

Case Study: A Child's Journey with CMPA

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Freddie is an eighteen-month-old little boy in the Midlands, who was diagnosed with cows' milk protein allergy (CMPA) at three weeks of age. Freddie was born at 36 weeks gestation and weighed 1900 g at birth. Freddie was closely followed up by the dietetics department, initially for his intra-uterine growth retardation and later for his CMPA, reflux, growth and poor feeding. He has a family history of cows' milk protein and wheat allergies on his mother's side, eczema, hay fever, autism and ulcerative colitis. He lives with his mum, dad and eight-year-old brother.

Anthropometry

His weight history is as follows:

| Age | Weight | Feed |
|-------------------------|------------------------------|----------------------------------|
| Birthweight | 1900 g (0.4th-2nd centile) | Pre-term formula |
| 7 weeks (3 weeks CGA) | 3.95 kg (25th-50th centile) | EHF |
| 10 weeks (6 weeks CGA) | 5.77 kg (91st centile) | EHF |
| 14 weeks (10 weeks CGA) | 6.5 kg (75th-91st centile) | EHF |
| 22 weeks (18 weeks CGA) | 7.95 kg (75th-91st centile) | EHF and mostly milk-free diet |
| 31 weeks (27 weeks CGA) | 7.98 kg (25th-50th centile) | EHF (changed to different brand) |
| 44 weeks (40 weeks CGA) | 8.20 kg (9th-25th centile) | Neocate LCP and milk-free diet |
| 47 weeks (43 weeks CGA) | 8.6 kg (25th-50th centile) | Neocate LCP and milk-free diet |
| 1 year, 4 months (CGA) | 10.71 kg (50th-75th centile) | Neocate Advance (NGT-fed) |

Key: CGA = corrected gestational age; EHF = extensively hydrolysed infant formula; NGT = Nasogastric tube

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Introduction of an extensively hydrolysed infant formula

Freddie was initially fed a stage 2 pre-term formula from birth, but his parents had noticed that he was very constipated and irritable and had abdominal cramps and green stools. The symptoms worsened when he was changed onto a standard formula and at three weeks of age, he was trialled on an extensively hydrolysed infant formula (EHF) formula, after which his stools were softer and yellower and he was passing them more easily. Freddie was still very unsettled and irritable but his parents were eager to trial the EHF for a longer period and they were advised to continue giving him his vitamin drops (Abidec). Over the next few weeks, Freddie had several admissions for bronchiolitis and possible laryngomalacia, reflux, a poor fluid intake and constipation (for which a stool softener was prescribed). Because Freddie's symptoms on each admission were so varied, it was unclear each time whether any of these were formula-related. Freddie often refused to smile but despite this, his weight sat between the 75th and 91st centiles.

Continued symptoms on an EHF

Freddie was next reviewed in an outpatient clinic aged 31 weeks (27 weeks corrected gestational age [CGA]), where his parents reported that he was refusing his bottles (managing to drink 15 oz per day) and had a body rash, periods of diarrhoea (6-7 x per day) and constipation, bloating, restlessness and irritability whilst on the EHF. Freddie had also been started on solids, taking only 2-3 spoons three times per day and his parents had noticed that his symptoms worsened after having any jar foods containing cows' milk or traces of it and that Freddie didn't appear to react to milk-free, wheat or soya-based foods. They were concerned that Freddie was not tolerating different textures and often refused meals and that this

was impacting his weight. Although proportionate, Freddie was small overall and his weight now sat between the 25th and 50th centiles. At this point, Freddie's main treatment goals were to resolve his symptoms and to encourage and maintain overall growth. His anthropometry and diet history were checked every few weeks, whilst his biochemistry was monitored monthly by his GP. Freddie was referred to an allergy consultant and feeding clinic and was trialled on another brand of EHF, with the hope that his milk intake and tolerance would improve. His parents were advised to offer small amounts of formula every three hours.

A few weeks later, Freddie was reviewed again aged 44 weeks (40 weeks CGA) and his symptoms were worsening and his parents were distraught. He had a poor tolerance of the EHF and his rate of weight gain had slowed (weight between the 9th and 25th centiles), which was likely due to a poor intake. In this case, Freddie's red flag indicators (infants still reacting to an EHF and faltering growth) showed a need for an amino acid based formula (AAF) to be prescribed as Freddie was not tolerating the EHF and his growth was not sufficient. Neocate LCP was introduced and, at this point, Freddie was having small amounts of pureed foods per day and approximately 570 ml formula per day, which gave an overall intake of 83 kcal/kg/day. Mum didn't feel comfortable with concentrating his Neocate feeds or adding a high-calorie supplement to his milk feeds. During a telephonic review three weeks later, his parents reported that Freddie, now aged 47 weeks (43 weeks CGA), was tolerating the milk much better and drinking it more regularly and they felt that this was a huge step for them. His weight now sat between the 25th and 50th centiles and Freddie was smiling and appeared much happier. Freddie's diet was also completely milk-free and his intake was improving very slowly. He was still under the care of the feeding team, who were querying a swallowing difficulty.

Discussion

When Freddie was started on the Neocate LCP, his overall formula intake improved and his weight increased a centile within the first three weeks of trialling the formula. It was noted that although Freddie was occasionally windy or constipated, his other symptoms had resolved and he required fewer stool softeners. Freddie's biochemistry results were found to be normal at each review. Freddie also had a biopsy to rule out Hirschsprung's disease and it has been noted that, recently, he has had fewer chest infections. Due to a possible unsafe swallow, Freddie currently aged 18 months, is now fed Neocate Advance via a nasogastric tube.

Summary

This case demonstrates that CMPA is not always straight-forward to diagnose or manage in a child with complex medical and feeding issues, especially under the age of one year, and that additional vigilance is needed when monitoring a child's symptoms. Often the symptoms of CMPA are subtle and the management pathway is not always clear, especially when the child has delayed symptoms of CMPA but these worsen on an EHF and resolve on an AAF. In the above case, the child's medical conditions and poor formula intake delayed the transition onto an AAF and his milk tolerance could have been better monitored if he had been seen more regularly. It would have been of great benefit if Freddie's formula had been changed to Neocate LCP within 2-4 weeks of trialling the EHF, despite the medical and feeding complications. Overall, the introduction of Neocate LCP into Freddie's diet was effective in terms of symptom resolution and in ensuring that Freddie felt better, his intake improved and this, in conjunction with better absorption of nutrients, helped to improve Freddie's nutritional status. It was also of a great relief for his parents.

