

CLINICAL UPDATE

Cow's milk protein allergy

Identification and management of CMPA in breastfed and formula-fed infants

Kathryn Wilson

Foundation year two, general paediatrics,
Leeds General Infirmary (LGI)

Laura McDowall

Senior paediatric dietician, LGI

Donald Hodge

Philip Chetcuti

Consultant paediatricians with specialist
interests in paediatric allergies, LGI

Peter Cartledge

Specialist registrar in general paediatrics, LGI

The case discussed in this article (see Box 1) illustrates a typical presentation of cow's milk protein allergy (CMPA).

CMPA is a common food allergy which affects 2% to 7.5% of infants. It can affect infants who are exclusively breastfed or formula fed.^{1,2} However, this is less common in exclusively breastfed babies – 2% to 5% among formula-fed infants and only 0.5% in breastfed infants.^{1,3,4} It is often missed as a cause of infant distress due to its non-specific, diverse manifestations and therefore can mimic other disorders such as infantile colic, gastro-oesophageal reflux and atopic eczema.

The role of the health visitor is paramount in being aware of this condition, recognising the diverse symptoms and considering this condition as part of their assessment.⁵

Early recognition and management is important as it can provide immediate symptom relief in a distressed infant, reduce parental stress, and reduce the risk of the infant failing to thrive and developing consequences of the condition such as

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anaemia. Initial management in the community would involve a two- to four-week trial of cow's milk-free diet and reassessment of symptoms.

What is CMPA?

CMPA results from a hypersensitive immune response to one or more milk proteins.^{2,3} It can be divided into immunoglobulin E (IgE)-mediated and non-IgE mediated disease. IgE-mediated disease commonly presents early – within a week of cow's milk protein introduction – with symptoms such as urticaria, eczema, wheeze, vomiting and diarrhoea. Non-IgE mediated disease can present later and has complex symptoms that are harder to

recognise. These infants require referral to a specialist paediatrician.¹

Recognising CMPA

Cow's milk allergy typically presents within one to two weeks of introducing cow's milk formula. It has a broad spectrum of symptoms, which affects more than one body system (see Figure 1).^{1,2,6}

Symptoms can be mild, but can also include life-threatening anaphylaxis needing emergency resuscitation. Symptoms that should raise concern and prompt referral to a paediatrician include blood in stools, significant weight loss (greater than 20% of birthweight), difficult breathing or failure to thrive.¹⁻³

How can CMPA be diagnosed?

Initial diagnosis involves recognising the symptoms and conducting a comprehensive history and examination of the infant. A family history of asthma or eczema also makes this diagnosis more likely.

If CMPA is suspected, there is no single test that will confirm this absolutely. Diagnosis is based on dietary elimination of cow's milk to demonstrate whether this improves the symptoms and a 'challenge' in future (described below).¹

Food elimination and challenge has been regarded as the gold standard in diagnosis. However, skin prick testing (SPT) and serum measurements of IgE antibodies⁶ are also used as a guide to this condition's management, and an experienced paediatrician will decide if this is indicated.

How should this infant be managed?

The main principle of management is to avoid allergens while maintaining a balanced diet that allows the infant to thrive. This can be successfully managed at first in the community with early recognition and initiation of an elimination diet. Referral to a paediatrician is required in most cases to confirm the diagnosis.

For formula-fed infants, extensively hydrolysed formulas – composed of digested, incomplete proteins that are less allergenic – should be substituted for cow's milk formulas. However, about 10% of infants are intolerant to these and will

Box 1. Case study: suspected cow's milk allergy

You visit the mother of a 12-week old baby who has been exclusively breastfed since birth. The mother recently injured her back and has been given an opioid-containing painkiller and a sedative. Her GP has advised her to stop breastfeeding while on these medications.

The baby was started on a standard infant formula, which she took well for seven days. However, for the last week she has been vomiting the majority of her feeds. The infant had already seen her GP a number of times, as she is being treated for atopic eczema. Her mother also reports that the eczema is worse than usual.

