

## A Clinicopathological Study of H. Pylori and Perforated Peptic Ulcer

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### Abstract

**Background and objectives:** Peptic perforation is one of the common complications of peptic ulcer disease. H. pylori and NSAIDs accounts for most of them. This complication of peptic ulcer disease represents a surgical emergency. Eradication of H. pylori in patients with peptic ulcer disease is associated with reduced incidence of complication and recurrence of disease. This study aims to find out a relation in the study population between perforation peritonitis and H. pylori.

**Methods:** A total of 50 cases of perforation peritonitis were taken for study during period Mar. 2016 to Sept. 2017. The relation of perforated peptic ulcer with age, sex, H. pylori infection, h/o peptic ulcer symptoms, NSAIDs intake, alcohol and smoking was studied. Along with this relation of H. pylori with each individual parameter like age, sex etc. also studied. Rapid urease test was performed on biopsy specimen from margin of perforation. Another biopsy specimen was sent for histological examination. Those who were positive were treated with anti H. pylori therapy for 14 days.

**Results:** The mean age of the study subjects was found to be  $42.48 \pm 16.6$  (mean  $\pm$  SD) with a range of 17-75 years. 80% of perforated peptic ulcer were positive for H. pylori. Maximum number (74%) of perforated peptic ulcer cases were present in  $\leq 50$  years age group and 86.5% were males. The most common site of perforation was 1<sup>st</sup> part of duodenum (96%) followed by antral (4%).

**Conclusion:** H. pylori is still the common cause of perforated peptic ulcer. Males are most commonly affected. The most common site of perforation is 1<sup>st</sup> part of duodenum.

**Keywords:** Peptic ulcer, Perforation, Peritonitis, NSAIDs

**Abbreviations:** H.pylori – Helicobacter pylori, P.U.D – Peptic ulcer disease, P.P.U – Perforated peptic ulcer, P.U.S – Peptic ulcer symptoms, + ve – positive, -ve – negative, R.U.T – Rapid urease test

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### I. Introduction

Peptic perforation is one of the common complications of peptic ulcer disease. Peptic ulcers are defined as erosions in gastric or duodenal mucosa that extend through the muscularis mucosae [1]. Classically ulcer is caused by leaking roof (protective layer over epithelium) and acid rain which percolates through this leaking roof to damage the epithelium. Various factors are responsible for development of peptic ulcer. H. pylori and NSAIDs accounts for most of them. H. pylori is associated with 80 to 95% of duodenal ulcers and 75% of gastric ulcers [1]. The prevalence of peptic ulcer disease have been declining in recent years with overall prevalence of 0.12% to 1.50% in developed countries and lifetime prevalence in India as 8.8% [1,2]. This change is due to increased detection and eradication of major cause of P.U.D. i.e. H. pylori.

H.pylori represents the most drastic change in our understanding of peptic ulcer disease and has led many experts to conclude that peptic ulcer disease is in reality an infectious disease. Microscopically it is spiral or helical gram negative rod with 4-6 flagella and resides in gastric type epithelium within or beneath the mucus layer, which protects it both from acid and antibiotics. It produces a variety of enzymes that help it to adapt a hostile environment. This bacteria is capable of splitting urea into ammonia and bicarbonate, creating an alkaline microenvironment in the setting of acid gastric milieu, which facilitates establishing a diagnosis of this organism by various laboratory tests. H. pylori persistently colonizes the human stomach and is of etiologic importance in peptic ulcer disease [3].

Perforation is a common complication of peptic ulcer. This complication of peptic ulcer disease represents a surgical emergency. After diagnosis is made, operation is performed following appropriate resuscitation. Eradication of H. pylori in patients with peptic ulcer disease is associated with reduced incidence of complication and recurrence of disease [4,5,6,7].

Several invasive and noninvasive tests can detect the H. pylori in patients with peptic ulcer disease. Serology is the test of choice for initial diagnosis when endoscopy is not required, if however endoscopy is to be performed the rapid urease assay and histology are both excellent options, but the cost advantage lies with rapid urease assay [8,9]. After treatment the urea breath test and stool antigen is the method of choice but should not be performed until 4 weeks after anti-H. pylori triple or quadruple therapy ends.

