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Original Article

Prevalence of Helicobacter pylori among patients with dyspepsia and correlation between endoscopic and histological diagnosis.

KC Shiva Raj[1], Lakhey A[1], Koirala K[2], Amatya GL[3]

[1] *Department of Pathology, KIST Medical College, Lalitpur, Nepal.*
[2]*Department of Surgery, KIST Medical College, Lalitpur, Nepal.*
[3]*Department of Gastroenterology, Bir Hospital, Kathmandu,Nepal.*

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ABSTRACT

Background: Dyspepsia is a prevalent complaint in general practice and gastrointestinal clinics. Helicobacter pylori have major causal relationship with gastro duodenal disease. The following study seeks to identify the prevalence of H. pylori based on histology and to correlate endoscopic findings with histopathology.

Materials and Methods: This was a cross-sectional observational study conducted in GRP Polyclinic and Om Hospital and research centre from April 2015-September 2015. The upper gastrointestinal endoscopic findings were recorded and were correlated with histopathological findings. All the relevant data were collected and analysed using Statistical Package of Social Sciences version 16 for windows.

Results: Endoscopy finding was divided into reflux esophagitis, antral gastritis, duodenitis, duodenal ulcer, gastric ulcer, and gastric cancer. Duodenal ulcer and gastric ulcer was noted more frequently in males than in females (55.0% vs. 45.0% and 58.2% vs. 41.8%), respectively, $P < 0.001$).

Chronic follicular gastritis was the most common in gastric ulcer (41.7%), whereas chronic persistent gastritis was common in non-ulcerative disease. Chronic active gastritis and chronic follicular gastritis were more common in ulcerative diseases, whereas chronic persistent gastritis was more common in gastritis and duodenitis ($P < 0.001$). The overall prevalence of H. pylori infection was 68.1% with male preponderance. Chronic active gastritis had highest prevalence of H. pylori (84.8%), followed by chronic follicular gastritis (84.1%) and chronic persistent gastritis (p value < 0.001.

Conclusion: Rate of H. pylori infected patients with dyspepsia was high. Ulcerative lesions were more common in males than in females with higher rate of infection with H. Pylori. Histological diagnosis of chronic active gastritis and chronic follicular gastritis was the most common pathologies in ulcerative lesions.

INTRODUCTION

Dyspepsia is a prevalent complaint in general practice and gastrointestinal clinics.[1] Helicobacter pylori (H. pylori) were of major concern today because of its causal relationship with gastro duodenal disease. After the discovery of H. pylori by Marshall and Warren in 1983 by using Warthin Starry Silver stain, the etiological understanding of gastritis

Correspondence:
Dr. Shiva Raj K C, MBBS, MD
Department of Pathology
KIST Medical College, Imadole, Laltipur, Nepal
Email: shiva_kc_123@yahoo.com

Table: 1 Prevalence of Helicobacter Pylori in accordance with endoscopic diagnosis

Endoscopy	Male no (%)	Female no (%)	Overall no (%)	
Esophagitis	20/35(57.0)	30/67 (44.7)	50/102 (49.0)	
Gastrtitis	151/246 (61.3)	222/337 (65.8)	373/583 (63.9)	
Duodenitis	49/73 (67.1)	27/34 (79.4)	76/107 (71.0)	**P=0.043**
Gastric Ulcer	56/60 (93.3)	34/43 (79.0)	90/103 (87.3)	
Duodenal ulcer	57/66 (86.3)	45/54 (83.3)	102/120(85.0)	
Gastric carcinoma	3/3(100)	1/2 (50)	4/5 (80)	
Total	**336/483 (69.5)**	**359/537 (66.8)**	**695/1020 (68.1)**	

Table: 2 Incidence of Helicobacter Pylori in accordance with endoscopic diagnosis and correlation with histopathology

