

## SYNEO CASE STUDY

### BABY T

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## PATIENT PROFILE

4-week-old boy with suspected non-IgE mediated allergy to cows' milk and associated complex conditions, namely allergy to hydrolysates and multiple food allergies as evidenced by persistent symptoms with mixed feeding of breast milk (with maternal exclusion of dairy, soy and egg) and a hydrolysed rice-based formula.

- Skin symptoms
- Gastrointestinal symptoms
- Respiratory symptoms
- Feeding difficulties
- Faltering growth/Failure to thrive

## BACKGROUND

Baby T is a male infant, who presented at age 4 weeks, with irritable behaviour as well as blood and mucous in the stools, which started in the first week of life. He was born term, after a normal pregnancy and delivery, weighing 3.09kg, and was breastfed from birth. There is a strong family history of food allergy, non-IgE mediated cows' milk intolerance, and environmental allergies.

In the first week of life, the breast milk supply was poor, and he lost more than 10% of his birth weight, so Baby T was fed milk-based formula. The mother was readmitted to the maternity hospital and was treated with oral antibiotics in the second week of his life, to manage a postnatal uterine infection. During this period, the child continued to be mixed fed as the mother was unwell with limited breast milk supply. The child developed marked abdominal distention after the dairy-based feeds, but the stools were thought to be normal.

Neither the mother nor the baby was prescribed probiotics at that time. Within a few days of starting the antibiotics, the mother noted mucous and blood in his stools. His skin became dry and he was very irritable and was unable to sleep for more than 20 minutes at a time, often waking and passing flatus, and with long periods of inconsolable crying.

His weight dropped from the 15th centile at birth to the 3rd centile at age 4 weeks. As he was unsettled, and the weight gain was poor, the mother continued to give him complementary feeds of a milk-based formula and noted the amount of mucous and blood in the stool increased markedly, with increasing screaming, arching and abdominal discomfort.

He was taking frequent short breastfeeds, thought by the mother to be comfort feeding. The mother noted increased nasal congestion and difficulty breathing through his nose. He had increased discomfort and screaming just before passing watery explosive stools. He regurgitated small amounts of gastric contents several times a day.

His mother ceased dairy, soy and egg in her own diet when he was 4 weeks old, but no improvement was noted. He continued to breastfeed and the mother then tried a rice-based semi-elemental (hydrolysed) formula. There was no improvement in the unsettled behaviour or the long periods of screaming. The stools became malodorous, and the skin did not improve. His skin was sensitive, and he developed a nappy rash after the use of perfumed nappy wipes.

## MANAGEMENT

At 5 weeks of age, **Neocate Syneo** was introduced to Baby T as a supplementary feed to breastfeeding with ongoing maternal dietary exclusion diet of dairy, soy and egg. Domperidone was prescribed to support lactation and improve breast milk supply.

The child accepted **Neocate Syneo** from the first feed, and there was no issue in moving from

breastfeeds to **Neocate Syneo** alone, at age 6 weeks. Both the mother and the pediatrician are very pleased with the outcome of nutritional management, specifically the speed of symptom improvement and the ongoing excellent health of the infant.

## FOLLOW UP CARE

Maternal elimination of cows' milk, soy and egg with top-up feeds of **Neocate Syneo** resulted in appropriate weight gain, decreased irritability and improved sleep. He had ongoing small possets after each feed. Feed thickener was added to each feed and the possetting decreased.