Earlier studies have shown that H. pylori is commonly associated with peptic ulcer disease and its complications such as perforation, more recent studies have shown that peptic ulcer disease and acute duodenal perforation are not related significantly to H. pylori infection. This study aims to find out a relation in the study population between perforation peritonitis and H. pylori.

## **II. Materials and methods**

### **2.1 Study type and setting**

This cross-sectional study included 50 patients who were admitted and treated in the Department of General Surgery, Rajendra Institute of Medical Sciences, Ranchi with perforation peritonitis between March 2016 to September 2017.

### **2.2 Inclusion criteria:**

Patients who presented with features of perforation peritonitis having peptic perforation.

### **2.3 Exclusion criteria:**

Patients who had sealed peptic perforation (no apparent perforation seen) detected during operation.

### **2.4 Parameter studied:**

The relation of perforated peptic ulcer with age, sex, H. pylori infection, h/o peptic ulcer symptoms, NSAIDs intake, alcohol and smoking was studied. Along with this relation of H. pylori with each individual parameter like age, sex etc. also studied. Positive alcohol consumption was defined as those who drink more than 20 gm of alcohol amount in a week.

### **2.5 Study Tools:**

1. History sheets
2. Biopsy of margin of perforation
3. Rapid Urease Test Kit ( Mfd.&Mktd. By Gastro Cure Systems, Kolkata, India )
4. Histological examination of biopsy specimen.
5. Anti H. pylori therapy (3 drug regime consisting of clarithromycin, pantoprazole and amoxicillin)

### **2.6 Study Technique:**

Patients presenting with features of perforation peritonitis in OPD or in emergency of Surgery department were admitted, detailed history was taken, resuscitation was done, x-ray abdomen erect view & chest X-ray PA view taken. After proper resuscitation patient was taken to operation theatre. After proper draping and under general anesthesia exploratory laparotomy was performed. Upper Midline incision was made, perforation in duodenum or stomach detected. Full thickness 2 biopsy specimens from the margin of perforation was taken including the mucosa. Rapid urease test was performed using the Rapid urease test kit. Perforation was repaired with omental patch. After thorough toileting abdomen was closed in layers with drain in hepato renal pouch of Morrison. Rapid urease test kit was observed for colour change from yellow to pink within 24hrs. Another biopsy specimen was sent for histological examination. Those who were positive were treated with anti H. pylori therapy for 14 days.

### **2.7 Statistical Analysis:**

Data were collected on predesigned structured case report form. Continuous variables were expressed as mean  $\pm$  SD. Categorical variables were expressed as number and percentage. We compared the differences in the clinical characteristics of the study population using the Student's t-test for the continuous variables and the Fisher's exact test for the categorical variables. In this study, a P value  $< 0.05$  (2-tailed) was adopted as the threshold of statistical significance for all tests. The results were depicted with the help of tables, bar diagrams and pie charts. All the analyses were performed using SPSS version 20.0. (SPSS Inc., Chicago, IL, United States).

### III. Observation & Results

Following observations were obtained after analysis of data of 50 cases of perforated peptic ulcer. 40 out of 50 (80%) patients were H. pylori positive by R.U.T. kit as well as histologically.

**Table 1.** Baseline characteristics of patients n (%)

Variables	Total (n =50)
Sex (men)	43 (86)
Age (mean ± SD)	42.48 ± 16.6
Presentation	
Abdominal pain	50 (100)
Abdominal distention	13 (26)
Vomiting	6 (12)
Shock	5 (10)
H/O P.U.S.	42 (84)
H/O NSAIDs	5 (10)
Alcohol consumption	13 (26)
Smoking	16 (32)
Laboratory findings	
WBC count (× 10 <sup>3</sup> / μL)	12.12 ± 1.2
Hemoglobin (g/ dL)	11.04 ± 1.03
Serum Creatinine ( mg/dL)	1.13 ± 0.3
Site of perforation	
1 <sup>st</sup> part of duodenum	48 (96)
Antral	2 (4)
H. pylori positive	40 (80)
Mortality	5 (10)

