

Frequency of Helicobacter Pylori (H. Pylori) among patients presenting with Duodenal Perforation

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ABSTRACT

Aim: To determine the frequency of helicobacter pylori among patients presenting with duodenal perforation.

Study design: Descriptive cross-sectional study.

Place and duration of study: General Surgery Department Hayatabad Medical Complex Peshawar from 1st March 2021 to 30th September 2021

Methodology: One hundred and seventy five patients who had a first-time duodenal perforation, were between the ages of 20 and 60, and had a prior history of peptic ulcer disease lasting at least six months were included.

Results: Thirty three (18.8%) patients had H pylori in body mass index of 18.5-24.9kg/m², 39(22.3%) in BMI 24.9-29.9kg/m² and 19(10.8%) in BMI 30-32.2 kg/m². Fifty nine (33.7%) patients had H. Pylori who had peptic ulcer disease (PUC) since 7-11 years and 32(18.36%) had the condition with PUC 11-15 years. 69(39.4%) belongs to Urban areas, while 22(12.6%) belongs to rural areas. 18(10.3%) patients found to be chain smoker, while diabetes mellitus and hypertension was noted in 15(8.6%)

Conclusion: Our population frequently develops duodenal perforation from H. Pylori owing to peptic ulcer disease. It is a serious problem and we advise more study to identify risk factors linked to this high H. Pylori burden and preventive measures to stop its spread and the morbidity linked to it.

Key Words: Helicobacter pylori, Duodenal ulcer, Gastric ulcer, Peptic ulcer, Perforated peptic ulcer, ELISA

INTRODUCTION

Despite being uncommon, duodenal perforation poses a serious health risk. According to published studies¹, the mortality rate varies from 8% to 25%. In 1688, Muralto made the first description of a perforated duodenal ulcer, which Lenepneau then recorded.² An omental patch is a common method for repairing perforations, and Cellan-Jones first described it in 1929.³ In 1904, there was a report of the first laparoscopic surgery for a perforated duodenal ulcer.⁴

In recent years, peptic ulcer disease has become less common. Proton pump inhibitors (PPIs) and Helicobacter pylori elimination therapy can help to partially explain this. But perforation and other peptic ulcer complications continue to be major healthcare concerns. This may be connected to both the ageing population and the increased use of (NSAIDs).⁵ Furthermore, due to the extensive use of endoscopic procedures like endoscopic retrograde cholangiopancreatography (ERCP), iatrogenic duodenal perforations are increasing in frequency. The best ways to treat duodenal ulcers are still up for debate. The diagnosis is frequently postponed, which reduces survival^{6,7}.

Till 1983 when Warren and Marshall made the connection between Helicobacter pylori and peptic ulcers, it was thought that stress, dietary variables, and increased gastric acid secretion were the primary causes of peptic ulcers. The prevalence of H. pylori infection is about 50% worldwide.⁸ From established to developing countries, the range of prevalence decreases. According to reports, 92%, 66.6%, and 70% of patients with duodenal perforation have H Pylori infection⁹⁻¹¹.

The goal of the current research is to ascertain how frequently H. Pylori is found in duodenal perforation cases. H. Pylori is not unusual in our community, and as was already stated, the literature indicated that patients with duodenal perforation may have different prevalence rates from one area to another. In addition few studies have found a connection between H pylori and duodenal perforation. In this research, we'll find out how frequently local patients with duodenal perforation experience it. The findings of this study will help us determine the size of the problem locally and will be disseminated to other gastroenterologists and surgeons in the area in order to create future research plans.

Received on 10-10-2022

Accepted on 11-03-2023

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted at General Surgery Department Hayatabad Medical Complex Peshawar from 1st March 2021 to 30th September 2021 and 175 patients were enrolled. All patients who had a first-time duodenal perforation, were between the ages of 20 and 60, and had a prior history of peptic ulcer disease lasting at least six months were included. Patients with a history of H Pylori therapy of any kind and those with previously diagnosed cases were excluded.

The patients or their family members were informed of the study's benefits and its goal and a written informed consent was acquired. A 5cc sample of blood was taken using stringent aseptic procedure after duodenal perforation confirmation for ELISA-based H pylori detection. The data was entered and analyzed through SPSS-23. The Chi square test and p value of 0.05 being considered significant.

RESULTS

The mean age of the patients was 35 years. Age group was analyzed as 42(24%) patients belong to age group of 25-35 years, 69(39.4%) belongs to age group of 35-45 years, while the rest 64(36.6%) belongs to age group of 45-55 years. There were 131(74.9%) males and 44(25.1%) females (Table 1). H Pylori was detected in 91(52%) patients (Fig. 1).

