



Case Study: Baby K

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Baby K is an 11-week-old girl who first attended the general paediatric clinic. She was referred by her GP due to suspected cow's milk protein allergy.

Background

Baby K was born premature at 35 weeks via an elective C-section due to no foetal movements. She was found to be in respiratory distress, with suspected sepsis for which she was covered with IV antibiotics for three days. She was initially commenced on IV fluids (10% Dextrose) and then fed a mixture of expressed breast milk and cow's milk formula via a nasogastric tube, she then progressed onto bottle feeds.

During this time, she presented with symptoms of loose stools, vomiting and mucous, which was ongoing after discharge. Baby K's parents requested a milk for preterm babies from their GP which improved the loose stools but the vomiting and mucous continued. Baby K then became constipated which was treated with Lactulose.

Baby K was commenced on an amino acid-formula with long chain polyunsaturated fatty acids (LCP) by her GP which resolved the vomiting, however constipation became progressively worse to the point that Baby K hadn't opened her bowels for two weeks. The GP continued to prescribe lactulose and added glycerol suppositories which caused severe abdominal pain and screaming for two hours after opening her bowels, therefore her parents were reluctant to continue with these.

Baby K's feeding started to deteriorate - only taking 1-4 oz formula every 4-5 hours - and dark smelly urine was noted.

Baby K's birth weight was between the 50th and 75th centiles and, despite difficulties, her weight at 11 weeks when she presented in clinic was the same. There was no length measured at birth, however, when she attended clinic she was on the 50th centile for length.

Baby K's family history included: Mum has asthma and Dad reported a family history of gastrointestinal problems.

Management

At the first appointment, a non-IgE mediated cow's milk allergy was suspected. Baby K had already been commenced on an amino acid-formula with LCP by her GP, however, due to constipation with this, poor feeding was a concern as it was

felt this would exacerbate constipation further. As Baby K had not been initially started on an extensively hydrolysed formula (EHF) as per iMAP guidance,¹ it was felt that dropping down to this might help resolve constipation and improve feeding. The aim was to have 7 x 100-110 ml feeds a day every 3-4 hours, which would meet her estimated requirements.² This provided 700-770 ml fluid, 469-516 kcal and 11.2-12.3 g protein a day. It was advised that if her parents noticed a reduction in wet nappies and dark smelly urine, to go to the emergency department.

A week later a telephone review was carried out. The parents reported that Baby K was much more settled on the EHF, her bowels were opening regularly, and stools were soft and yellow. Baby K's feeding had improved, she was now taking 110 ml every four hours. The parents were advised to continue with the EHF and continue 100 ml feeds every four hours.

Four days later Baby K's Dad called the department. He reported that Baby K had started to projectile vomit on all feeds, she had developed a rash on her face and her stools had become loose and watery. They had attended the out of hours GP clinic over the weekend due to her symptoms and had been advised to revert back to the amino acid-formula with LCP that Baby K had previously been on. Due to severe constipation and resulting feeding difficulties with this formula, it was agreed that Baby K should revert back to an amino acid-formula, but to trial an amino acid-formula with synbiotics Neocate Syneo, to help rebalance the faecal microbiota and subsequently soften stools.³

One month later Baby K came back to clinic for review. There were no concerns with her growth, both length and weight remained on the 50th centile. She was feeding well, 150-180 ml every four hours, and her bowels were opening regularly every 2-3 days without laxatives, and her parents reported the stools were soft and yellow. Baby K was settled on feeds, and her parents appeared calmer and less anxious. It was advised that Baby K continue on Neocate Syneo until at least 12 months of age, and it was advised that milk-free weaning was commenced at six months of age. A review appointment four months later was arranged.

Neocate Syneo Case Study Series

A series of case studies sharing experiences and best practice surrounding the dietary management of Cow's Milk Allergy, Multiple Food Protein Allergies and other conditions requiring an amino acid-based formula.

Brief telephone contact with the parents was made after three months (26 weeks of age). They had started introducing some milk-free weaning foods, and Baby K continued to have Neocate Syneo as her main dietary source. She remained settled, feeding well and bowels were opening regularly with soft stools. No further concerns were documented on the patient's medical record.

Discussion

- Research suggests that infants with allergies have an imbalance in their gut microbiota⁴
- Preterm birth, delivery by C-section and the use of antibiotics early in infancy can have a negative impact on the development of the gut microbiome and differences can be seen compared with infants delivered at term by vaginal delivery⁵
- Early nutrition has a significant impact on the gut microbiome, and where breast milk contains pre- and probiotics, standard infant formula does not. Evidence suggests that adding prebiotic mixtures to infant formula can alter gastrointestinal microbiota to resemble that of a breastfed infant which can result in better stool consistency and frequency⁶
- In this case breast milk was not available, and Baby K had ongoing symptoms of constipation with subsequent feeding issues on the standard amino acid blend. Constipation resolved on the synbiotic formula and eliminated the need for help with laxatives therefore continuing with this formula was clinically beneficial.