**Table 2.** Comparison of clinical characteristics of perforated peptic ulcer categorized by the H. pylori infected, NSAIDs user and Non-H. pylori Non-NSAIDs group n (%)

Variables	H. pylori +ve group ( n= 40)	NSAIDs user group (n= 5)	Non H. pylori Non-NSAIDs group (n= 5)
Sex (men)	36 (90)	2 (40)	5 (100)
Age (mean ± SD)	41.45 ± 17.7	51.0 ± 10.2	42.2 ± 9.8
H/O P.U.S.	40 (100)	0 (0)	2 (40)
Alcohol consumption	8 (20)	0 (0)	5 (100)
Smoking	11 (27.5)	0 (0)	5 (100)
Site of perforation			
1 <sup>st</sup> part of duodenum	38 (95)	5 (100)	5 (100)
Antral	2 (5)	0 (0)	0 (100)
Mortality	4 (10)	1 (20)	0 (0)

**Table 3.** Comparison of clinical characteristics of perforated peptic ulcer according to age n (%)

Variables	≤ 50 years ( n= 37)	>50 years (n= 13)
Sex (men)	32 (86.5)	11 ( 84.6)
H/O P.U.S.	31 (83.8)	11 (84.6)
H/O NSAIDs	3 (8.1)	2 (15.4)
Alcohol consumption	10 (27)	3 (23)
Smoking	12 (32.4)	4 (30.7)
Site of perforation		
1 <sup>st</sup> part of duodenum	35 (94.6)	13 (100)
Antral	2 (5.4)	0 (0)
H. pylori +ve	29 (78.4)	11(84.6)
Mortality	0 (0)	5 (38.5)

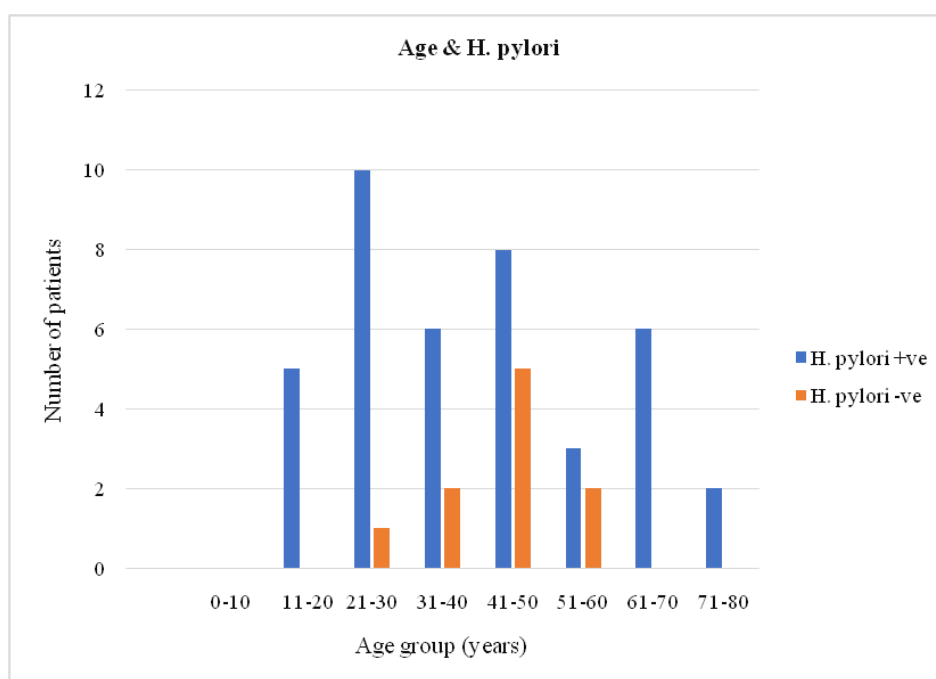
#### 3.1 Age distribution

The mean age of the study subjects was found to be 42.48 ± 16.6 (mean ± SD) with a range of 17-75 years. For statistical analysis patients were divided into 2 groups of ages i.e. ≤ 50 years & > 50 years as shown above (Table 3) & below (Table 4).74% of perforated peptic ulcer cases were present in ≤ 50 years age group.

