001;12(2):78-82. 4. Isolauri E, Sütas Y, Makinen-Kiljunen S et al. J. Pediatr 1995;127(4):550-557. 5. Commission Directive 1999/21/EC (FSMP) and Commission Directive 2006/141/EC (as laid down in the infant formulae and follow-on formula guidelines). 6. Codex Stan 72 –1981 (revision 2007). 7. Data on file 2013, Neocate LCP vs Nutramigen AA

The presentation of cows' milk allergy is often far from textbook and with such a diverse presentation - from colic to constipation and eczema to diarrhoea

and by nine months they were still on a very restricted diet; parents had not added in meat or soya. They were once again encouraged to do so.

Just before their birthday, the girls had episodes of green, mucousy and blood stained stools on a couple of occasions. Gastroenteritis was suspected, but nothing grew on cultures. On discussion with the paediatrician, blood was taken, which was negative for coeliac disease, but showed they had low ferritin. Both girls were started on iron and advice on good iron sources was given.

As a precaution, the family were advised to wait until 18 months for milk challenge, but to try soya in the meantime. Unfortunately, this seemed to cause renewed symptoms, so they were advised to use a coconut based milk substitute instead, as they were thriving well and not really drinking Neocate. At 18 months, parents used the milk ladder to challenge the girls. They completed the first couple of steps without problems, but had a change in stools with the next step. Parents were advised to retry once stools had normalised.

DIETETIC MANAGEMENT

These case studies clearly illustrate many of the complexities of dealing with infants and young children. The presentation of cows' milk allergy is often far from textbook and with such a diverse presentation - from colic to constipation and eczema to diarrhoea - it can be difficult to diagnose.

As is emphasised in the NICE guideline (1), the history is key. Careful questioning regarding any other allergic history in the child, but also in the parents and siblings will identify the presence of atopy, such as food allergy, asthma, eczema, allergic rhinitis and hayfever. However, an 'allergic' child may be born in to a family previously without any atopic history. In the end, if other causes of symptoms have been ruled out (e.g. thickener in the feeds of a vomiting child, emollients and steroid creams for a child with eczema, colic drops and time for a baby with severe colic), then a clinical trial of milk-free diet is probably warranted. This is best carried out before weaning, before the complexities of a milk-free diet have to be faced.

Since even in babies (or at least parents) a placebo effect may be at work, it is increasingly felt important that a cautious early challenge of milk is recommended, even if the infant did seem to improve on the exclusion formula. An exclusively hydrolysed formula is the best option for most infants, but in the case of previous anaphylaxis, suspected allergic colitis, prolonged symptoms, or failure to improve on an extensively hydrolysed formula, an amino acid based formula will be the best option. This is because up to at least 10 percent of infants will still have symptoms with an extensively hydrolysed formula, because of protein fragments, while the totally synthetic nature of amino acid formulas means that no such allergic response is possible.

The issue of soya formula is also raised by one of these case studies. We have fewer infants put on soya formula by GPs and Health Visitors, although this does occur, the advice

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is still that soya formula should not be used as a replacement for a cows' milk formula, especially in infants under six months (2, 3). Over six months, soya formula may be used, if advised by a dietitian, and soya products such as yoghurts and custards can be useful additions to the weaning diet.

The difficulty of finding suitable foods to feed a milk allergic infant is also well illustrated by these case studies. A low allergen prescribable weaning food can do much to improve the nutrient density and variety of infants such as these, who either refuse other foods or who have severely limited choices - which can occur when there are multiple food allergies. It is important that a product such as this is used appropriately, but it is also important that it is available. Due to the difficulties of providing an appropriately calorie dense, nutritionally adequate - particularly adequate in calcium - it is important that all infants diagnosed with or suspected of having cows' milk allergy are referred to a dietitian with the appropriate competencies.

Children tend to grow out of cows' milk allergy between the ages of one (50 percent) and six years (over 90 percent) (4). The milk ladder (5) has been introduced as a resource to help with the challenge stage; a really easy resource that helps families to reintroduce milk in a controlled way. Step 1 is a malted milk biscuit, Step 2 garibaldi or digestives containing milk, right on up to fresh milk itself. Families have expressed that this takes much of the guess work and worry out of reintroducing milk. Families are told how fast to move up the ladder, from one to two days for gut-based symptoms, to three to seven days for those with more skin-based symptoms that take longer to become apparent. If the child develops symptoms, then the family go back to the step that was previously tolerated. If they try again and find the same symptoms occur, they will stay on that step for four to six months and then try again. One of the benefits of this tool is that it means that families can confidently include the amount of milk in the diet that their child tolerates.

For those who fail the challenge, alternative supermarket products are available. One soya drink is specifically designed for this age group; over two years of age all other soya drinks with added calcium can be used. If soya is not tolerated, the dietitian may suggest an alternative based on, for instance, coconut, oats, almond or hemp fortified with calcium, giving advice to ensure that calorie and protein requirements are met from other sources. Rice drinks are not suitable under 4.5 years due to the presence of trace amounts of arsenic (5).

Much still needs to be done to educate our primary care colleagues concerning allergies, particularly in infancy. The NICE guideline (1) can help in this process, as will the milk allergy in primary care (MAP) guidelines (6), but we need to do all we can, as opportunities arise to educate our fellow health professionals on the robust, evidence-based treatment of food allergy in infancy.

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Questions relating to: *Cows' milk allergy*
Type your answers below and then **print for your records** or print and complete answers by hand.

Q.1	Name four symptoms that may be caused by cows' milk allergy?
A	
Q.2	Describe the sorts of interventions that may be appropriate to try before considering cows' milk allergy.
A	
Q.3	Why is it important that infants and children with cows' milk allergy should be referred to a dietitian?
A	
Q.4	What community based guidelines have been produced to help with the appropriate treatment of cows' milk allergy in the community?
A	
Q.5	Why might an amino acid formula be the most suitable option?
A	
Q.6	When can soya milks be used?
A	
Q.7	What is the milk ladder used for?
A	
Q.8	Why will the length of time that a child stays on each step of the milk ladder vary?
A	
Q.9	Describe which milk substitutes may be used from the second year of life, suggesting which may be the best option if tolerated. Also name one that should not be used in children under five and explain why it should not be used.
A	

Please type additional notes here . . .