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ETIOLOGY AND PATTERN OF PRESENTATION OF GASTRITIS IN CHILDREN, OUR EXPERIENCE AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: This study aimed to look in to the frequency of different causes and pattern of presentation of gastritis in children less than 16 years of age.

Study Design: Prospective cross sectional study.

Place and Duration of Study: This study was performed in the Children Hospital and the Institute of Child health, Lahore, from Jan 2016 to Jan 2017.

Material and Methods: This study was performed in the department of Pediatric Gastroenterology, Hepatology and Nutrition at Children Hospital and the Institute of Child health, Lahore, from Jan 2016 to Jan 2017. One hundred and sixty children fulfilling the inclusion criteria were enrolled in this study. All patients went through endoscopy. Macroscopic findings were noted and gastritis was confirmed by histological analysis of gastric mucosa. Biopsies were taken from gastric antrum, the body and pylorus.

Results: The mean age of children was 8.73 ± 3.70 years (range 2-16years), and majority were in the age range of 6-10years. Males were affected slightly more than females with a ratio of 1.3:1. Drug induced gastritis was the major contributor in 58 (36.2%) patients followed by food related gastritis in 55 (34.3%). *H.Pylori* positive gastritis was seen in 38 (23.7%) patients. No cause of gastritis was found in 5.6% of patients.

Conclusion: Our study concluded that drug induced gastritis and food related gastritis was more common than *H. Pylori* positive gastritis in children in our setting.

Keywords: Gastritis, Helicobacter pylori, Junk food, NSAIDS.

INTRODUCTION

Gastritis is an inflammation of gastric mucosa while damage to gastric mucosa is known as gastric ulcer. Acid peptic disease is a collective term when inflammation/ulcer involves one or both of stomach and duodenum[1]. Usually stomach is affected in acute conditions while chronic ulcers are located on duodenum. Gastritis is not uncommon in pediatric age Group-2. There are different etiological reason for gastritis in children, however, in most cases the etiology is obscure.

H.pylori attacks D-cells in antrum and disturbs balance between gastrin producing G-cells and somatostatin producing D-cells. Ultimately there is more production of gastrin leading to more acidity and causing gastritis[3] Staining of gastric mucosal biopsy specimen is with Warthin-Starry silver stain is utilized to confirm *H.pylori* presence[4]. Non-steroidal anti-inflammatory drugs (NSAIDs) like ibuprofen and aspirin disrupts the mucosal protective layer and allows the acid to damage the underlying mucosa and hence causes gastritis. Same is true for steroids[5]. Some foods like spices, carbonated drinks, high fat and salt containing diet can disrupt the gastric mucosa and causes gastritis[6].

The main presentation of children with gastritis is recurrent abdominal pain and dyspepsia or vomiting. Young children may have hematemesis or melena as presentation[6]. Drug induced or food related gastritis presents usually with acute symptoms but *H.pylori* gastritis have mainly recurrent abdominal pain and dyspeptic symptoms. Other presentations include diarrhea, constipation, flatulence, bloating, fatigue, low energylevel, weight loss, muscle loss, bad breath etc[1,2].

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H.pylori negative gastritis has not been assessed sufficiently and international data is sparse. Current data shows that NSAIDS, dietary habits and life style can also be significantly involved in gastritis[7]. Therefore we aimed to determine the frequency of different causes of gastritis and pattern of clinical presentation in children.

MATERIAL AND METHODS

This cross sectional study was conducted in the department of Pediatric Gastroenterology, Hepatology and Nutrition, Children Hospital, Lahore from Jan 2016 to Jan 2017 in hospital settings. The Helicobacter pylori infection was defined when *H.pylori* were detected on biopsy specimens taken from different parts of stomach. Drug induced gastritis was defined as absence of polymorphonuclear neutrophils and evident foveolar hyperplasia on histopathology. Food related gastritis was defined by gastritis in the patients who are very fond of taking junk, fried, high fat and salt containing foods etc. Sample size was calculated by using the prevalence formula with confidence level of 95%, anticipated population proportion of 0.70 and relative precision of 0.10.