Diagnosis	Chronic persistent Gastritis			Chronic Active Gastritis			Chronic Follicular Gastrtitis			Carcinoma		
	H.Pylori +	H.Pylori -	Total	H.Pylori +	H.Pylori -	Total	H.Pylori +	H.Pylori -	Total	H.Pylori +	H.Pylori -	Total
Esophagitis	16/41 (39.0%)	25/41 (61.0%)	41/102 (40.19%)	30/56 (53.57%)	26/56 (46.42%)	56/102 (54.90%)	4/5 (80%)	1/5 (20%)	5/102 (4.90%)	-	-	-
Gastritis	93/251 (37%)	158/251 (62.95%)	251/583 (43%)	190/225 (84.4%)	35/225 (15.5%)	225/583 (38.6%)	90/107 (84.1%)	17/107 (15.8%)	107/583 (18.3%)	-	-	-
Duodenitis	22/53 (41.5%)	31/53 (58.5%)	53/107 (49.5%)	40/40 (100%)	0/40 (0.0%)	40/107 (37.3%)	14/14 (100%)	0/14 (0.0%)	14/107 (13.0%)	-	-	-
Duodenal Ulcer	13/27 (48.1%)	14/27 (51.8%)	27/120 (22.5%)	67/67 (100%)	0/67 (0.0%)	67/120 (62.6%)	22/26 (84.6%)	4/26 (15.3%}	26/120 (21.6%)	-	-	-
Gastric Ulcer	18/18 (100%)	0/18 (0.0%)	18/103 (17.4%)	38/42 (90.4%)	4/42 (9.5%)	42/103 (40.7%)	34/43 (79.0%)	9/43 (20.9%)	43/103 (41.7%)	-	-	-
Carcinoma	-	-	-	-	-	-	-	-	-	4/5 (80.0%)	1/5 (20.0%)	5/5 (100.0%)
Total	**162/390 (41.5%)**	**228/390 (58.4%)**	**390/1020 (38.2%)**	**365/430 (84.8%)**	**65/430 (15.1%)**	**430/1020 (42.1%)**	**164/195 (84.1%)**	**31/195 (15.9%)**	**195/1020 (19.1%)**	**4/5 (80.0%)**	**1/5 (20.0%)**	**5/5 (100.0%)**

and its role as bacterial carcinogen have changed the management of gastritis. One half of the world's population has H. pylori infection, with an estimated prevalence of more than 90% in developing countries.[2-6] In our country, the reported prevalence of H. pylori ranged from 30% to 67%.[7-11] This bacterium colonizes human gastric mucosa and can elicit lifelong inflammatory and immune responses, with release of various bacterial and host dependent cytotoxic substances. It causes chronic and active gastritis, peptic ulcer disease and associated with increased risk of developing gastric cancer.[12-14]

The following study seeks to identify the prevalence of H. pylori based on histology and to correlate endoscopic findings with histopathology.

MATERIAL AND METHODS

This was an observational cross-sectional study at GRP Polyclinic Pvt. Ltd and Om Hospital and Research centre Pvt Ltd over a period of 6 months from from April 2015-September 2015. Data analysis was done from all consecutive individuals who had undergone gastric biopsy during upper GI endoscopy for various dyspeptic symptoms like pain abdomen, nausea, vomiting, belching, throat pain, upper gastrointestinal bleeding, weight loss etc. However, patients under the age of 14 years, with oesophageal varices were not included in the study. Prior to investigation, informed consent was taken from the patient. Permission from ethical review committee was obtained.