You examine her and note that she is a happy baby who does not appear to be 'unwell'. Although she is not having problems breathing, you do notice she has a very quiet wheeze.

- What is happening in this case?
- What is cow's milk allergy?
- How can cow's milk allergy be diagnosed?
- How should this infant be managed?
- Can this infant ever have cow's milk again?

require amino acid formulas,^{9,10} which are created from constituent amino acids. These formulas have a bitter taste and some infants may refuse them.^{11,12}

Management of breastfed infants relies on reducing the maternal allergen load, so the mother should strictly eliminate all cow's milk products from her diet and continue to breastfeed.² If symptoms persist, other allergens may be contributing to the symptoms and referral to a specialist may be required. Multiple allergen avoidance should be done under the supervision of a dietician.

In both breastfed and formula-fed infants, any solids in the infant's diet must be dairy free. Reactions to other foods may also occur,^{2,4} therefore a stepwise food introduction should be followed. To do this, one main allergen – wheat, soya, nuts, eggs or fish – may be introduced each week and symptoms monitored. It is worthwhile introducing wheat first, as delaying this beyond 26 weeks can lead to increased risk of developing diabetes and coeliac disease.^{13,14}

Dietetic support should be sought to ensure adequate nutrition in the infant and mother, with maternal calcium supplements for breastfeeding mothers. The weight of the infant should be monitored to ensure they are not failing to thrive. Symptoms can also be relieved with the use of emollients and antihistamines.

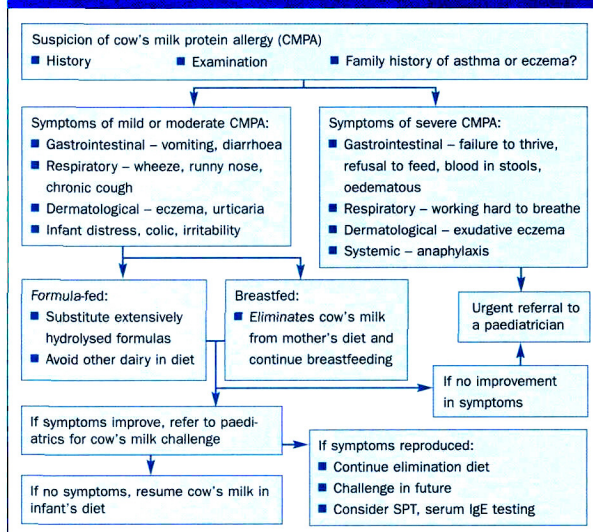
If the elimination diet fails to improve symptoms, it should be discontinued and a paediatric specialist consulted.

Can the infant have cow's milk again?

By school age, 95% of children outgrow milk allergy.¹⁵ If symptoms improve or disappear over two to four weeks with an elimination diet, a challenge with a cow's milk protein can be performed by referring the infant to a paediatric specialist.² A challenge involves giving a small amount of cow's milk that is doubled in dose every 15 to 30 minutes in a controlled medical environment while monitoring response. Challenges should be performed under medical supervision. Doctors should be aware that, although initial reactions may have been minor, severe reactions can occur on challenge.¹

If the challenge is positive (the symptoms reappear on ingestion of cow's milk protein), the diagnosis is confirmed and the elimination diet should be continued for 12 months.² Follow up of the infant

Figure 1. CMPA: diagnosis and management²



with sequential SPT every one to two years will guide the timing of future challenges.

After a negative challenge (symptoms do not develop on ingestion of cow's milk protein), the infant should receive 250ml of cow's milk formula or an appropriate portion size for the child each day for seven days at home and be observed for any delayed reactions by parents. If no delayed reactions occur, a normal diet can be reintroduced.²

Summary

CMPA is a common food allergy that presents with diverse manifestations affecting more than one body system. Early recognition of the condition and prompt initiation of dietary elimination of cow's milk protein is important. A future challenge with cow's milk protein can confirm a positive diagnosis.

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