General Pathologists Did Not Routinely Evaluate Gastric or Duodenal Eosinophilia

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BACKGROUND

- Pathologic accumulation and over-activation of eosinophils and mast cells are implicated in chronic inflammatory diseases in the gastrointestinal (GI) tract, such as eosinophilic gastritis (EoG) and duodenitis (EoD)[1,2]
- Patients with EoG and/or EoD (EoG/EoD) have chronic, unexplained symptoms such as abdominal pain and/or cramping, bloating, early satiety, loss of appetite, nausea, vomiting, and diarrhea
- In patients with EoG and/or EoD, inflammation may be present despite normal-appearing mucosa during endoscopy

Figure 1. Pathogenesis of EGIDs

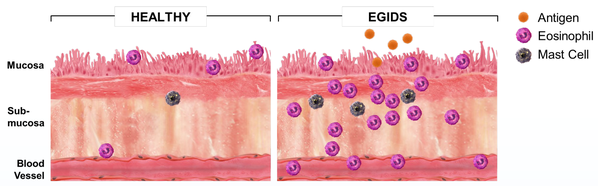
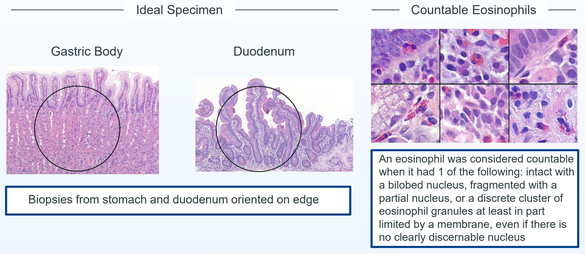


Figure 2. Ideal Biopsy Specimens, Countable Eosinophils, and 3 Systematic Approaches to Counting Eosinophils



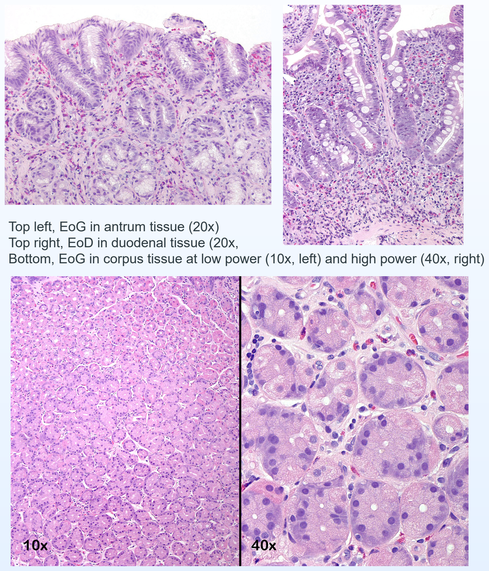
OBJECTIVE

- We investigated whether providing patient histories of allergic and eosinophilic disorders, and the direction to rule out EoG and EoD affects pathologists' search for eosinophils in gastric and duodenal biopsies

METHODS

- We performed a study of 31 general pathologists who completed their residencies ≥5 years ago and analyze ~25% gastrointestinal biopsies in their practices
- Pathologists were given hematoxylin and eosin-stained sections (antral, oxyntic, and duodenal mucosa) from 16 patients
- Ten cases had elevated eosinophils (as many as 85 eosinophils/high-power field) in gastric and/or duodenal tissues (confirmed by 2 expert GI pathologists); 4 cases had *H pylori* gastritis, 1 case had atrophic gastritis, 1 case had normal stomach but duodenal lymphocytosis, and 1 case had celiac sprue
- Pathologists were randomly assigned to 3 groups (~10 per group):
  - **Group A** received a succinct history of each case (eg, "30-year-old man with dyspepsia and vomiting")
  - **Group B** received the same histories along with a hint of a possible allergic or eosinophilic condition (eg, "history of atopic dermatitis; 1500 eosinophils/μL in peripheral blood")
  - **Group C** was specifically asked to rule out eosinophilic gastritis and duodenitis
- Pathologists received a list of common and uncommon gastric and duodenal diagnoses, including EoG and EoD, and were asked to make selections; a space for comments was provided **(Figure 4)**
- Results were analyzed descriptively

Figure 3. Examples of H&E-stained EoG and EoD Biopsies



Top left, EoG in antrum tissue (20x)
Top right, EoD in duodenal tissue (20x,
Bottom, EoG in corpus tissue at low power (10x, left) and high power (40x, right)

