The role of FeNO in Eosinophilic Esophagitis & relationship with downstream eosinophils
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Background

- Eosinophilic Esophagitis (EoE) is eosinophilic-predominant inflammation of the esophagus diagnosed by upper endoscopy with biopsies.
- A non-invasive, cost-effective, and low risk alternative that can aid in management of EoE is not currently available.
- Previous studies assessing correlation of Fractionated exhaled nitric oxide (FeNO) with esophageal eosinophilic inflammation were low powered.
- No studies have investigated the contribution of eosinophilic inflammation of stomach and duodenum to FeNO.
- We hypothesized that in an adequately powered sample, patients with esophageal eosinophilic inflammation will have elevated FeNo levels correlating with severity of esophageal eosinophilia on biopsies.

Objective

- To assess the utility of FeNO as a non-invasive biomarker of esophageal eosinophilic inflammation for monitoring disease activity.

Methods

- Subjects aged 6-21 years with suspected EoE were recruited in our prospective study.
- FeNO measurements were obtained in duplicate using a NIOX MINO machine prior to endoscopy.

Results

- We recruited a total of 134 patients; 45 were diagnosed with EoE by histopathology.
- The median (IQR) FeNO level was 17 ppb (11-37, range: 7-81) in the EoE group and 12 ppb (8-19, range: 5-71) in the control group.
- After adjusting for atopic diseases, EoE patients had significantly higher FeNO levels as compared to patients without EoE (z = 3.33, p < 0.001; Figure 1).
- A weak yet statistically significant positive association was found between the number of esophageal eosinophils and FeNO levels (r = 0.30, p < 0.005).
- On subgroup analysis within the EoE cohort, higher FeNO levels were noted in patients with abnormal gastric (n = 23, 18 vs. 15) and duodenal eosinophilia (n = 28, 21 vs. 14); the difference was not statistically significant.

Conclusion

- After ruling out possible confounders, our study found significantly higher FeNO scores in the EoE cohort.
- Additionally a weak yet statistically significant positive correlation between FeNO and number of esophageal eosinophils was noted.
- Future, prospective studies following individual patients longitudinally, with each patient serving as their own control as they experience change in esophageal eosinophilia secondary to therapy, may yield more clinically useful results for assessing response to therapy.

NIOX MINO machine

Wilcoxon Rank Sum test (FeNO & EoE)