**Table 4.** H. pylori status and age group (n = 50)

Age (years)	H. pylori +ve No. (%)	H. pylori -ve No. (%)	Total No. (%)	P value
≤ 50	29 (72.5)	8 (80)	37 (74)	1.0000
> 50	11 (27.5)	2 (20)	13 (26)	
Total	40 (100)	10 (100)	50 (100)	

Age distribution showed that 25% & 20% of H. pylori +ve patients among perforated peptic ulcer belonged to the age groups of 21-30 years & 41- 50 years respectively while 50% of H. pylori –ve patients belonged to 41-50 years age group. 72.5% of H. pylori +ve and 80% of H. pylori –ve cases were present in ≤ 50 years age group. Statistical analysis failed to reveal any significant differences between ages of H. pylori positive cases compared to their counterpart (P = 1.0000).



**Fig. 1.** Bar chart showing relation between age and H. pylori

### 3.2 Sex distribution

86% of peptic perforation were noted among males while only 14% among females.

**Table 5.** Sex & H. pylori status (n = 50)

Sex	H. pylori +ve No. (%)	H. pylori -ve No. (%)	Total No. (%)	P value
Male	36 (90)	7 (70)	43 (86)	0.1326
Female	4 (10)	3 (30)	7 (14)	
Total	40 (100)	10 (100)	50 (100)	

90% of H. pylori +ve and 70% of H. pylori –ve cases were male while 10% of H. pylori +ve and 30% of H. pylori -ve cases were female. The difference was not significant (P = 0.1326). 40% of NSAIDs user and 100% of Non-H. pylori Non-NSAIDs group user were male.

### 3.3 Presentation at the time of admission

All patients presented with abdominal pain, 13 (26%) presented with abdominal distension, 6 (12%) with vomiting and 5 (10%) with shock. The mean level of WBC ( $12.12 \pm 1.2$ ) was above normal range. However, the mean levels of Hb ( $11.04 \pm 1.03$ ) and serum creatinine ( $1.13 \pm 0.3$ ) were within normal range.

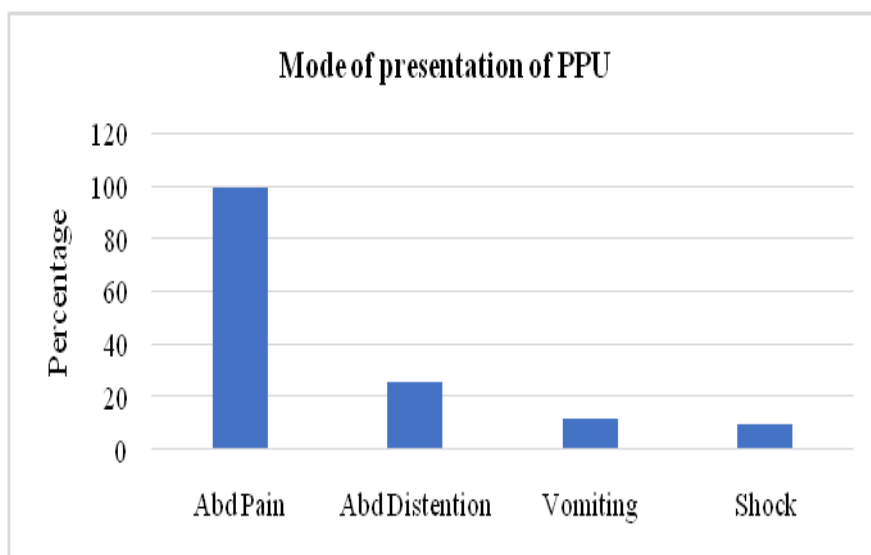


Fig. 2. Bar chart showing different modes of presentation

### 3.4 Site of perforation

The site of perforation in 48 out of 50 cases was D1 in which 38 were H. pylori +ve and 10 were H. pylori -ve. Only 2 cases were of antral perforation and both were H. pylori +ve. The difference was not significant (P = 1.0000).