After defining different causes of gastritis inclusion criteria was devised. One hundred and sixty children fulfilled the inclusion criteria. The children enrolled had abdominal pain, nausea, vomiting, indigestion, black or tarry stools and hematemesis. Demographic data, history of use of NSAIDs, diet, life style and examination were recorded on a performa. Patients who had history of intake of antibiotics and or antacids were excluded. Oesophagoduedenoscopy (OGD) was performed in all children. Gastritis was diagnosed macroscopically as hyperemia, ulcers,

Table-I: Demographic, pattern of presentation, endoscopic, histopathological findings.

Parameters		Drug induced Gastritis N (%)	Food and life style related Gastritis N (%)	*H. pylori* Gastritis N (%)
Patients		55 (34.3%)	58 (36.2%)	38 (23.7%)
Age		8.4 ± 3.6	9.3 ± 3.3	10.0 ± 3.06
Gender	Male	25 (45.45%)	28 (48.2%)	24 (63.15%)
	Female	32 (58.18%)	30 (51.72%)	14 (36.84%)
Presentation		N=69 (43.5%)		
Recurrent Abdominal pain N=69 (43.5%)		8 (14.54%)	20 (34.48%)	38 (100%)
Vomiting N=50 (31.25%)		10 (36.31%)	30 (521.7%)	10 (36.31%)
Upper GI Bleed				
32 (20%)		30 (54.54%)	2 (34.48%)	0
Dyspepsia 32 (20%)		12 (21.8%)	14 (24.1%)	6 (15.78%
Others				
Endoscopic findings				
Pangastritis		48 (87.27%)	58 (100%)	7 (18.42%)
Hemorrhagic antral gastritis		2 (3.63%)	0 (0%)	0 (0%)
Antral nodularity		0	0 (0%)	30 (78.9%)
Erosions/ ulcers		5 (9.09%)	0 (0%)	1 (2.63%)
Histopathology findings				H pylori detected
Inflammation		55 (100%)	58 (100%)	38 (100%)
Atrophy		0 (0%)	0 (0%)	10 (26.3)
Metaplasia/ dysplasia		0 (0%)	0 (0%)	0 (0%)
Lymphoid aggregate		6 (10.9%)	9 (15.51%)	20 (52.8%)

bleeding and antral nodularity of the gastric mucosa[6].

For histological analysis 5 gastric biopsy specimens were collected, 2 from the corpus (one from the lesser curvature and one from the greater curvature), 2 from the gastric antrum (one from the distal lesser curvature and one from the area next to the incisura angularis and one from the distal greater curvature). The histological study consisted of hematoxicillin and modified giemsa stain. Determination of *H.Pylori* status was based on biopsy tests (histologic examination with giemsa, rapid urease test, and/or culture) (figure).

Statistical analysis was carried out by using the Statistical package for social sciences version 20 (SPSS Inc., Chicago, IL, USA). Simple descriptive statistics were used. Frequency and percentage were computed for qualitative variables like gender and causes of gastritis. Mean ± SD was presented for quantitative variables like age. *p*-value less than 0.05 was taken as statistical significant. This study was approved by hospital ethical review board (ERB) and conducted according to the principles of the Helsinki Declaration.

RESULTS

Total patients were 160. Slight predominance of males was evidenced (56.3%) with a mean age of presentation 8.732 ± 3.70 years (range of 1-16 years). Majority of the patients were from 6-10 years group. The major presentation was recurrent abdominal pain followed by vomiting, hematemesis, melena and dyspepsia as shown in the table-I. Pangastritis was the predominant findings in food related gastritis, drug induced gastritis and antral nodularity in *H.pylori* gastritis as shown in the table-II. Drug induced gastritis was the most prevalent cause of gastritis followed by food related, *H.pylori* and idiopathic as shown in the table-II.

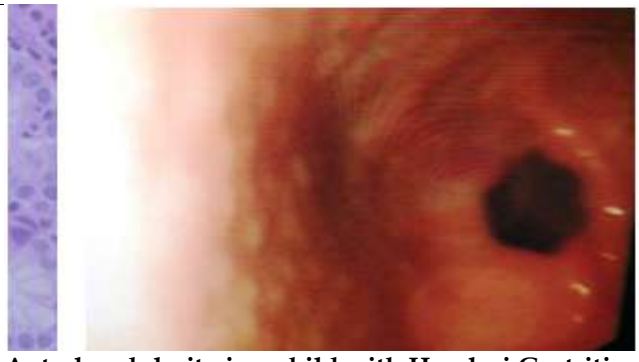
Table-II: Frequency and percentage of patients of different causes of Gastritis # 160.

