

Prevalence of Eosinophilic Digestive Diseases in Hospital de Niños Dr. Roberto Gilbert in Guayaquil-Ecuador

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Received: September 12, 2019; **Published:** December 27, 2019

Abstract

Objective and Study: The main propose of this study is to know the prevalence of eosinophilic gastrointestinal diseases in our population. We have no data about it. Those are rare and chronic group of disorders characterized by different kind of gastrointestinal dysfunction.

Methods: This is a retrospective study. We collected data from the Hospital de niños Dr. Robert Gilbert between 2009 to 2018. Our group of study was children ranged 2 month to 16 years. Data was analyzed by the SPSS Statistics program.

Results: 2460 patients were performed by endoscopy and biopsy, just 21 cases confirmed by biopsy were established as EGIDs (0.85%); 4 children had eosinophilic esophagitis (16%), 2 children had eosinophilic gastritis (12%); 9 has eosinophilic duodenitis (36%); 6 had eosinophilic colitis (24%); and 2 had eosinophilic proctitis (8%). The main symptom was chronic diarrhea. Frequency by gender still is male 12 cases (48%) and female 9 (36%).

Conclusions: As we know, these groups of pathologies take importance over the first world because is more common in that population and less in Latin America probably of the lack of information. Knowing the prevalence is important because it would help to search this type of diseases that in some cases are misdiagnosed and only has to be confirming by biopsy.

Keywords: Eosinophilic Gastrointestinal Diseases; Eosinophilic Esophagitis; Eosinophilic Proctitis; Eosinophilic Gastroenteritis

Introduction

Eosinophilic gastrointestinal diseases (EGIDs) are a diversity of gastrointestinal chronic inflammatory disorders that prevalence over first world, those are eosinophilic oesophagitis (EoE), e. gastritis (EoG), e. gastroenteritis (EGE) and e. colitis or proctocolitis (EC). The EoE is the most common and the best described compared with other EGIDs [1]. Eosinophils are often located in the gastrointestinal tract (GIT), except the esophagus. The mechanism involves interleukin (IL)-5 and eotaxin-1 in eosinophilic accumulation in the GIT in health and diseases; reports indicate that IL-18 is induced in eosinophil associated gastrointestinal diseases (GID) [2]. There are very strong associations with allergy food or intolerance, which children are more affected during the first years [3-5]. The most frequent diseases food is seeds, soy, cow's milk, egg, tree nuts, fish, peanut and selfish [6]. Firsts descriptions of EGIDs divided patients according the affect anatomical location by eosinophil; i.e. mucosal (diarrhea and bleeding), muscular (obstruction) and serosal (ascites) disease [7]. Clinically manifestations of these disorders depend of the affect segment (Table 1) [1].

EGIDs	Symptoms
EoE	GERD like symptoms, vomiting, dysphagia, food impaction, failure to thrive.
EoG	Dyspepsia, nausea, retrosternal/epigastric pain, vomiting, outlet obstruction mimicking pyloric stenosis (muscular involvement), hematemesis melena (mucosal involvement).
EGE	Abdominal pain, vomiting, nausea, diarrhea, failure to thrive/weight loss, protein loss or gastrointestinal bleeding (mucosal involvement); perforation, intussusception, obstructive symptoms (muscular involvement); abdominal distention, ascites (serosal involvement).
EC	Abdominal pain, tenesmus, diarrhea with mucus and/or blood (mucosal involvement), perforation, volvulus, intussusception (transmural involvement).

Table 1

Eosinophilic esophagitis

Eosinophilic oesophagitis (EoE) is a chronic immune/antigen mediated inflammatory disease of the esophagus [8]. This pathology is usual in first world (EUA, Europe and Australia) more than Latin America, China, Japan and Saudi Arabia [11,16]. EoE is an allergic mediated condition that triggers an inflammatory response producing symptoms like dysphagia and food impaction in adults [9]. Children have a variety of symptoms like gastroesophageal reflux, dysphagia, epigastric pain, heartburn and/or water brash [10]. The incidence of EoE is 12.8, 6.4, 1.6, 0.8/100,000 persons year in EUA, Spain, Denmark and Slovenia respectively [11-13]. The prevalence is about 56.7, 44.6, 8.9, 2.3/100,000 persons in EUA, Spain, Australia, Denmark respectively [9,11,14,15]. In Latin America made a multicenter study with 36 gastroenterology centers which demonstrated the prevalence in 3 countries with the highest rates of EoE; Brazil 82.3, Colombia 57.7 and Argentina 32.3/1000 habitants [17]. The main diagnosis tool, still the endoscopy with biopsy, showing the main histological feature, a dense but patchy eosinophilia of esophageal mucosa, regularly associated with microabscesses, superficial layering, or extracellular eosinophil granules. The presence of at least 15 eosinophils per high power field (eos/hpf) on mucosal biopsy is requiring doing the diagnosis [8].

