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ORIGINAL ARTICLE

## Frequency of H. Pylori in Patients of Dyspepsia Through Biopsy Assessment

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### ABSTRACT

**Background:** Various problems like gastritis, gastric ulcer, duodenal ulcer and non-ulcer dyspepsia are commonly caused by Helicobacter Pylori. Less developed countries like Pakistan, India and Bangladesh are more prone to this infection as compared to more developed countries as Japan. The infection rate in Pakistan, stating specifically, has been reported to be as high as 90% in adult Pakistani population. Therefore, diagnosis and subsequent eradication of H. pylori may lead to a reduction in morbidity as well as mortality.

**Objectives:** To determine the frequency of + ve biopsy for presence of H. Pylori when taken from various biopsy sites in patient with dyspepsia.

**Methodology:** This cross-sectional study was conducted in the department of Gastroenterology & Hepatology, Shaikh Zayed Hospital Lahore. Seventy five patients of dyspepsia were included who were evaluated for initial history and clinical examination. The upper GI endoscopy was performed and biopsies from corpus, antrum and fundus were taken. The data were entered and analyzed using SPSS version 17.0 to demonstrate descriptive statistics through frequency, percentages, mean, SD etc.

**Results:** Out of total 75 patients, 30 male (40%) and 45 (60%) females having mean age of 37.4 years were reported. H. Pylori was detected in biopsy of 35 patients (46%) in fundus, in body of 29 patients (38.7%), and 35 patients had H. Pylori (46%) in antrum.

**Conclusion:** The presence of H. Pylori infection is frequently found in patients of dyspepsia especially in biopsy site of fundus and body.

**Key Words:** Dyspepsia, biopsy site, antrum, body, fundus, H.Pylori, Endoscopy

### INTRODUCTION

The feeling of pain or uneasiness originating from the upper gastrointestinal tract and leading to central upper abdomen is termed as state of Dyspepsia. This widespread problem is more incident as well as prevalent in underdeveloped countries. The diagnosis of this disease needs a few essential considerations as ruling out any possibility of existence of any organic disease, such as a peptic ulcer or esophagitis and also, that the symptoms must persist for at least 12 weeks. Endoscopy of the upper gastrointestinal tract is the foremost chosen mode of investigation for Dyspepsia. The non-ulcer dyspepsia is often times referred to as investigated dyspepsia, which is clearly different from un-investigated dyspepsia<sup>1</sup>. Studies have shown the prevalence of Helicobacter Pylori (H. pylori) to be comparatively higher in patients with non-ulcer dyspepsia than in healthy controls.<sup>2</sup>

Different gastrointestinal disturbances including gastritis, duodenitis, gastrointestinal

ulcers and other inflammatory conditions have become quite invasive among all age and sex groups. Several causative factors as age, gender, hyperacidity, smoking habit, alcohol consumption, and use of non-steroidal anti-inflammatory drugs have been reported contributing to the development of these complications.<sup>3</sup> Additionally strong evidences have been reported in recent studies that the bacterial agent i.e. Helicobacter pylori is involved in causing various problems like gastritis, gastric ulcer, duodenal ulcer and non-ulcer dyspepsia.<sup>4</sup>

This relationship of Helicobacter pylori with gastroduodenal pathology has strongly been proven since the time of its discovery by Waren and Marshall in 1983. Considering the vital role of H. pylori infection in healing and relapsing of gastroduodenal ulcers and also the possible effect on the clinical course of patients with the disturbances created by specific treatment on this infection, it is imperative to diagnose it properly. It is therefore required for all patients undergoing

endoscopy for dyspeptic symptoms to be biopsied for the detection of *H. pylori* as well. Many studies support the investigation of biopsy sites for the detection of *H. Pylori*. A study reported that it was necessary to take biopsies from both the antrum and the body, as *H. pylori* might be found in either.<sup>4</sup> *H. pylori* density at 12 biopsy sites of the stomach and showed that using two antral biopsies (one from the lesser curvature near the incisura and one from the greater curvature) enables the detection of *H. pylori* in virtually all infected patients.<sup>5</sup> Hence different dimensions of *H. pylori* detection has already been investigated in various studies, which in general, support the possible positive role of *H. pylori* in detection of various gastric disorders.

### OBJECTIVE

To determine the frequency of + ve biopsy for presence of *H. Pylori* when taken from various biopsy sites in patient with dyspepsia.

