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HISTOPATHOLOGICAL AND DIAGNOSTIC OVERLAP IN PEDIATRIC EOSINOPHILIC ESOPHAGITIS

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Relevance. Eosinophilic esophagitis (EoE) and gastroesophageal reflux disease (GERD) have similar histopathologic findings (eosinophilic infiltration, basal hyperplasia and spongiosis) that can be problematic for making a correct diagnosis. This study of 75 pediatric cases aims to determine the histopathologic criteria needed to eliminate both the histopathologic overlap (microscopic features) and the clinical-pathological discordance that confounds the diagnosis of EoE.

Aim: to evaluate clinicopathologic correlation of pediatric eosinophilic esophagitis by assessing histomorphology characteristics and evaluating both the degree of histopathologic and diagnostic overlap with GERD.

Materials and methods. The results were obtained through a retrospective review of 75 pediatric patients with suspected EoE (age range 0-17 years; 52 male/23 female) treated between January and October 2025 at the Republican Scientific and Practical Center for Pediatric Surgery – Surgical Department No. 3 – Elective Surgery. The biopsy samples were taken systematically from the upper, middle, and lower thirds of the esophagus, the antrum, the body of the stomach, and duodenum. The histological slides were stained with Hematoxylin and Eosin (H&E) with regards to histological parameters of EoE: eosinophil count per high-powered field (hpf) of 400x, hyperplasia of the basal zones (>20% of epithelial thickness) of the esophagus, spongiosis of the basal zone of the epithelial layer, eosinophil degranulation, and micro-abscesses. Correlations were made using clinical and endoscopically data to determine the final pathology diagnosis.

Results and their discussion. The comparison of the major pathological diagnoses showed that (n=75): Definitive eosinophilic esophagitis (EoE) (n=42; 56.0%), reflux esophagitis (n=18; 24.0%), indeterminate (overlap zone) (n=12; 16.0%), and other (n=3; 4.0%). Of these, 76.2% (n=32) had a peak eosinophil count >50 eos/hpf and 38.1% (n=16) had a peak eosinophil count >100 eos/hpf. All the definitive EoE cases had the complete triad of basal zone hyperplasia, spongiosis, and eosinophil degranulation. In the indeterminate cases (overlap zone), peak eosinophil counts were between 15-50 eos/hpf and either lacked any evidence of eosinophil degranulation or were only focally hyperplastic in the basal zone. Discordance between clinical and pathological diagnosis (diagnostic overlap) was noted in 20% (15/75) of cases due primarily to the sampling of only the lower esophagus on biopsy. Samples taken from multiple levels (upper/middle/lower) yielded a 94% diagnostic accuracy. Of the EoE patients, 71.4% had associated allergic comorbidities.

Conclusions. The diagnostic overlap of EoE and GERD can be resolved through histopathological overlap identified by means of the complete triad (basal zone hyperplasia, spongiosis, and eosinophil degranulation) rather than eosinophil count alone. The diagnostic overlap and clinical pathology discordance between EoE and GERD can be resolved through formal multi-level biopsies taken from the upper, middle, and lower esophagus. Indeterminate cases which fall within the "overlap zone" between EoE and GERD require multi-level biopsies with accurate clinical correlation for appropriate diagnosis. EoE has an allergic pathogenesis—71.4% of our sample [n=104] had asthma, dermatitis or allergic rhinitis. However, EoE is not related to, nor caused by GERD; therefore, when EoE is treated with acid suppressants such as proton pump inhibitors (PPIs), there is no efficacy, whereas allergy-based therapies such as steroids and diet, result in EoE resolution.