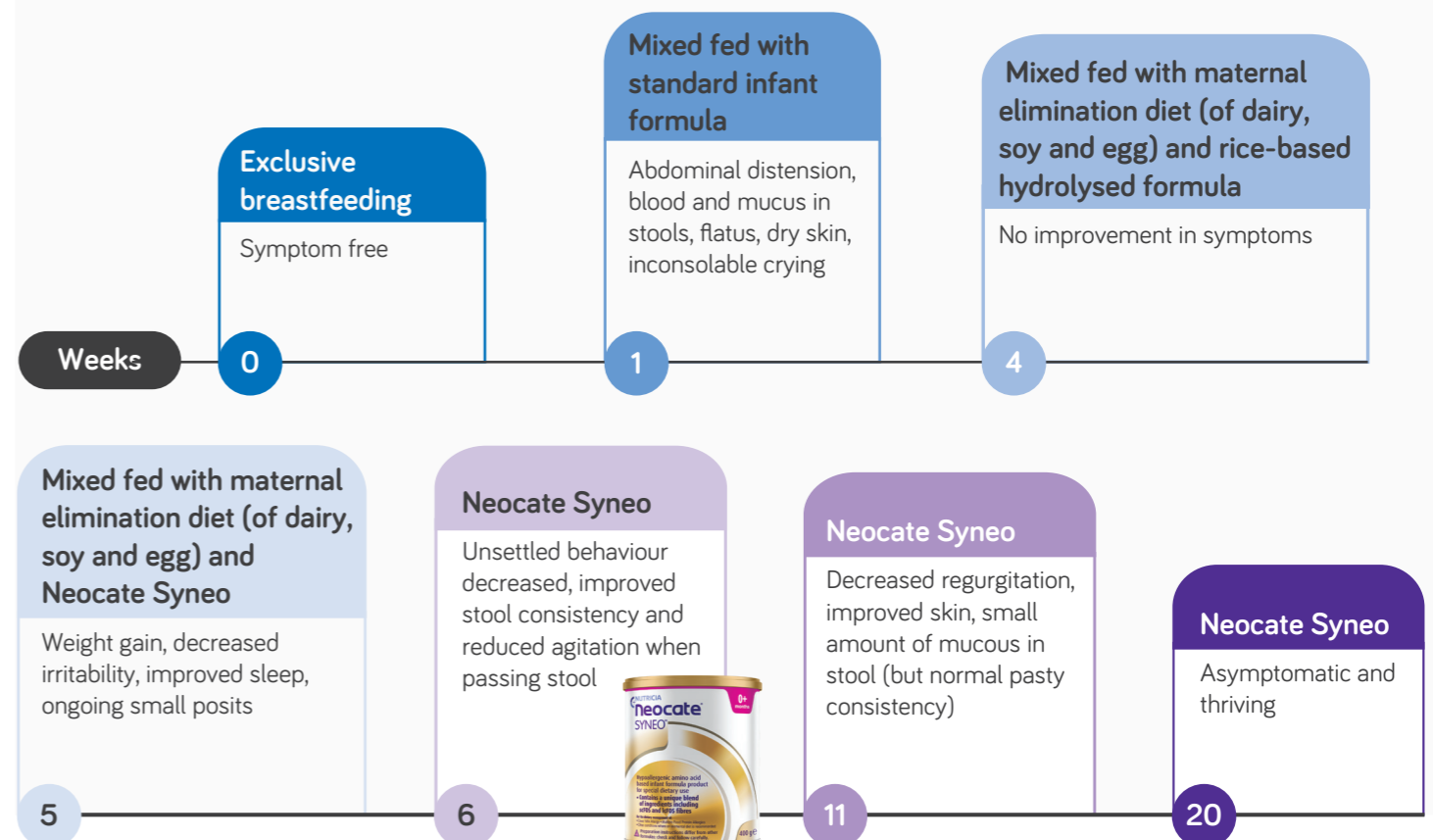
Within a week, the mother decided to cease breastfeeding, leaving him taking **Neocate Syneo** alone. The periods of unsettled behaviour decreased markedly within 24 hours and the agitation (screaming) before passing a stool decreased over the next three days, along with

an improvement in the stool, possibly indicating decreased inflammation in the gut and a change in the bowel flora.

At age 11 weeks there were still small amounts of mucous in the stool, but stools were pasty rather than loose. The episodes of regurgitation had decreased. His skin improved, and he still has some yellow scales in the eyebrows, consistent with seborrhoeic dermatitis.

His weight was tracking on the 50th centile at age 5 months, and he was asymptomatic and thriving.