Eosinophilic gastritis

EG is a chronic, worsen disease [1] and is another of the spectrum of EGIDs. Some articles include this pathology as EGE and others just like EoG [18]. It is characterized by infiltration of eosinophils in the stomach wall [1]. EG is the second most common after EoE of the EGIDs, with a prevalence of 6.3/100,000 individuals [1,19]. EG is shown to be more prevalent among older age groups, with female predominance [19]. There is a very strong association with allergic conditions in children (59.9%) and adults (33.6%) [19]. For diagnosis is important to make and biopsy which demonstrate > 30 eos/hpf in > 5 hpf; founding in gastric mucosa the presence of inflammation associated with eosinophil cryptitis and eosinophil abscesses; also the presence of eosinophil in the submucosa and muscularis is characteristic in EG [1,20,21]. Clinical symptoms depend on the gastric layer involved; the mucosal layer is the most affected and present with epigastric pain, nausea, vomiting and early satiety. Laboratory findings include peripheral eosinophilia, iron deficiency anemia and hypoalbuminemia. Endoscopic images reveal some abnormalities like nodules in the mucosa, erythema and ulcers or erosions; although in some cases it appears normal [20,22,23].

Eosinophilic gastroenteritis

EGE is rare idiopathic disease and other EGIDs which involve stomach, duodenum, ileum and proximal colon [24,25]. The incidence is approximate 1/100,000 [28]. The prevalence is 5.1/100,000 individuals in the EUA. It is more prevalent in Caucasian than African-American and Asians and female over male patients. Despite EGE is more prevalent in children under 18 years than adults [26]. This pathology is an underdiagnosed condition [27]. Clinically the patients with EGE present abdominal pain, diarrhea, vomiting, nausea and bloating; it also present anemia, hypoalbuminemia, growth failure and in rare cases ascites [29-31]. EGE can be associated with other conditions as

virus (EBV); parasites (*Enterobius vermicularis*) or mimicking other diseases like infestation of parasites (*Anisakis*) [32-34]. The presences of variable numbers of eosinophils are normal in the stomach, small intestine and colon. Experts consider until 20 - 25 eos/hpf in stomach and small bowel [27]. Although further studies shown in children normal up to 26 eos/hpf in duodenum and 50 eos/hpf in colon [35].

Eosinophilic colitis

It is normal found eosinophils in colon mucosa and is predominant in right colon in both adult and children [35,36]. Eosinophilic colitis is a clinical disorder affecting the colon with abundant eosinophil inflammation in the absence of known cases of eosinophilia [37-40]. The prevalence in adult and pediatric population is 1.5 to 2.4/100,000 individuals [19,26]. Patients with EC present a diversity of symptoms; by the way, the most common are pain, hematochezia and diarrhea [39]. EC in biopsy shown more than 20.3 ± 8.2 (max. 50); 16.3 ± 5.6 (max. 42); 8.3 ± 5.9 (max. 32) eos/hpf in ascending colon, transverse colon and rectum respectively [35]. One condition associated is allergic proctocolitis (APC) in infants with poor specificity presenting abdominal pain and diarrhea as the common symptoms, rarely hematochezia as initial symptom. Approximately 60% of all cases of APC are found in breast fed children for the reason that cow’s milk are excreted in breast milk, same as the mother eat other allergenic food as soy, fish, egg, wheat, etc. treatment are based generally in diet change and highly hydrolyzed protein formula or amino acid based elemental formula [41-45].

Methodology

We retrospectively collected data from the Hospital de niños Dr. Roberto Gilbert, department of gastroenterology in Guayaquil-Ecuador during the period from January 2009 to November 2018. This hospital is third level of attention. The age group ranged between 2 months to 16 years. All patients have been undergone endoscopically and biopsied. We included patients reported food allergy. The data were analyzed by the SPSS Statistics program and graphics were made by excel.

Results and Discussion

A total number of 2460 patients performed by upper and lower endoscopy, in every procedure the specialist take a variable sampling number of each segment, oesophagus, stomach, duodenum, colon and rectum sending the sampling to specialized pathologist to perform the biopsy. Just 21 (n) cases confirmed by biopsy were established as EGIDs (0.85%); 4 children had eosinophilic oesophagitis (16%), 2 children had eosinophilic gastritis (12%); 9 had eosinophilic duodenitis (36%), 6 had eosinophilic colitis (24%) and 2 had eosinophilic proctitis (8%) (figure 1).