### MATERIAL AND METHODS

This cross-sectional survey was conducted at Department of Gastroenterology & Hepatology, Shaikh Zayed Hospital, Lahore. The opted sampling technique was non-probability purposive sampling through which the sample size of 75 cases was calculated, with 11.5% margin of error, 95% confidence level, taking expected percentage of *H. Pylori* in antrum confirmed on biopsy i.e., 57.84 (least among all the three sites). Those patients having Dyspepsia (as per operational definition.) among of both genders and lying in the age group of 20 - 60 years were included in the study. Whereas, those patients having a history of diabetes mellitus, chronic renal failure, cirrhosis, ischemic heart disease and Upper gastrointestinal bleed / active ulcers were excluded from the study. Also, pregnant women, Patients on non steroidal anti inflammatory drugs, having Malignancy and

those currently taking proton pump inhibitors and antibiotics in the two weeks preceding the study were excluded. Some patients fulfilling the selection criteria refused to participate, such patients were also not considered. Some relevant history and physical examination that was pre-requisites for endoscopy was done after which an informed written consent was obtained. The procedure was performed under conscious sedation and lignocaine spray with the videogastroscope Olympus-GIF 160/180. All mucosal defects (gastritis, erosions and ulcers) were registered by location and number. During upper gastrointestinal endoscopy, three biopsy specimens from stomach were taken with Olympus Biopsy Forceps having a cup diameter of 2.4 mm: one biopsy sample from fundus, one from body and one from antrum by researcher himself. *H. pylori* was then identified by gram staining from biopsy materials which was fixed in 10% formalin and then embedded in paraffin, cut in sequential sections and stained by hematoxylin-eosin and giemsa methods. The mucosal specimens was evaluated histologically for *H. pylori* colonization by histopathology department. All the collected information was entered and analyzed using SPSS version 17. The quantitative variables like age were presented by calculating mean and standard deviation. The qualitative variables like gender and presence and absence of *H. Pylori* in antrum, body and corpus was presented by calculating frequency and percentages.

### RESULTS

In the study a total of 75 dyspeptic patients were included. Among them 30 patients were male (40%) and 45 patients (60%) were female. Mean age was of patients was 37.4 years, very close to median age calculated as 35 years.

**Table 1:** Different characteristics of study

Variables of study		Frequency	Percent
Gender	Female	45	60.0
	Male	30	40.0
Fundus for <i>H. Pylori</i>	Negative	40	53.3
	Positive	35	46.7
<i>H. Pylori</i> in Body	Negative	46	61.3
	Positive	29	38.7
Antrum for <i>H. Pylori</i>	Negative	40	53.3
	Positive	35	46.7

Frequency of H. Pylori in Patients of Dyspepsia Through Biopsy Assessment

The minimum age observed was 22 years and maximum age of 60 years. All the patients underwent biopsy from antrum, body and fundus for H. Pylori detection. Among them, 35 patients (46.7%) were positive for H. Pylori in fundus, while 40 patients (53.3%) were negative for H. Pylori in fundus. 29 patients (38.7%) were positive for H. Pylori in body, while 45 patients (61.3%) were negative for H. Pylori in body. 35 patients (46.7%) were positive for H. Pylori in antrum, while 40 patients (53.3%) were negative for H. Pylori in antrum. There were only 2 patients (2.66%) whose

antrum biopsy were positive for H. Pylori whereas the fundal and body biopsies were negative. The biopsies at all three sites were negative for H. Pylori in 38 patients (50.66%). In 29 patients (38.66%) biopsies were positive at all three sites for H. Pylori. In 2 patients H. Pylori was positive in fundus, while it was negative in body and antrum of the patients. In 4 patients H. Pylori was positive in fundus and antrum, while it was negative in body.

