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ABSTRACT

Title: Efficacy Assessment of Medication Therapies Used to Treat Pediatric Eosinophilic Esophagitis

Background: Eosinophilic esophagitis (EoE) is a chronic inflammatory disease of the esophagus that primarily involves children and adolescents and is believed to be related to food allergies. Symptoms of EoE include abdominal pain, dysphagia, and feeding difficulties. Endoscopic findings and histology noting 15 or more eosinophils per high power field (eos/hpf) are typically needed to make the diagnosis. In addition to food allergy testing and/or elimination diets, several drug therapies are used to treat EoE. Proton Pump Inhibitors (PPI) are often initially tried, followed by glucocorticoids in the forms of metered dose inhaler fluticasone propionate (FP) and oral viscous budesonide (OVB). Few studies have examined the real world effects on patient response to these medications.

Objective: To examine the efficacy in patient response to PPI alone, FP +/- PPI, and OVB +/- PPI after at least one month of treatment.

Design/Methods: This was a retrospective chart review of patients ages 0 to 21 years diagnosed with EoE between December 2010 and June 2017 from University of Rochester Strong Memorial Hospital. Those who received prior EoE treatment, did not meet the biopsy requirements (<10 eos/hpf), failed to have a follow-up office visit, or were not compliant with the prescribed medication were excluded. Of the remaining patients, the age, presenting symptoms, initial endoscopy results, and the medications prescribed were recorded. A follow-up of symptoms and, if performed, follow-up endoscopy after at least four weeks of the initial prescription were also recorded. The mean peak eos/hpf for before and after each treatment was used for analysis. A two-sample *t*-test was used to calculate the significant change in eos/hpf for each drug therapy.

Results: 105 EoE patients were included in the study. 44 patients were on OVB therapy (34 on OVB+PPI), 41 were on FP therapy (31 on FP+PPI), and 20 were on just PPI therapy. The population had a mean age of 9.90, 85.71% Caucasian, 67.62% male, and 36.19% presented with fibrosis on the initial endoscopy. Of the OVB +/- PPI patients, a symptom improvement was seen in 86.36% and the eos/hpf decreased by an average of 34.4 eos/hpf (42.9 ± 21.5 to 8.3 ± 12.4). Of the FP +/- PPI patients, a symptom improvement was seen in 92.68% and the eosinophil count had an average decrease of 24.51 eos/hpf (45.1 ± 16.6 to 22 ± 28.3). Of the PPI patients, a symptom improvement was seen in 75% and the eos/hpf decreased by average of 8.6 eos/hpf (38.1 ± 24.6 to 26.5 ± 27.6). Patients on OVB +/- PPI had a more significant decrease in eos/hpf compared to PPI than patients on FP +/- PPI compared to PPI ($p=0.003$ and $p=0.064$, respectively). Patients with fibrosis had a greater decrease in eos/hpf on OVB +/- PPI (35.3 ± 21.0 to 4.6 ± 6.6) than those on FP +/- PPI (43.3 ± 12.0 to 28.7 ± 33.4).

Conclusions: In this retrospective study, we can conclude that OVB +/- PPI is more effective than FP +/- PPI in reducing the eosinophil count compared to PPI therapy. FP +/- PPI had a higher reported symptom improvement than OVB +/- PPI patients, but this may be confounded by the known bitter taste of OVB. In severe EoE cases, e.g. those found to have fibrosis on biopsy, strictures, or high eosinophil counts, OVB should strongly be considered as the initial treatment option.