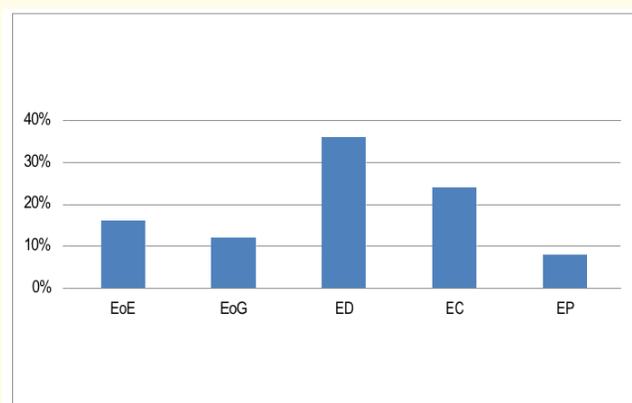


Figure 1: Percentage of eosinophilic gastrointestinal disease.
 EoE: Eosinophilic Oesophagitis; EoG: Eosinophilic Gastritis; ED: Eosinophilic Duodenitis;
 EC: Eosinophilic Colitis; EP: Eosinophilic Proctitis.

Two patients are twins and both had eosinophilic colitis. Three patients had more than one eosinophilic gastrointestinal disease. One patient present duodenitis and proctitis; other gastritis, duodenitis and proctitis; the last one duodenitis and colitis. The more prevalent EGIDs were eosinophilic duodenitis, also known as eosinophilic gastroenteritis (EGE); then under EGE were EC and EoE.

Frequency by gender still is male 12 cases (48%) and female 9 (36%). Their age ranged between 2 month to 16 years; mean of 4,00 (SD ± 4,83) (Figure 2).

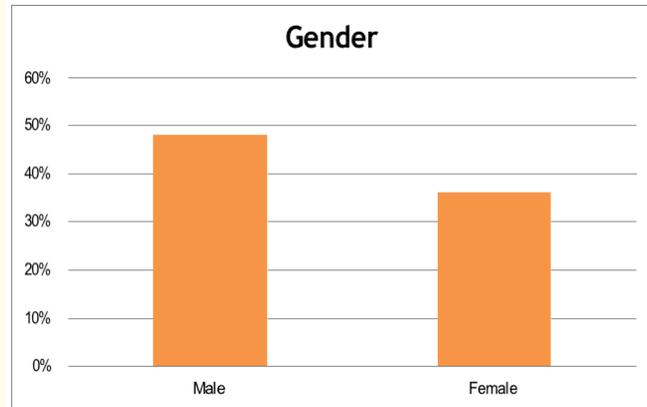


Figure 2: Gender of eosinophilic gastrointestinal disease.

The main symptoms were chronic diarrhoea (33,33%), abdominal pain (28,57%), reflux (23,80%), recurrent abdominal pain (9,52%) and dyspepsia (4,76%) (Figure 3).

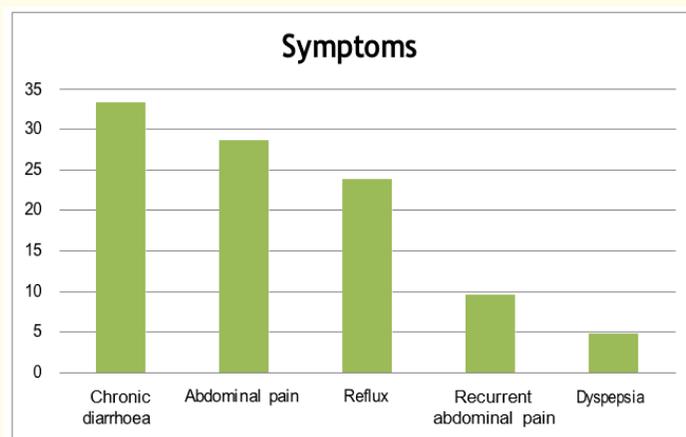


Figure 3: Symptoms of eosinophilic gastrointestinal disease.

Conclusion

Eosinophilic gastrointestinal diseases are chronic inflammatory pathologies and are expressed with random gastrointestinal symptoms, depend on the segment affected. Diagnosis is confirmed with endoscopy and biopsy presenting eosinophils on the sample correlated with clinical symptoms. The lack of consensus of each EGID slows down the rapid diagnosis and right treatment. Have to be present the strong association between the EGIDs and allergies. These results are the least comparing to United States, Canada or Europe. The lack of data keep us searching more statistics around our country and others in Latin America to know the prevalence of which EGIDs are more common by age, gender and race. Only Brazil and Colombia and less many Venezuela and Argentina have data just about eosinophilic esophagitis but no other gastrointestinal diseases [17]. In further studies we hope to collect more data about EGIDs and contribute the prevalence in our country and Latin America.

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Volume 9 Issue 1 January 2020

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