**Table 2:** H. Pylori at biopsy sites

				Frequency		
Body for H Pylori	Negative	Fundus for H Pylori	Negative	40		
			Positive	6		
	Positive	Fundus for H Pylori	Negative	0		
			Positive	29		
Antrum for H Pylori	Negative	Fundus for H Pylori	Negative	38		
			Positive	2		
	Positive	Fundus for H Pylori	Negative	2		
			Positive	33		
Antrum for H Pylori	Negative	Body for H Pylori	Negative	40		
			Positive	0		
	Positive	Body for H Pylori	Negative	6		
			Positive	29		
Antrum for H Pylori	Negative	Body for H Pylori	Negative	FHP	Negative	38
					Positive	2
			Positive	FHP	Negative	0
					Positive	0
	Positive	Body for H Pylori	Negative	FHP	Negative	2
					Positive	4
			Positive	FHP	Negative	0
					Positive	29

FHP: Fundus for H Pylori

**DISCUSSION**

The incidence of Helicobacter pylori has approached extremely high rates worldwide; infecting about 50% of the population<sup>6</sup>. It is quite evident from literature that some patients of dyspepsia may represent various stages of Helicobacter pylori infection that consequently progresses to ulcer diseases<sup>7</sup>. The precise determination of the locations from which the biopsies are taken is imperative step for the accurate diagnosis of H. Pylori infection in dyspeptic patients. In this regard, researchers have already posed enough attention to investigate biopsy sites for the detection of H. Pylori. It is necessary to take biopsies from both the antrum and the body, as H. Pylori may be found in either. Additionally, H. Pylori at 12 biopsy sites of the stomach and showed that using antral biopsies

enable the detection of H. Pylori in almost all infected patients. Though all factors establishing exact distribution of H. pylori within the stomach are still unidentified, it is assumed that the pathogenic effects of H. pylori depend on the pattern of colonisation. The H. pylori is often times isolated from the gastric antrum, however, loss of normal gastric type epithelium (for example, with gastric antral atrophy or intestinal metaplasia) or the loss of the adherent layer of mucus because of bile reflux is associated with lower levels of antral colonisation. Furthermore, the increase and shift of H. pylori to the fundic mucosa with increased colonisation in this area following eradication therapy has also been documented in a number of studies. H. pylori was present in the corpus and fundus without antral infection in two subjects (1.96%) and only in the fundus in one subject

(0.98%). The highest sensitivity in detecting H. pylori infection was reported to be in biopsies taken at the antrum and from the incisura in a study<sup>9</sup>. On the other hand, it is also found no benefit in taking additional biopsies from the incisura angularis in assessing H. pylori infection.<sup>10</sup>

In our study H. Pylori was present in the fundus without antral infection in two subjects. In another study it is reported that the diagnosis was established from both antral and corpus biopsies in 34 (68%) and only antrum in 4 (8 Among them, 35 patients (46.7%) were positive for H. Pylori in fundus, while 40 patients (53.3%) were negative for H. Pylori in fundus. Twenty-nine patients (38.7%) were positive for H. Pylori in body, while 45 patients (61.3%) were negative for H. Pylori in body. Thirty-five patients (46.7%) were positive for H. Pylori in antrum, while 40 patients (53.3%) were negative for H. Pylori in antrum. In 29 patients (38.66%) biopsies were positive at all three sites for H. Pylori. In a study done on dyspeptic patients histopathology of gastric biopsy showed Helicobacter pylori in 30 (47.62%) patients, while 33 (52.38%) patients had gastritis which was not associated with Helicobacter pylori infection. (10). In our study H. Pylori was negative in 38 patients (50.6%) at all three biopsy sites.<sup>11</sup>

Functional dyspepsia, also termed as idiopathic dyspepsia is the commonest type among all Dyspepsia types. The time when no structural or biochemical justification for a patient's symptoms can be identified after all suitable investigations indicate presence of functional dyspepsia. The American Gastroenterology Association, the Digestive Health Foundation in the United States, the Maastricht Helicobacter pylori consensus meeting in Europe, the Canadian H. pylori consensus conference, two Asian-Pacific consensus meetings, and the British Society of Gastroenterology have proposed guidelines for the management of dyspepsia in detail<sup>3,4,11-14</sup>. Though the idea as posed in these guidelines that that treatment of H. pylori may have favourable impacts on symptoms and quality of life, The testing and treatment of H. pylori in patient management has long been a major component of these guidelines<sup>2</sup>. It is however essential, to consider its increasing frequency and impacts in development and worsening of Gastric diseases in Pakistan, and also, to investigate further in this regard. Timely evidence obtained through literature may help devise strategies for eradication of H. Pylori.

## CONCLUSION

From our study it is concluded that H. Pylori is frequently found in patients of Dyspepsia, particularly in biopsy locations of antrum, body and fundus.

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