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Original Research Article

Study of Prevalence of Helicobacter Pylori in Peptic Ulcer Perforation in North Karnataka Population

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Conflict of interest: Nil

Abstract:

Background: The majority of peptic ulcer perforations are due to H. pylori infection, which leads to severe bleeding and mortality. A study of etio-pathology can prevent morbidity and mortalities in peptic ulcers.

Method: 60 patients with peptic perforation underwent resuscitation, and a laparotomy was performed in the department of general surgery. H. pylori infection was confirmed by histo-pathological examination by Giemsa staining, and H. pylori infection was treated accordingly.

Results: The distribution of age and site of perforation by H. pylori infection was significant; moreover, the factors associated with type II DM, smoking, tobacco chewers, and irregular diets had a significant p value ($p<0.001$).

Conclusion: It is concluded that most of the peptic ulcer perforation is due to H. pylori infection. Hence, every patient with PUP must be investigated for H. pylori infection and treated to prevent a further recurrence of PUP.

Keywords: Helicobacter pylori, Giemsa staining, histopathology, laparotomy.

Introduction

Previously Helicobacter pylori (H. Pylori) were designated as Campylobacter pylori in patients with chronic gastritis and acid peptic disease [1]. The new name Helicobacter pylori (H. Pylori) were suggested in 1989. The genus name reflects the two morphological appearances of the organism: helical in vivo and rod-like in vitro. Ever since its isolation, H. pylori has been the subject of several double-bind studies that support the hypothesis those H. pylori is a significant factor in the etiology of acid peptic disease associated with 60–90% peptic ulcer [2].

Pylori are gram-negative, mobile-shaped bacteria that colonize the mucous-secreting epithetical cells of the gastro-duodenum. It produces a variety of enzymes, like urease, catalase, superoxide dismutase, etc., of which the most important is urease, which is important in the etio-pathogenesis and the diagnosis of H. pylori by simple chemical tests. Pylori infection causes gastric ulcers and is associated with mortality resulting from hemorrhage, perforation, and obstruction. Hence, the need for surgery for perforated peptic ulcers has remained stable or even increased [3].

The root cause of gastric ulcers is stress, a strained life, and junk food; therefore, overly busy young adults are more prone to PUP [4]. Hence, an attempt is made to evaluate PUP in different age groups.

Material and Method

60 patients admitted to the emergency general surgery department of KLE'S JGMM Medical College, hospital in Hubli 580028 were studied.

Inclusive Criteria: The patient was clinically diagnosed with peptic ulcer perforation. Those who were diagnosed with peptic ulcer perforation, both gastric and duodenal, and gave their consent in writing for surgery were included in the study.

Exclusion Criteria: The patients who had malignancy in the G.I.T. were excluded from the study.

Method:

The diagnosis of peptic ulcer perforation was made by a history of the patient's clinical examination and radiological investigations confirmed during laparotomy.

The investigation included routine blood examinations (CBC, urine analysis, blood urea, serum creatinine, serum electrolytes, radiological examination, ECG, blood grouping, x-ray chest, and USG abdominal). A special attempt was made to look into various precipitating factors that led to perforations. A biopsy was taken from the peptic ulcer perforation site with intact mucosa and sent to a histopathology test to detect the organism by Giemsa staining. The perforation was closed and reinforced with an omental patch. Based on the histo-pathological report, the prevalence of H. pylori infection was treated with proton pump inhibitors and suitable antibiotics.

The duration of the study was from January 2023 to December 2023.

Statistical analysis: The distribution of age and site of perforation-associated infections were analysed. Statistically, the ANOVA test was used, and significant results were noted. The statistical analysis was carried out in SPSS software. The ratio of males and females was 2:1.

Observation and Results

Table 1: Distribution age among the patients in the study was H. pylori <30 years had 2 (3.3%) H. pylori patients, 31-45 aged patients 8 (13.3%) H. Pylori, 46-61 years of age had 11 (18.3%) H. Pylori patients, >61 years old had 9 (15%) H. Pylori patients, and all values are statistically significant ($p<0.001$). DF = 7.