## TIMELINE



## DISCUSSION

Baby T's symptoms improved over the first 24 hours of commencing feeds of **Neocate Syneo**. This infant formula is based on free amino acids which provide optimal nutrition for infants with complex conditions associated with cows' milk protein allergy such as allergy to hydrolysed formulas and multiple food allergy. In addition, it contains specific pro- and prebiotics (Bifidobacterium breve M-16V and short and long-chain fructo-oligosaccharides), which have been clinically demonstrated to improve the gut microbiota of cows' milk protein allergic infants.<sup>1</sup>



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## CONCLUSION

It is estimated that 17% of families seek help from a health practitioner to manage their unsettled infants. Less than 5% of unsettled infants have a medical diagnosis as the cause of their distress.<sup>2</sup>

Food allergy is often not recognised, and gastro-oesophageal reflux is frequently diagnosed in irritable infants, with prescription of proton pump inhibitor (PPI) medications, which have been associated with the development of food allergy.<sup>3</sup> This risk should be considered before prescribing these medications, which are ineffective in decreasing infant crying time, in most cases.

Cows' milk and soy protein allergy is estimated to affect 2% of infants and should be considered early in the management of the unsettled baby.<sup>4</sup>

Flatus, abdominal pain and distention, blood and mucous in stool, pain and irritability immediately before defecation, and poor weight gain all suggest CMPA and should prompt the health professional to consider early referral to specialist medical care and to suggest using a dairy and soy-free infant formula.

As per *ASCIA guidelines* for non-IgE mediated CMPA, Baby T was prescribed an amino acid-based formula (second choice) following ongoing symptoms on a hydrolysed rice protein-based formulas (first choice).<sup>5</sup> There is currently limited evidence on the role of hydrolysed rice protein-based formula in complex conditions associated with CMPA, such as allergy to hydrolysates and multiple food allergy.<sup>6</sup> The use of an amino acid formula containing synbiotics supported symptomatic relief as well restoration of the gut flora, moving from an adult pattern to one more similar to that of breast fed infants.<sup>1</sup>

1 Sorensen K, Cawood AL, Gibson GR, Cooke LH, Stratton RJ. Amino Acid Formula Containing Synbiotics in Infants with Cow's Milk Protein Allergy: A Systematic Review and Meta-Analysis. *Nutrients*. 2021 Mar 14;13(3):935. doi: 10.3390/nu13030935. PMID: 33799379; PMCID: PMC7998621.

2 Ellwood J, Draper-Rodi J, Carnes D. Comparison of common interventions for the treatment of infantile colic: a systematic review of reviews and guidelines. *BMJ Open*. 2020 Feb 25;10(2):e035405. doi: 10.1136/bmjopen-2019-035405. PMID: 32102827; PMCID: PMC7202698.

3 Untersmayr E. Acid suppression therapy and allergic reactions. *Allergo J Int*. 2015 Dec;24(8):303-311. doi: 10.1007/s40629-015-0085-x. PMID: 28603686; PMCID: PMC5464390.

4 UKemp AS, Hill DJ, Allen KJ, Anderson K, Davidson GP, Day AS, Heine RG, Peake JE, Prescott SL, Shugg AW, Sinn JK; Australian consensus panel. Guidelines for the use of infant formulas to treat cows milk protein allergy: an Australian consensus panel opinion. *Med J Aust*. 2008 Jan 21;188(2):109-12. doi: 10.5694/j.1326-5377.2008.tb01534.x. PMID: 18205586.

5 ASCIA. Guide for Milk Substitutes in Cow's Milk Allergy. Available at: [www.allergy.org.au/images/stories/pospapers/ASCIA\\_HP\\_Guide\\_CMA\\_Milk\\_Substitutes\\_2020.pdf](http://www.allergy.org.au/images/stories/pospapers/ASCIA_HP_Guide_CMA_Milk_Substitutes_2020.pdf)

6 Dupont, Christophe et al. "Hydrolyzed Rice Protein-Based Formulas, a Vegetal Alternative in Cow's Milk Allergy." *Nutrients* vol. 12,9 2654. 31 Aug. 2020, doi:10.3390/nu12092654