Table1: Age and gender distribution of patients (n=175)

Characteristic	No.	%
Age (years)		
25-35	42	24.0
>35-45	69	39.4
>45-55	64	36.6
Gender		
Male	131	74.9
Female	44	25.1

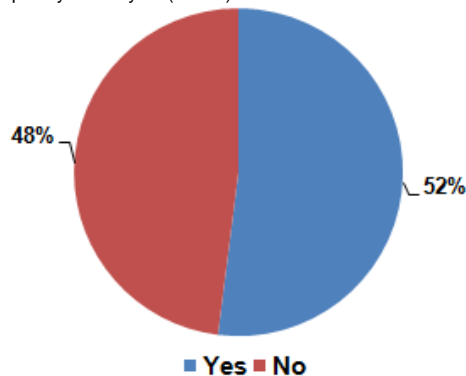
Thirty three (18.8%) patients had H pylori in BMI of 18.5-24.9 kg/m², 39 (22.3%) in BMI 24.9-29.9 kg/m² and 19 (10.8%) in BMI 30-32.2 kg/m². Fifty nine (33.7%) patients had H. Pylori who had peptic ulcer disease since 7-11 years and 32 (18.36%) had the condition with peptic ulcer 11-15 years. 69(39.4%) belongs to urban areas, while 22 (12.6%) belongs to rural areas. 18(10.3%) patients found to be chain smoker, while diabetes mellitus and

hypertension was noted in 15(8.6%) and 11(6.3%) patients (Table 2).

Table 2: Final outcome of the patients

Outcome	H. Pylori		P value
	Yes	No	
Body massed index (kg/m²)			
21.0-24.9	33 (49.3%)	34 (50.7%)	0.280
25.0-29.9	39 (49.4%)	40 (50.6%)	
>29.9-32	19 (65.5%)	10 (34.5%)	
Peptic ulcer disease PUD (years)			
7-11	59 (53.2%)	52 (46.8%)	0.288
>11-15	32 (50%)	32 (50%)	
Residence			
Urban	69 (60.5%)	45 (39.5%)	0.02
Rural	22 (36.1%)	39 (63.9%)	
Diabetes mellitus			
Yes	15 (42.9%)	20 (57.1%)	0.226
No	76 (54.3%)	64 (45.7%)	
Hypertension			
Yes	11 (39.3%)	17 (60.7%)	0.142
No	80 (54.4%)	67 (45.6%)	
Smoking			
Yes	18 (51.4%)	17 (48.6%)	0.940
No	73 (52.1%)	67 (47.9%)	

Fig. 1: Frequency of H. Pylori (n=175)



DISCUSSION

The gram-negative bacterium *Helicobacter pylori*, one of the most common pathogens in children worldwide, are carried by more than 50% of the world's population. Despite the fact that patients with *H. pylori* infection can develop chronic gastritis and peptic ulcers after a prolonged infection, the majority of infected patients show no signs.¹²

Age, region and race, all affect the prevalence of *H. pylori*. Age-related increases in *H. pylori* infection prevalence have been linked to socioeconomic status and have been observed in both developed and developing countries. In addition, it's possible that changes in childhood prevalence can accurately reflect changes in overall prevalence because the first *H. pylori* infection is usually contracted during early childhood and rarely cleared on its own. *H. pylori* infection rates are 60–80% in Saudi Arabia, India and Vietnam, which is considerably higher than the 20–25% rates in developed nations like the United States, Australia, and France.¹³ Similar findings were found in many more studies, which noted the prevalence rates listed below in different countries: Personal hygiene, socioeconomic status and number of infected family members are thought to be important factors affecting the frequency of *H. pylori* infection.^{14,15} In toddlers under the age of 10 in developing nations, the infection starts. Childhood infections can last into maturity without treatment because natural eradication is uncommon; this suggests a connection between a high prevalence in adults and a history of childhood infection¹⁶.

While children are more prevalent than in developed countries, older people are more prevalent than in underdeveloped countries. *H. pylori* can spread from person to person with family infections serving as the major cause. A recent study found that even in developing countries the onset of infection typically happens in a family setting during childhood, undervaluing the significance of other infection routes like fecal-oral transmission. Rocha et al. also claim that women who have *H. pylori* infection can have a significant independent influence on their children.¹⁷ As significant determinants of the infection rate in adults and children, socioeconomic status differences and housing conditions during their early years have been found. In a survey of 15,916 healthy adults >16 years, *H. pylori* prevalence was found to be 29.3% in people in their 20s, 49.1% in people in their 30s, 57.8% in people in their 40s, and 61.5% in people in their 50s, indicating a marked rise in prevalence in people in their 40s and 50s¹⁸.

Although there is debate over the relationship between *H. pylori* infection and perforated ulcers, the connection between the two is well known for gastric ulcers. In our study, 52% cases of perforated duodenal ulcers had *H. pylori* infection. Compared to what Juan et al¹⁹ (73.9%) and Enders et al²⁰ (80.6%) found, this number is noticeably lower.

Despite the fact that *Helicobacter pylori* can be detected via serology, Positive serology is less precise than other techniques because it cannot tell the difference between an active and a chronic infection. Serology assays range in sensitivity and specificity from 52 to 94.5% and 60 to 97.2%. Similar studies have revealed that between 60 and 87% of cases were histologically diagnosed^{21,22}. Such a large discrepancy may result from either different culture techniques or a high rate of false negatives brought on by the indiscriminate use of antibiotics that inhibit the development of this microorganism. To determine the relationship and potential etiological significance of *H. pylori* in perforated peptic ulcer, multiple studies have been done.

CONCLUSION

Our population frequently develops duodenal perforation from *H. Pylori* owing to peptic ulcer disease. It is a serious catastrophe, and we advise more study to identify risk factors linked to this high *H. Pylori* burden and preventive measures to stop its spread and the morbidity linked to it.

Conflict of interest: Nil

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