Figure 4. Example Document Provided to Pathologists

Diagnosis of gastric and duodenal biopsies in clinical practice

Case # ___

A. Patient history
(example: 35-year-old man with dyspepsia, bloating, frequent vomiting and diarrhea. No GERD)

B. Patient history + hint of allergic or eosinophilic condition
(example: History of atopic dermatitis; 1500 eosinophils/μL in peripheral blood)

C. A clear request to rule out EoG and EoD

	Gastric biopsies: Best diagnosis	Intestinal metaplasia (Yes or No)
	Normal gastric mucosa or minimal changes only	
	Reactive gastropathy (with or without mild chronic gastritis)	
	Mild Chronic Inactive Gastritis	
	Chronic Inactive Gastritis	
	Helicobacter gastritis (any intensity)	
	Atrophic gastritis	
	Multifocal Metaplastic Gastritis	
	Lymphocytic Gastritis	
	Eosinophilic Gastritis	
	Autoimmune Gastritis	
	Collagenous Gastritis	
	Granulomatous Gastritis	
	CMV Gastritis	

Brief comment or suggestion you would like to communicate to the gastroenterologist:

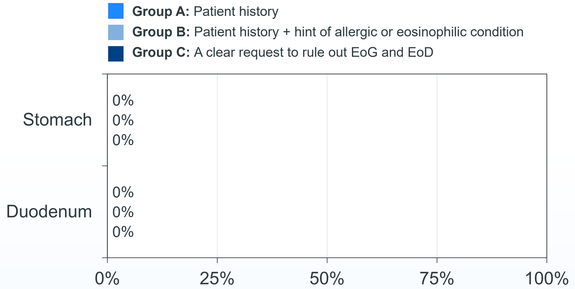
	Small intestinal biopsies: Best diagnosis
	Normal duodenal or small intestinal mucosa
	Duodenitis (active or erosive)
	Peptic Duodenitis (with or without activity)
	Duodenal Intraepithelial Lymphocytosis
	Variable Villous Blunting
	Flat villi (likely celiac disease)
	Collagenous Sprue
	Eosinophilic Duodenitis
	Autoimmune enteritis
	Infectious Duodenitis (Giardia, Cryptosporidium, CMV, Strongyloides)

Brief comment or suggestion you would like to communicate to the gastroenterologist:

RESULTS

- Pathologists made correct diagnoses of many non-eosinophilic GI disorders (*H pylori* gastritis, atrophic gastritis, and celiac sprue) indicating competence in GI pathology (data not shown)

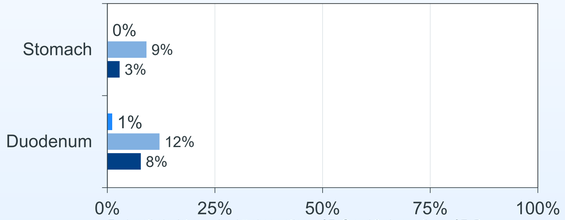
Figure 5A. Proportion of Pathologists Correctly Identifying All Observations of EG and/or EoD



Group A had 10 pathologists, Group B had 11 pathologists, and Group C had 10 pathologists

- Most pathologists did not identify elevated eosinophils, even when Pathologists were asked to rule out EoG and EoD (as in Group C)

Figure 5B. Proportions of Observations of Gastric and Duodenal Eosinophilia by Each Group



Each pathologist examined 7 observations of EoG and 9 observations of EoD

- Few observations of EoG and EoD were made, even when Pathologists were asked to rule out EoG and EoD (as in Group C)

CONCLUSIONS/DISCUSSION

- Most pathologists did not observe gastric or duodenal eosinophilia, nor correctly identify EoG and/or EoD, when assessing biopsies, even for patients with reported histories of eosinophilic disorders
- Specific training of pathologists and increased awareness of EoG and EoD among gastroenterologists might increase identification of patients with EoG and/or EoD
- A standardized biopsy and histopathology protocol should be used to evaluate patients for EoG/EoD, so that they can receive an accurate diagnosis

Reference: (1) Caldwell JM, et al. J Allergy Clin Immunol. 2014.; (2) Youngblood BA, et al. Gastroenterology. 2019.; (3) Dellon ES, et al. NEJM. 2020.

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