EoE Biopsies have Elevated and Activated Mast Cells that Produce Cytokines and Chemokines that Drive Disease Pathogenesis

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Methods

- Single-cell suspensions were prepared by enzymatic & mechanical digestion (Figure 3, Mitogen) of fresh biopsies from patients clinically diagnosed with EoE or non-disease control esophageal tissue.
- Multi-color flow cytometry was performed to quantify immune cells and evaluate the activation state of eosinophils & mast cells as shown in Figure 4.
- Mast cells were FACs-sorted from EoE biopsies or non-diseased GI tissues as shown in Figure 7 followed by overnight incubation with or without PMA/ionomycin.
- Cell-free supernatants were collected the following day and cytokines were quantified using meso scale discovery (MSD) system.

Figure 4. Flow Cytometry Gating Strategy for Mast Cells and Eosinophils in EoE Biopsy Tissue

Figure 5. Increased Numbers of Eosinophils and Mast Cells in EoE Biopsies

Figure 6. Resting Mast Cells Display an Increased Activation State in EoE Biopsies

Figure 7. Gating Strategy and Method for Activating Sorted Mast Cells from GI Tissue

Figure 8. Mast Cells from EoE Tissue Basally Produce IL-5, IL-13, and CCL3

Figure 9. EoE Tissue Mast Cells Produce Increased Levels of Cytokines upon Stimulation

Figure 10. Mast Cell-Derived GM-CSF and VEGF Correlate with Tissue Eosinophil Percentage in EoE Biopsies

Results

- Elevated and activated mast cells are found in patients with EoE.
- These mast cells produce abundant cytokines and chemokines that can induce inflammation and recruit other immune cells, such as eosinophils and T cells.
- EGIDs are chronic inflammatory diseases that are driven in part by mast cells.
- Therefore, targeting both eosinophils and mast cells may be needed to significantly reduce inflammation.

Conclusions