



Case Study: Infant with persistent allergic gastrointestinal and skin symptoms on an extensively hydrolyzed formula showed improvement after implementation of amino acid-based formula with synbiotics

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Patient history:

This case focuses on a baby girl who was born at full term via C-section. While in the hospital, breastfeeding was initiated, and she continued to be exclusively breastfed for one month. A standard cow milk protein-based infant formula was then introduced, and following this, gastrointestinal symptoms developed as well as eczema. The presenting symptoms included colicky abdominal pain, constipation, back arching, and screaming after feeds. Progressively, she developed both breast and bottle aversion. A series of feed changes occurred including anti-reflux formula and addition of an antacid into her formula, which had no impact and made her constipation worse. As time progressed, her feeding aversions deteriorated to such an extent that feeds would take up to two hours (both breast and bottle), and she would only take nighttime feeds. At birth her weight was at the 25th percentile, and while there was no length measured at birth, at 6 weeks she was at the 50th percentile. She continued to track on these percentiles and at the time of the appointment was on the 50th percentile for weight.

Nutrition/Medical management:

At the first appointment, baby girl was 5 months of age, and a non-IgE-mediated allergy was suspected. As such, it was recommended that the mother start on a milk and soy elimination diet and the baby start on an extensively hydrolyzed whey-based formula as supplemental formula. Soy elimination was suggested in addition to the elimination of cow milk as approximately half of children with non-IgE-mediated allergies to cow milk also have a soy allergy. Additionally, soy-based formulas are not recommended for infants less than 6 months of age. The mother disclosed at this appointment that she was too tired to continue breastfeeding while following an elimination diet, and baby girl was therefore fully switched onto the extensively hydrolyzed whey-based formula. No skin prick test or specific IgE tests were performed as she was exhibiting symptoms associated with a non-IgE-mediated allergy, and eczema was very mild.

After 4 weeks, the baby returned to clinic. The mother reported that her eczema was much improved, and there were some improvements in her gastrointestinal symptoms (less pain). However, her constipation and aversive feeding remained, and her nightrightimes were very disrupted due to abdominal discomfort/pain. Reassuringly, her growth continued along the same percentiles for both weight and length, which is a common phenomenon in children with non-IgE-mediated food allergies. An amino acid-based formula was recommended following this consultation due to

ongoing symptoms. Within 48 hours of the appointment, the baby was doing much better overall, and she was starting to show interest in taking a bottle outside of nighttime feeds. However, her constipation remained, as she continued to strain for hours before producing a loose stool. It was advised that she continue with this amino acid-based formula in addition to milk and soy free complementary foods for another three weeks, and then a reintroduction of cow milk protein-based formula was recommended. Within 24 hours of the reintroduction of cow milk protein-based formula, her symptoms returned confirming a non-IgE-mediated cow milk allergy. A decision was made to change her amino acid-based formula to one containing synbiotics (pre- and probiotics) with the goal of improving her stooling pattern. She was transitioned over one week (each day increasing the ratio by 1 fl oz) to ensure tolerance, and by using this approach no gastrointestinal side effects were reported. The frequency of her stools improved to one stool every three days following the transition. The parents were advised to keep her on this formula while expanding her complementary foods.

Conclusion:

The role of synbiotics (pre- and probiotics) has been studied extensively in food allergies. It is known that breast milk is a source of beneficial prebiotic oligosaccharides and beneficial bacteria. In this case, breast milk was no longer available, and baby girl had ongoing symptoms on a standard amino acid-based formula. The amino acid-based formula with synbiotics (Neocate® Syneo® Infant) has been shown in one clinical trial to improve bifidobacteria levels and decrease adult-like *Eubacterium rectales/Clostridium coccooides* group in infants with non-IgE-mediated cow milk allergy¹⁻³, which was the basis of the change in formula recommendation.

Product usage:	Patient profile:
<ul style="list-style-type: none"> ✓ Supplemental feeding to an elimination diet 	<ul style="list-style-type: none"> ✓ Eczema or Atopic Dermatitis (AD) ✓ GI symptoms ✓ Symptoms not resolved with extensively hydrolyzed formula (eHF)

References:

1. Candy, et al. *Pediatr Res.* 2018;83:677-86. 2. Fox, et al. *Clin Transl Allergy.* 2019;9:5. 3. Wopereis, et al. *Clin Transl Allergy.* 2019;9:27.

The opinions expressed are those of the author of this case study and not necessarily reflective of the views of Nutricia North America. Formula choices were made independently prior to the author’s development of this patient case report.

Nutricia North America supports the use of breast milk wherever possible. Neocate® is a family of hypoallergenic, amino acid-based medical foods. Neocate is intended for use under medical supervision. Neocate® Syneo® Infant is indicated for the dietary management of cow milk allergy, multiple food allergies and related GI and allergic conditions, including food protein-induced enterocolitis syndrome, eosinophilic esophagitis and gastroesophageal reflux.