Conclusion

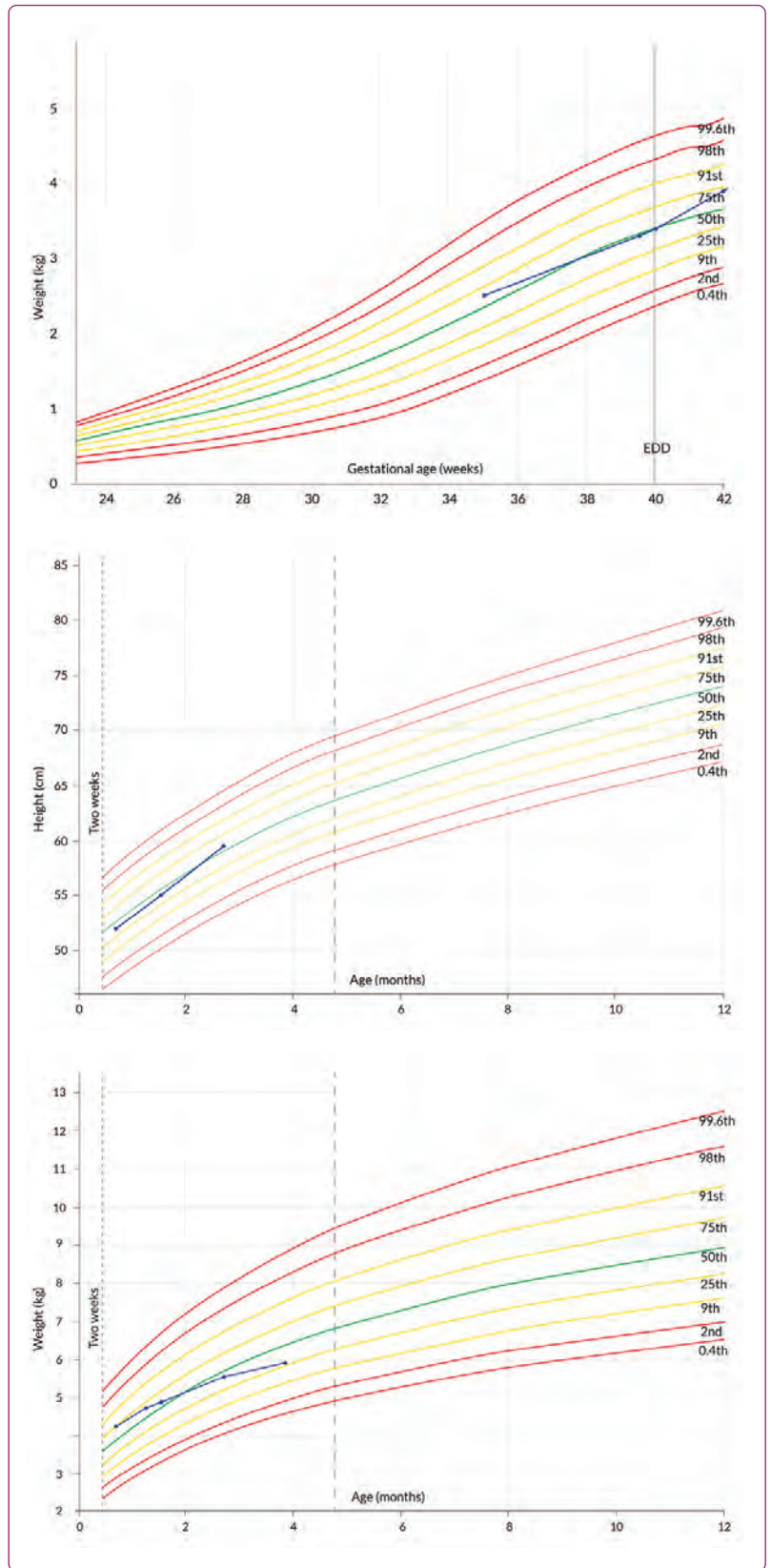
- When symptoms continue on an extensively hydrolysed formula it is important to trial an amino acid-formula
- When gastrointestinal problems such as constipation occur with an amino acid-formula, an amino acid-formula with synbiotics may be beneficial
- When breast milk is unavailable, an amino acid-formula with synbiotics has a positive impact on the bacterial flora in children with non-IgE mediated allergies.³

Product usage

- Oral nutritional supplement
 - Tube feed
 - Sole source of nutrition
 - Supplement to an elimination diet
- Calorie density: 0.68 kcal/ml (standard concentration)

Patient profile

- Anaphylaxis
- Atopic Dermatitis (AD)
- Faltering growth
- Multiple Food Allergies (MFA)
- GI symptoms
- Symptomatic on breast milk
- Symptomatic on an eHF



References: **1.** Venter CBT (2017). Better recognition, diagnosis and management of non-IgE mediated cow's milk allergy in infancy: iMAP - an international interpretation of the MAP (Milk Allergy in Primary Care) guideline. *Clin Transl Allergy*; 7: 26. **2.** GOSH (2018). Nutritional Requirements for Children in Health and Disease. January. London: Great Ormond Street Hospital for Children NHS Foundation Trust. **3.** Candy DV (2018). A synbiotic-containing amino-acid-based formula improves gut microbiota in non-IgE-mediated allergic infants. *Pediatr Res*; 83(3): 677-686. **4.** Wopereis HO (2014). The first thousand days - intestinal microbiology of early life: establishing a symbiosis. *Pediatr Allergy Immunol*; 25(5): 428-38. **5.** Gosalbes MJ LS (2013). Meconium microbiota types dominated by lactic acid or enteric bacteria are differentially associated with maternal eczema and respiratory problems in infants. *Clin Exp Allergy*; 8(6): e66986. **6.** Vandenplas YD (2014). Prebiotics in infant formula. *Gut Microbes*; 5(6): 681-687.

This case study is intended for Healthcare Professionals only.

Neocate Syneo is a Food for Special Medical Purposes for the dietary management of Cow's Milk Allergy, Multiple Food Protein Allergies and other conditions requiring an amino acid-based formula. Neocate Syneo must be used under medical supervision after full consideration of all feeding options, including breastfeeding.