Table 6. Site of perforation and H. pylori status (n=50)

Site of perforation	H. pylori +ve No. (%)	H. pylori -ve No. (%)	Total No. (%)	P value
D1	38 (95)	10 (100)	48 (96)	1.0000
Antral	2 (5)	0 (0)	2 (4)	
Total	40 (100)	10 (100)	50 (100)	

### 3.5 P.P.U., History of peptic ulcer symptoms (P.U.S.) and H. pylori status

84% of P.P.U. had history of peptic ulcer symptoms. 100% of H. pylori +ve cases had history of peptic ulcer symptoms while 80% of H. pylori -ve patients had no history of P.U.S. The difference was extremely significant statistically (P = <0.0001).

Table 7. History of P.U.S. and H. pylori status (n=50)

H/O P.U.S.	H. pylori +ve No. (%)	H. pylori -ve No. (%)	Total No. (%)	P value
P.U.S. +nt	40 (100)	2 (20)	42 (84)	<0.0001
P.U.S. - nt	0 (0)	8 (80)	8 (16)	
Total	40 (100)	10 (100)	50(100)	

### 3.6 P.P.U., History of NSAIDs AND H. pylori status

90% of P.P.U. was not associated with NSAIDs while 80% of P.P.U. were H. pylori +ve thus emphasizing H. pylori as major determinant in our region for P.P.U. 100% of H. pylori +ve cases had no history of NSAIDs intake while 50% of H. pylori -ve cases had history of NSAIDs intake. The difference was extremely significant statistically (P = 0.0001) making H. pylori important determinant in non- NSAIDs user peptic perforation. The history of NSAIDs users were more in >50 years age group (15.4% vs 8.1%) (Table 3). There is female predominance in NSAIDs user group (60%) as well as mortality is high (20% vs 10% in H. pylori group) (Table 2).

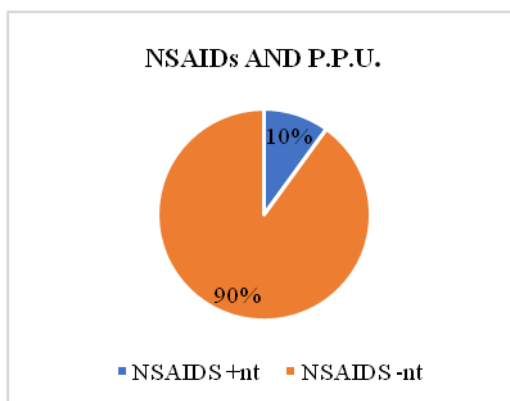


Fig. 3. Pie chart showing relation between NSAIDs & P.P.U.

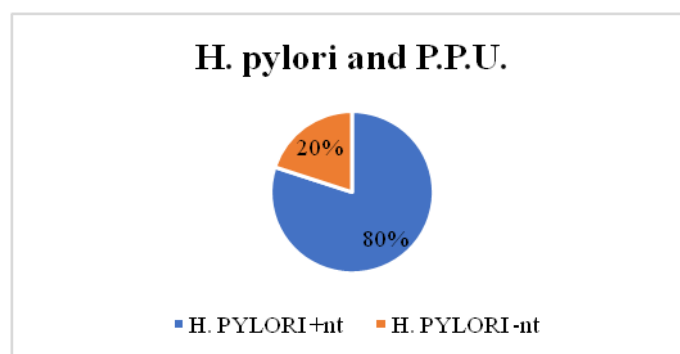


Fig. 4. Pie chart showing relation between H. pylori & P.P.U

Table 8. History of NSAIDs & H. pylori status (n=50)

H/O NSAIDs intake	H. pylori +ve No. (%)	H. pylori -ve No. (%)	Total No. (%)	P value
Present	0 (0)	5 (50)	5 (10)	0.0001
Absent	40 (100)	5 (50)	45 (90)	
Total	40 (100)	10 (100)	50(100)	

### 3.7 P.P.U., Alcohol, Smoking and H. pylori status

26 % of P.P.U. had history of alcohol consumption while 32% had smoking history. Non H. pylori Non-NSAIDs group had 100% history of alcohol and smoking, making alcohol and smoking as important risk factor in this group.