Table 2: Study of the relation between type of perforation and H. pylori status, Duodenal perforations were 16, gastric perforations were 14, and the statistical value was DF = 3, F = 128, and $p<0.001$ (the p value was highly significant).

Table 3: Association of factors with H. pylori infections NSAID had 27 (45%), 24 (40%) smokers, 22 (36.6%) diabetes mellitus, 27 (45%) hypertension, 26 (43.3%) tobacco (Gutka) chewers, and 27 (irregular) diets. The statistical status is DF=9, $p<0.001$.

Table 1: Distribution of age among the patients in the study of H. pylori (Total No. of Patients: 60)

Age	H. pylori Present	H. pylori Absent	Total (60)	P value
< 30	2 (3.3%)	3 (5%)	5 (8.3%)	P<0.001
31 – 45	8 (13.3%)	7 (11.6%)	15 (25%)	P<0.001
46 – 61	11 (18.3%)	12 (20%)	23 (38.1%)	P<0.001
> 61	9 (15%)	8 (13.3%)	17 (28.2%)	P<0.001
Total	30	30	60	

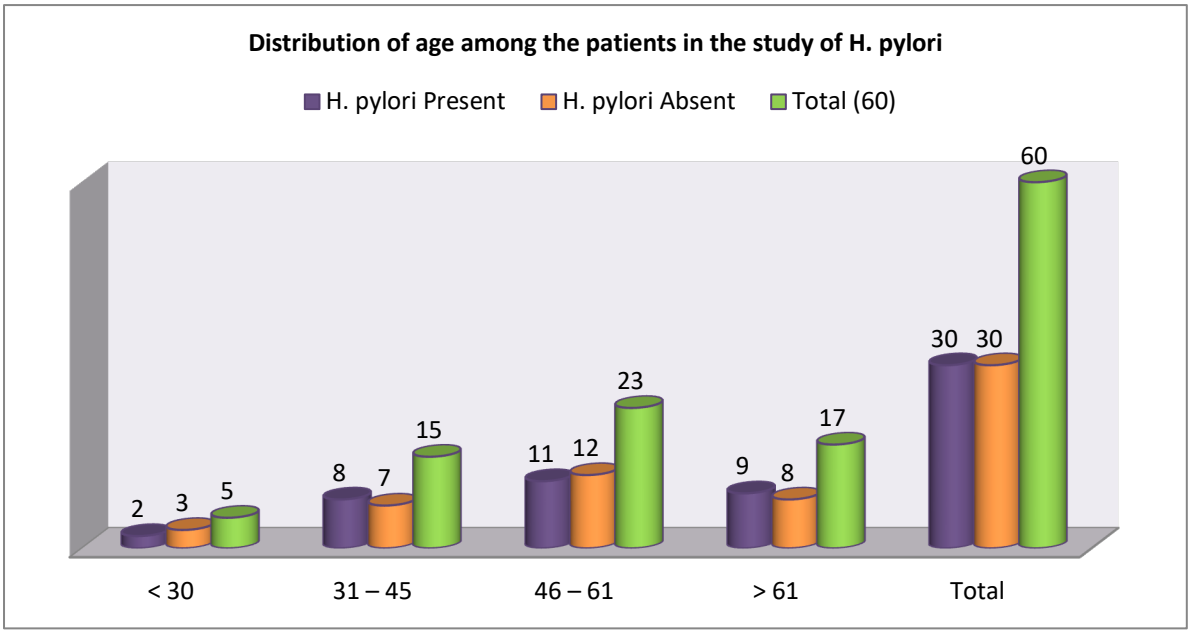

Figure 1: Distribution of age among the patients in the study of H. pylori

Table 2: Study of relation between type of perforation and H. Pylori status (Total No. of Patients: 60)

Site of perforation	H. Pylori Present	H. Pylori Absent	Total	P value
Duodenal	16	21	37	P<0.001
Gastric	14	9	23	P<0.001
Total	30	30	60	P<0.001