The upper gastrointestinal endoscopy was performed by two physicians separately and endoscopic findings were categorized into gastro-esohageal reflux disease, antral gastritis, gastric ulcer, duodenitis, duodenal ulcer, and neoplasm. The biopsy specimens were usually taken from the gastroesophageal junction, antrum or duodenum depending upon the endoscopic findings and sent for histological examination. The biopsy specimens were fixed in 10% buffered formalin, processed, embedded in paraffin, and cut and stained with Hematoxylin and Eosin (HandE) and Giemsa stain. Histological reporting was done by pathologist using Modified Sidney system which included inflammation, activity, atrophy, intestinal metaplasia, and Helicobacter Pylori colonization.[15] Histologically, gastritis was classified into chronic active gastritis (CAG), chronic follicular gastritis (CFG), and chronic persistent gastritis (CPG) with or without intestinal metaplasia, atrophy and Helicobacter Pylori colonization.

All the relevant data were collected and analysed using using Statistical Package of Social Sciences (SPSS) version 16 for windows. Chi-square test with exact test was used where applicable. P values of < 0.05 were considered to denote statistical significance.

RESULTS

TA total of 1020 UGI endoscopies were performed and biopsies were taken during the study period. The age of the patients ranged from 16-94 years with the mean of 41.7 ±18. Among all the patients, 549 (53.8%) were females and 471 (46.1%) were males.

Endoscopy finding was divided into reflux esophagitis, antral gastritis, duodenitis, duodenal ulcer, gastric ulcer, and gastric cancer, which was diagnosed in 102 (10.0%), 583 (57.1%), 107 (10.5%), 120 (11.7%), 103 (10.0%), and 5 (0.5%) patients, respectively. Duodenal ulcer and gastric ulcer was noted more frequently in males than in females (n = 66; 55.0% vs. n = 54; 45.0% and n = 60; 58.2% vs. n = 43; 41.8%), respectively, P < 0.001). In contrast, Esophagitis, antral gastritis was more common among females (n = 67; 65.6% vs. n=35; 34.4% and n=337; 57.8% vs. n = 246; 42.2%) respectively.

The histological features were divided into chronic persistent gastritis (CPG), chronic active gastritis (CAG), chronic follicular gastritis (CFG), and gastric carcinoma which were detected in 390 (38.2%), 430 (42.1%), 195 (19.1%), and 5 (0.5%) of cases respectively. CAG was the frequent finding in those who had duodenal ulcer (n = 67; 62.6%), all of which (100%) were colonized with H. pylori followed by gastric ulcer (n = 42; 40.7%). CFG was most common in gastric ulcer (n = 43; 41.7%), whereas CPG was common in non-ulcerative disease (duodenitis - n = 53; 49.5%; and gastritis - n = 251; 43%). CAG and CFG were more common in ulcerative diseases, whereas CPG was more common in gastritis and duodenitis (P < 0.001). Those who had histological features of CAG had highest prevalence of H. pylori (n = 365; 84.8%), followed by CFG (n = 164; 84.1%) and CPG (n = 162; 41.5%) with P value < 0.001.

The overall prevalence of H. pylori infection was 695/1020 (68.1%) with male preponderance; Male: 69.5% vs. F: 66.8% (Table 1). Helicobacter Pylori was found in 50 (49.0%) cases of esophagitis, 373 (63.9%) cases of antral gastritis, 76 cases (71.0%) of duodenitis,102 (85.0%) cases of duodenal ulcer, 90 cases (87.3%) of gastric ulcer, and 4 cases (80%) of gastric carcinoma. In gastric ulcer and duodenal ulcer including gastric carcinoma there was significantly higher prevalence of H. pylori (P = 0.046); however, no significant difference in the prevalence of H. pylori was observed between esophagitis, gastritis and duodenitis. The colonization rate of H. pylori in relation to different endoscopy diagnosis is illustrated in Table 1.

Intestinal metaplasia was identified in 3% (31/1020) of the patients who underwent UGI endoscopy. Only 11 (35.4%) patients with intestinal metaplasia had colonization by Helicobacter Pylori. The mean age of the patient with intestinal metaplasia was 54.2 ± 16.9 years. There was significant male predominance with male to female ratio of 1.6:1.