### 3.8 Alcohol addiction and peptic ulcer symptoms (P.U.S.)

76.2% of patients who had history of peptic ulcer symptoms were not addicted to alcohol while 37.5% of patients who had no history of peptic ulcer symptoms were addicted to alcohol. The difference was not significant (P = 0.4130).

### 3.9 Per-op RUT, Anti-H. pylori therapy & histopathology report

Biopsy were taken from the margins of the perforation. Per-op RUT was done and other specimen was sent for histopathological examination. 40 (80%) were positive showing color change to pink within 24 hours. All the HPE reports showed chronic inflammatory lesions with lymphocyte predominance having no evidence of malignancy. All the 40 RUT H. pylori +ve cases were also positive with Modified Warthin Starry stain but only 38 were positive with Giemsa and H&E stain. All H. pylori +ve cases were given anti-H. pylori therapy (3 drug regime consisting of clarithromycin, pantoprazole & amoxicillin) for 14 days at the time of discharge.

### 3.10 Mortality

5 (10%) patients died out of which 4 due to septicemia and 1 due to respiratory failure. NSAIDs user group had highest mortality rate of 20% while H. pylori +ve group had 10%. All the mortality was in >50 years age group. 38.5% of >50 years age group succumbed to the disease either due to septicemia or respiratory failure. The difference was extremely significant statistically (P = 0.0006).

**Table 9. Age and Mortality (n=50)**

Mortality	≤ 50 years No. (%)	>50 years No. (%)	Total No. (%)	P value
Dead	0 (0)	5 (38.5)	5 (10)	0.0006
Alive	37 (100)	8 (61.5)	45 (90)	
Total	37 (100)	13 (100)	50 (100)	

#### IV. Discussion

The present study evaluated H. pylori status in perforated peptic ulcer (P.P.U.) along with associated risk factors. The mean age of the study subjects was found to be  $42.48 \pm 16.6$  (mean  $\pm$  SD) with a range of 17-75 years. Maximum number (74%) of perforated peptic ulcer cases were present in  $\leq 50$  years age group and 86% were males. Previous western studies which evaluated the incidence and changing pattern of P.P.U. consistently revealed that most patients with P.P.U. were aged over 60 years without gender difference and the incidence of P.P.U. showed increasing trend by age [10,11,12]. On the other hand, a retrospective study from Middle Eastern showed that the mean age of the patients with P.P.U. was 35.5 years and 98.3% of patients were men [13]. Also, Korean population based study using national Health Insurance claims database reported that most patients with P.P.U. were younger than 60 years with men predominance. In another South Korean study, Men predominance was observed (85.1%) and the mean age and BMI of the subjects were  $50.6 \pm 18.3$  years and  $21.7 \pm 2.9$  kg/m<sup>2</sup>, respectively [14]. Thorsen K, Soreide JA, et al reported in their series that most of the peptic ulcer perforations irrespective of location occurred in middle age group between 30-50 years [15]. Sujit M Chakma, et al reported in their series that most of the patients of peptic perforation peritonitis were in between middle age group in North East India. Next were patients in between age group 55-65 years with more of gastric perforation in comparison to duodenal perforation [16]. Ugochukwa AI, et al reported male predominance in peptic ulcer perforation, male to female ratio was 3.2:1 [17]. Munikrishna P C, et al concluded that in their prospective study of peptic perforations most of the patients were male (96%) [18]. The findings of the present study are in fair agreement with the findings of the above workers. Due to the inherent limitation of this study, selection bias could be the reason of different epidemiologic characteristics. Also, there are different pattern of risk factors (H. pylori infection rate, NSAIDs consumption) according to the geographical area of each study.