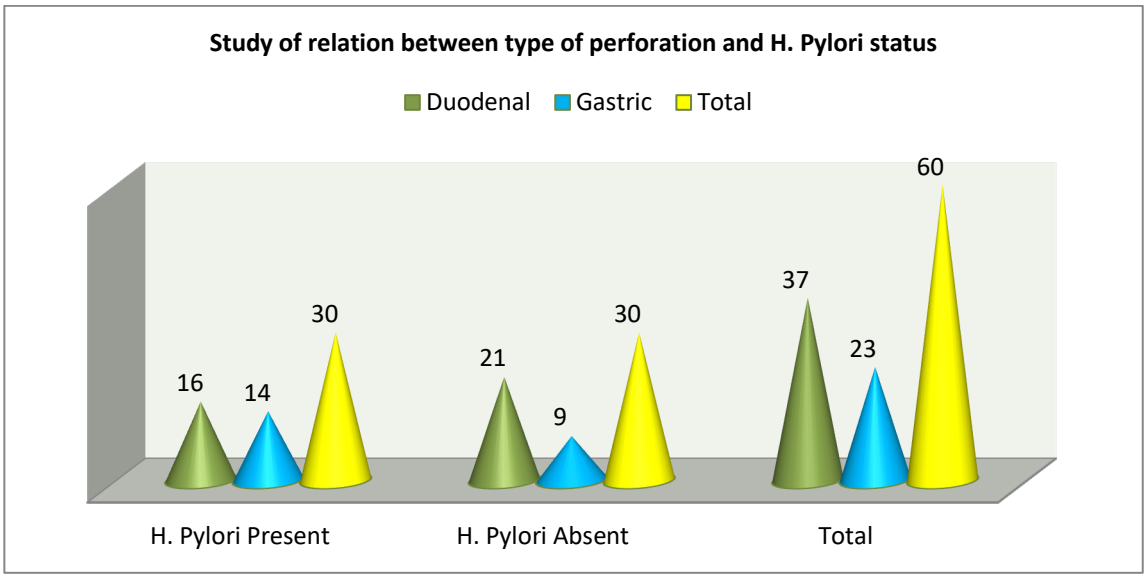

Figure 2: Study of relation between type of perforation and H. Pylori status

Table 3: Association of Factors with H. pylori Infections (No. of patients: 60)

Factors	H. pylori Present	H. pylori Absent	Total	P value
NSIADs	27 (45%)	33 (55%)	60	P<0.001
Smoking	24 (40%)	36 (60%)	60	P<0.001
Diabetes Mellitus	22 (36.6%)	38 (63.3%)	60	P<0.001
Hypertension	27 (45%)	33 (55%)	60	P<0.001
Tobacco (Gutka) chewers	26 (43%)	34 (56.6%)	60	P<0.001
Diet	Irregular 27 (45%)	Regular 33 (55%)	60	P<0.001

