

Case Study: Tube Feeding a Nine-Year-Old Boy with Eosinophilic Esophagitis

Patient History

A nine-year-old boy with a history of asthma and allergic rhinitis was diagnosed with eosinophilic esophagitis (EoE) at age 5 based on results of an endoscopy showing 60-65 eosinophils per high powered field (hpf). Biopsies were obtained while patient was on high dose proton pump inhibitor (PPI) therapy, ruling out PPI-responsive esophageal eosinophilia (PPI-REE). Symptoms prior to elemental diet included: abdominal pain, GERD, dysphagia, cough, chronic diarrhea (thought to be toddler's diarrhea) and nausea. Atopy patch testing was conducted and results were used together with the history of symptoms to develop a tailored elimination diet. The patient and parent were counseled by a registered dietitian and after following the tailored elimination diet, the patient did not show improvement in esophageal histology, eosinophil count or symptoms. Based on clinical evidence and patient history, further foods were removed from his diet, including the top eight food allergens. Concurrent therapy of budesonide swallow with an elimination diet was initiated in the hopes of symptom and histologic improvement, as the patient was experiencing extreme abdominal pain. After six weeks of combined dietary elimination and swallowed budesonide therapy, symptoms had not improved. A repeat endoscopy and biopsies were not obtained as symptoms were still present.

Nutritional Management

Due to persistent symptoms despite combined diet and topical steroid therapy, the patient discontinued topical steroid therapy and initiated a 100% elemental diet by mouth using flavored amino acid-based formula. Caloric needs were assessed and 56 ounces of amino acid-based formula (at 30 kcal per fluid ounce) were required to meet the patient's daily recommended nutrient intakes. After several weeks, consumption of the daily volume required became too



difficult by mouth and a nasogastric (NG) tube was placed. The placement of a feeding tube was also deemed necessary related to lack of weight gain as evidenced by stagnant growth. The challenge of meeting formula volume goals by mouth was decreased after NG tube placement. After eight weeks with an NG tube, a gastrostomy tube was placed as a more permanent solution. Consultation with the patient and family by a registered dietitian on the tube feeding regimen and management was conducted prior to placement of NG tube. Arrangements were made with a durable medical equipment company for feeding pump training and supplies related to administration of formula. While the daily volume goal was achieved, other obstacles included: difficulty with finding containers to hold pre-mixed formula for school personnel to administer; clumping and clogging of the formula causing feeding pump errors that were not able to be resolved by the nurse; potential for mixing errors given that large volumes were mixed at one time; and warming the cold formula from the refrigerator to room temperature before placing in the feeding bag in the hopes of minimizing stomach cramping.

In an effort to overcome each obstacle at home and school, the patient was offered Neocate® Splash, Unflavored ready-to-feed as a nutritionally complete formula that did not require mixing or warming to room temperature.

Results

The introduction of Neocate Splash, Unflavored ready-to-feed formula provided a nutritionally complete formula in easy-to-use packaging. The patient's ability to achieve his daily nutritional goals improved both at home and school. All lab values with the exception of iron are within normal limits. Iron levels have been low since birth and liquid supplementation is administered daily via g-tube during times the formula is not administered.

A nutritionally complete, ready-to-feed amino acid-based formula has increased the family's quality of life and given the patient more independence. The parent is no longer seeking out appropriate sized containers to transport pre-mixed formula. Potential mixing errors have been eliminated. The patient is able to administer his own feeds as a result of individual serving size containers. The need to warm pre-mixed formula to room temperature for the patient, and occurrence of pump errors due to clumped/ clogging formula have been eliminated, allowing the patient to spend more time in the classroom instead of the nurses' office. When planning for time outside of the home, carrying the appropriate amount of formula requires little planning and no need to carry a cooler.

Since initiation of the elemental diet, symptoms have been eliminated. However, an EGD (Esophagogastroduodenoscopy) conducted 12 weeks after initiation of the elemental diet, and with the continued administration of high dose PPI therapy, demonstrated 20 eos/hpf in the distal esophagus and 17 eos/hpf in the mid esophagus. There was noted improvement in tissue integrity. The inability to achieve complete remission is thought to be due to environmental allergens which were not treated at the time of the most recent endoscopy.

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