Cause of gastritis	N	Percentage (%)
Food & life style related	55	34.3
Drug induced	58	36.2
H. pylori	38	23.7
Idiopathic	9	5.6

DISCUSSION

Gastritis has been found a common diagnosis in children presenting with recurrent abdominal, vomiting or hematemesis. There are no epidemiological studies available from Pakistan about the prevalence of gastritis but not an uncommon entity in every day practice. In our study we found that mostly children belonged to age group of 6-10 years. Although children less than 5 years were also affected. Nguyen et al reported that *H.pylori* gastritis was more common

Pangastrtitis in a child with drug induced gastritis.



Antral nodularity in a child with H.pylori Gastritis.

Figure: Helicobacter pylori are seen inside the glands lumen (magnification x400).

in children more than 15 years of age[8]. In this study males were affected more than females and this is in contrast to published literature which shows females are more affected[9]. Majority of patients with gastritis of any cause present with recurrent abdominal pain followed by vomiting and hematemesis or melena. Most common presentation in this study was abdominal pain characteristically involving epigastrium followed by vomiting, hematemesis and melena. Kara et al found that most common cause of recurrent abdominal was gastritis[10]. Hematemesis and melena can be a presentation of erosive gastritis. In this study most children with hematemesis had erosive gastritis and belonged to the group of drug induced. NSAID induced gastritis was commonest cause in this study which is inconsistent with most of the published literature[11]. As the trend has been changed mothers are maintaining hygiene but over the counter use of NSAIDs still can cause gastritis. Heresbach et al described a study that showed *H.pylori* was found in most of patients with NSAID Induced gastropathy and suggested that *H-pylori* increases the risk of NSAID induced gastritis, but this was not found in this study[12]. This can be explained by inadvertent use of NSAIDS by mothers without consulting doctor to relieve fever in our set up. The patients who are on long term steroids or NSAID therapy for chronic illness like autoimmune disorders juvenile idiopathic arthritis, SLE, Nephrotic syndrome etc[13]. This study showed food related gastritis in 55 (34.3%) patients but we did not find such association of food causing gastritis in the literature. This was found in children with sedentary life styles because of indoor games and long screen time. Yamamoto et al described in their studies obesity as a risk factor for gastritis[14]. We can relate our junk food related gastritis to the obesity and sedentary life styles as mentioned in these studies but we did not calculate body mass index (BMI) of these patients categorically[15]. *H.pylori* has been thought main culprit of gastritis in children for decades, the rate of the *H.pylori* related gastritis has been declining, particularly in the developing countries. In our study *H.pylori* positive gastritis was seen in 38(23.7%) patients which is in accordance with published studies[16]. *H. pylori* infection is more common in older children and adolescent which was also evidenced in this study. Saeed et al found prevalence of 24% to 49.8% in pediatric population[17]. We were unable to find any cause in few children (5.6%) so labelled them idiopathic. *H.pylori* negative gastritis has been described in literature which can explain our findings[18,19]. On endoscopy, pangastritis (87.27%) and gastric erosions/ ulcer (9.09%) were the predominant findings in drug induced gastritis. Hemorrhagic antral gastritis was found in 3.63% cases of drug induced gastritis. Pangastritis (100%) was the constant feature of food and life style related whereas antral nodularity (78.9%) and few erosions (2.63%), atrophy (26,3%) of gastric mucosa and lymphoid aggregate (52.8%)were seen in *H.pylori* gastritis[20]. Metaplasia/dysplasia was not found in any case of gastritis[21]. Nakashima and his colleagues reported pangastritis and antral nodularity as major endoscopic findings in their cohort[22]. Limitations of our study include single center results which may not be generalizable and applicable to other settings. Despite these limitations, patients were identified with drug induced gastritis, food related gastritis and *H. pylori* gastritis and an attempt was made to share a clinical experience from a tertiary care center.

CONCLUSION

In our population, drug induced gastritis is most common followed by junk food related gastritis. Inadvertent use of NSAIDs should be discouraged. Junk food and sedentary lifestyle related gastritis can be associated with obesity. Future studies are needed to see correlation of gastritis with obesity by the calculation of BMI (body mass index).

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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