



Cytosponge™ Assessment of Esophageal Eosinophilia in Eosinophilic Esophagitis: Real World Experience



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INTRODUCTION

Eosinophilic esophagitis (EoE) is a chronic condition characterized by symptoms of esophageal dysfunction and tissue eosinophilia. One barrier to clinical care in EoE is the need for repeat upper endoscopy (EGD) with biopsies to assess for tissue esophageal eosinophilia. A non-endoscopic esophageal cytology collection device (Cytosponge™) may be a viable alternative to assess for esophageal eosinophilia, but few studies have examined its use in EoE.

METHODS

We first performed a pilot study in which individuals with confirmed EoE underwent Cytosponge™ procedure prior to a clinically-indicated EGD. The Cytosponge™ cytology results were compared to histology obtained via EGD (gold standard). Cytology from Cytosponge™ and histology from mucosal biopsies were classified as active disease (≥ 1 eos/hpf cytology; ≥ 15 eos/hpf, respectively) or remission (0 eos/hpf; < 15 eos/hpf, respectively). The eosinophil-associated protein, eosinophil-derived neurotoxin (EDN) was assayed in the supernatant using ELISAs. We subsequently used the Cytosponge™ to assess for mucosal eosinophils, in place of standard EGD with biopsy, in a subset of patients for clinical care.

RESULTS

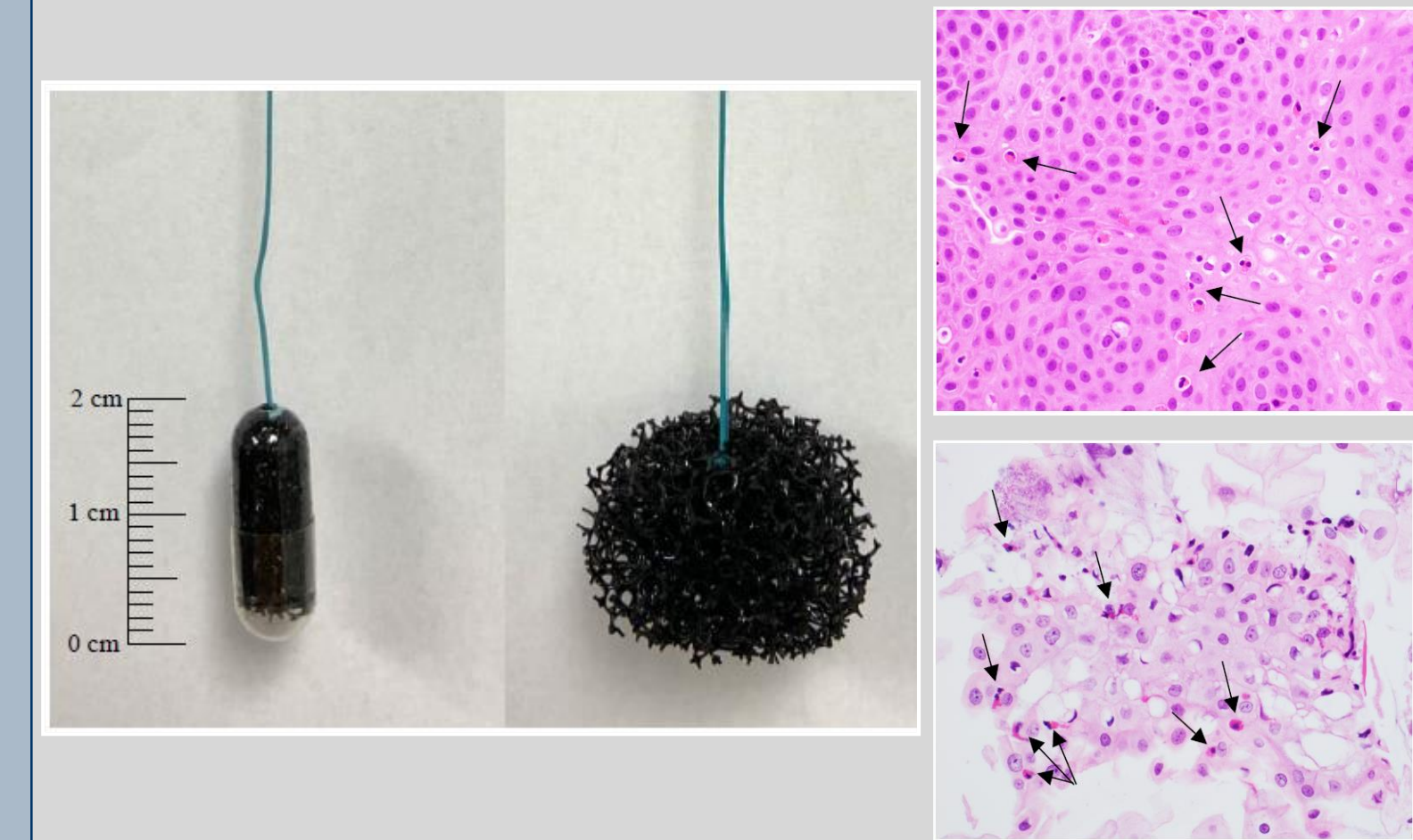
Part 1: Pilot Study

- For the pilot study, 7 patients (ages 20-53; 57% males) underwent the Cytosponge™ procedure 1 hour prior to EGD.
- When using a cut-off of 1 eos/hpf on cytology, there was 100% concordance between the Cytosponge™ and esophageal biopsies for identifying active EoE and remission (3 active, 4 remission).
- There was also a trend towards higher concentrations of EDN in the Cytosponge™ supernatant of active EoE (median 34.11 ng/mL) versus remission (median 9.5 ng/mL, $p=0.057$).

Part 2: Clinical Care

- Between September 2020 and May 2022, 15 Cytosponge™ procedures were performed for clinical care (9 patients; ages 30-61; 56% male). Eight patients were undergoing food elimination diets and one was undergoing surveillance after sustained deep remission.
- No eosinophilia was seen in 10/15 Cytosponge™ cytology specimens and 5/15 had eosinophilia (range 1-15 eos).
- One patient underwent EGD shortly after Cytosponge™ (1 eos on cytology), which demonstrated 10-30 eos/hpf on mucosal biopsy. The Cytosponge™ procedure was well-tolerated with no significant adverse events.

CYTOSPONGE™



a) Esophageal cytology collection device (Cytosponge™), b) Histology from standard esophageal biopsy, c) Cytology from Cytosponge™ (same patient as b). Arrows point to eosinophils.

Note: images previously published in McGowan EC, Aceves SS, CME Review: Noninvasive tests for eosinophilic esophagitis: Ready for use?. Ann Allergy Asthma Immunol 129 (2022); 27-34.

CONCLUSIONS

The Cytosponge™ is a novel mucosal assessment tool that is easily performed and correlates well with gold standard esophageal biopsies in EoE. It should be considered for use in eosinophilic esophagitis to avoid numerous EGD procedures.