Atrophy was noted in 24(2.35%) of all the patients included in this study. There was female predominance male to female ratio of 0.7:1. The mean age of the patient with atrophic gastritis was 40.8±12.6.

DISCUSSION

Current standard of care for most patients with symptoms of upper GIT consists of initial endoscopic examination followed by histopathology. The individual accuracy and sensitivity of these techniques in the diagnosis of any lesions is subjective to the operator's ability to target site of pathology. Helicobacter Pylori remains the most common cause of chronic gastritis. Furthermore, since Helicobacter pylorus has carcinogenic effect, it has radically changed our understanding and clinical management of gastroduodenal disease, and much has been researched about its clinical aspects and its epidemiology.[16]

In this study age of the patients with dyspepsia ranged from 16-94 years with the mean of 41.7 years. Among the patients seeking for medical help due to dyspepsia 549 (53.8%) were female and 471(46.1%) were male with slight female predominance (M:F- 1:1.16). A study done by Sharma et al documented 51% female seeking for medical help due to dyspepsia as compared to 49% males.[17]

Most common upper gastrointestinal endoscopic findings were antral gastritis 57.1%) followed by duodenal ulcer (11.7%), duodenitis (10.5%) and gastric ulcer (10.0%) Similar finding was observed in a study done by Poudel A et al. He observed 58.1% cases had antral gastritis followed by 11.63% with peptic ulcer.[18] Reflux esophagitis was observed in 10% of the patients which was less than study conducted by Ercelep OB et al.[19] Ulcerative lesions of stomach and duodenum was more common in males than in females as was observed in a study done by Shrestha R et al.[20]

Most common pathology in histopathology was chronic active gastritis (42.1%), followed by chronic persistent gastritis (38.2%), chronic follicular gastritis (19.1%) and gastric carcinoma (0.5%). This result was in concordance with other study.[20] In ulcerative lesions most common antral biopsy finding was chronic active gastritis and chronic follicular gastritis whereas in non-ulcerative lesions chronic persistent gastritis was the commonest diagnosis. Patients with chronic active gastritis and chronic follicular gastritis had higher frequency of Helicobacter Pylori positivity with incidence of 84.8% and 84.1% respectively. Higher incidence of Helicobacter Pylori were also seen in other studies done by Shrestha R et al.[20] Other studies also identified association between ulcerative lesions and higher incidence of Helicobacter Pylori.[21-23] Study done by X Y Chen et al observed positive correlation with the prevalence

and density of lymphoid follicles and aggregates with H pylori infection.[24] In a study done by Genta RM et al[25] observed 100% presence of Helicobacter Pylori in patients with chronic follicular gastritis. These discrepancies may be due to: 1) Various biopsy sites, 2) intake of proton pump inhibitor which leads to subepithelial colonization of bacteria and is difficult to identify in routine histopathology procedure. Overall prevalence of H. Pylori infection was 68.1%. Overall, researchers found a consistent pattern in most developing nations, where 70 to 90% of adults harbored the bacteria; most individuals acquired the infection as children, before age ten.[5,6] Nepalese data show that the prevalence of H. pylori infection varies widely from 30-67%.[6-11]

Intestinal metaplasia was observed in 3% (n=31) of the dyspeptic patients whereas gastric atrophy was noted in 3.25% (n=24) patients. Gastric carcinoma was seen in 5 (0.5%) of cases with 80% having Helicobacter Pylori infection. The data is too small to compare with other studies.

CONCLUSION

Rate of H. pylori infected patients with dyspepsia was high. Ulcerative lesions were more common in males than in females with higher rate of infection with H. Pylori. detected by histopathology among adult patients with gastrointestinal symptoms was high (68%). Histological diagnosis of chronic active gastritis and chronic follicular gastritis was the most common pathologies in ulcerative lesions. Because of higher prevalence rate of H. Pylori; routine endoscopic biopsy should be performed so as to detect this gram negative microorganism and to treat accordingly.

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