DF=9 and p value is highly significant

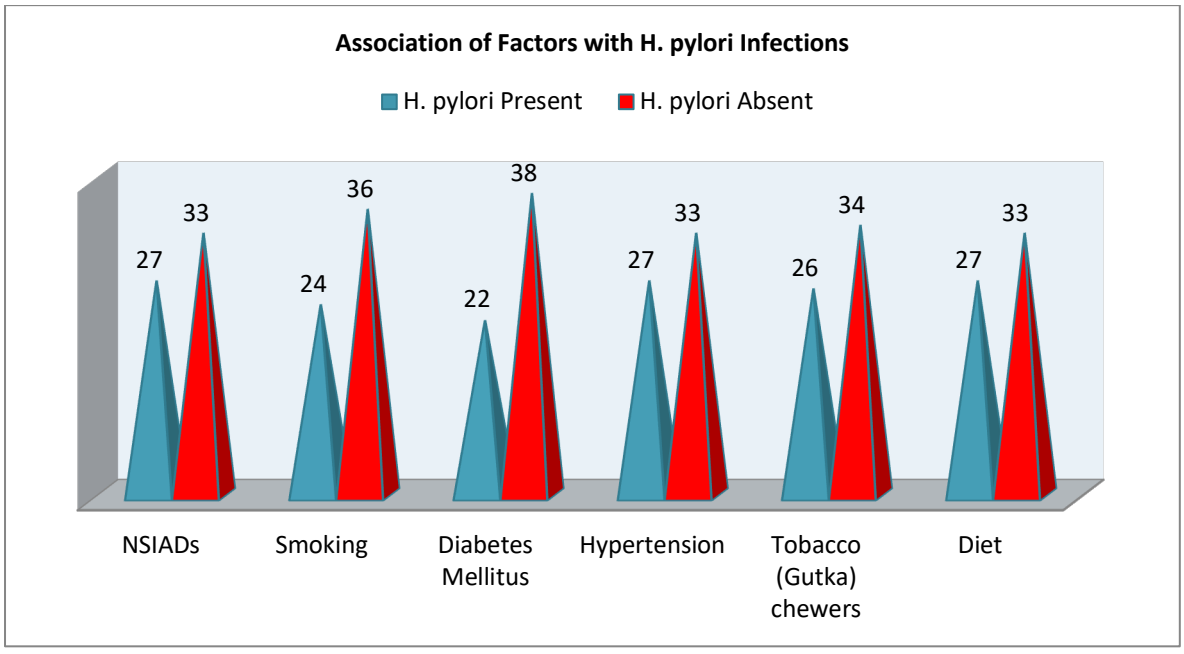

Figure 3: Association of Factors with H. pylori Infections

Discussion

Present study of the prevalence of H. pylori in peptic ulcer perforation in the north Karnataka population. In the study of the distribution of age in the patients with H. Pylori between the ages of 30 and 61 years, DF = 7 and $p<0.001$ (p value is highly significant) (Table 1), the study examined the relationship between type of perforation and status of H. Pylori. Duodenal perforations were 16 and gastric perforations were 14; the statistical status was DF = 3, F = 128, and $p<0.001$ (the p value is highly significant) (Table 2). The factors associated with H. pylori infection were 27 (45%) NSAIDs, 24 (40%) smokers, 22 (36.6%) had type-II DM, 27 (45%) were hypertensive, 26 (43.3%) were tobacco chewers, and 27 (45%) had an irregular diet. The statistical status was DF=9, and the p value was highly significant ($p<0.001$) (Table 3). These findings are more or less in agreement with previous studies [5,6,7].

PUP (peptic ulcer perforation) is one of the major surgical emergencies. The optional surgical treatment for duodenal ulcers has been controversial because of their relapse. Hence, simple repair followed by H. pylori eradication therapy for positive cases of H. pylori infection Treatment for H. pylori was more judicious and ideal therapy because H. pylori infection can be held responsible for more than 90% of duodenal ulcers and up to 80% of gastric ulcers [8]. It is reported that H. pylori seems to be acquired in early childhood. In contrast to many other infections, the immune system does not contribute to healing.

Another problem with eradicating H. pylori is that it is not only located on the surface of the gastric mucosa but also in the layer of mucous protecting it. It is treated with triple therapy proton pump inhibitor (PPI) clarithromycin plus amoxicillin or metronidazole because monotherapy of antibiotics was unsuccessful in treating H. pylori infection [9]. Traditionally, peptic ulcers are diagnosed endoscopically, but this is an expensive tool that is well tolerated by patients. The preferred method to diagnose H. pylori is by taking peri-operative biopsies, but to confirm gastric cancer, endoscopy is mandatory because PPU can be a symptom of gastric cancer [10].

Since 1990, laparoscopic closure of PPU has been described. It is a minimally invasive diagnostic tool [11]; the benefits are post-operative pain reduction, less consumption of analgesics, a reduction in hospital stay, and a reduction in wound infections. In rare cases, burst abdomens and incisional hernias due to shorter scars have been noted.

Summary and Conclusion

Laparoscopic surgery is a safe and less-invasive tool to treat PUP. To prevent recurrence, complete eradication of H. pylori inflection has to be treated along with the healing of post-operative wounds. Changes in lifestyle, diet, smoking, chewing tobacco, and control of type II DM can prevent PUP.

Moreover, the present study demands pathophysiological, nutritional, environmental, and genetic studies because the exact pathogeneses of PUP are still unclear.

Limitation of study: Due to the tertiary location of the research center, the small number of patients, and the lack of the latest techniques, we have limited findings and results.

This research paper has been approved by the ethical committee of KLE's JGMM Medical College, Hubli-580028, and Karnataka.

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