In our study, 80% (40 out of 50) of peptic perforation cases were tested positive by R.U.T. kit as well as histologically by staining. Previous studies by Gisbert JP, et al revealed mean prevalence of H. pylori infection in patients with perforated peptic ulcer of only about 60% [19]. In an Indian study by Sharma AK, et al the prevalence of H. pylori infection in peptic perforation was found to be 61.4%, which was well above the usual prevalence in normal population of 45% [20]. This study had emphasized that H. pylori is found more commonly in patients with peptic ulcer perforations.

But some studies are against the association of H. pylori and P.P.U. Matsukura N, et al conducted an age- and gender-matched case-control study between perforated and nonsurgical peptic ulcers in H. pylori infection and examined differences in the cytotoxin genes *cagA* and *vacA*. Serum H. pylori IgG antibody (ELISA) was positive in 20/21 (95%) of perforated vs. 37/40 (93%) of nonsurgical duodenal ulcers and in 5/5 (100%) of perforated vs. 24/28 (86%) of nonsurgical gastric ulcer patients. There were no significant differences between the perforated and nonsurgical peptic ulcer groups for these H. pylori serum and gene markers. It was assumed that H. pylori infection is not etiologically related to perforation of peptic ulcer [21]. D H Reinbach, et al concluded in their study the lack of association of acute perforated duodenal ulcer and H. pylori infection suggests that perforated duodenal ulcer has a different pathogenesis from chronic duodenal ulcer disease, and that the first should not be regarded simply as a complication of the second [22].

In our study, 72.5% of H. pylori +ve cases were present in  $\leq 50$  years age group though statistical analysis failed to reveal any significant differences between ages of H. pylori positive cases compared to their counterpart ( $P = 1.0000$ ). 90% of H. pylori +ve were male while only 10% of H. pylori +ve were female. This difference was also not significant ( $P = 0.1326$ ). But Previous studies also advocates similar trend. In a South East Asian study, the H. pylori-infected group was significantly younger (mean 47.6 versus 62.5 years), with a male preponderance (49 of 51 versus 14 of 22 patients), and had significantly less NSAID consumption (three of 51 versus ten of 22) and more prolonged dyspepsia (40 of 51 versus ten of 22), compared with H. pylori-negative patients [23]. In a South Korean study, 44.8% patients were positive for H. pylori tests, comparing with those who did not perform H. pylori test, patients who tested for H. pylori infection were significantly younger ( $47.6 \pm 16.8$  vs  $53.0 \pm 19.1$  years,  $P = 0.003$ ) and none of them had malignant disease [14]. H. pylori infection probably plays an important role in the causation of non-NSAID-induced peptic ulcer perforation.

In terms of the site of perforation, 1<sup>st</sup> part of duodenum was most common one (96%) followed by antral (4%) in our study. Yang YJ, et al reported duodenum to be the most common site, followed by pylorus, and antrum [14]. Cherian J V, et al reported that incidence of duodenal perforation is more common but there is rise in incidence of gastric perforation in Indian sub-continent [24]. Wysocki A, Budzynski P, Kulawik J, et al reported that previously predominated duodenal perforation is now shifting to gastric perforation [25]. Our study

also founded 95% of H. pylori +ve cases caused duodenal perforation, though all of the antral perforations were also H.pylori +ve. Xia B, et al reported that H. pylori infection was associated with both duodenal ulcer and gastric ulcer whereas non-steroidal anti-inflammatory drug use was only associated with gastric ulcer [26]. The finding of this series coincides with findings of the above workers.

In our study, all patients presented with abdominal pain, 13 (26%) with abdominal distension, 6 (12%) with vomiting and 5 (10%) with shock. Ugochuckwu AL, et al reported that most patients presenting with severe dehydration and shock was because of increased time duration between onset of symptoms and presentation at hospitals [17]. Dehydration in peptic perforation is due to internal as well as external loss of fluid and restriction of fluid intake. Most of the patients presented in between 2-4 days in our study. Some patients presented late between 6 to 7 days, among which most died due to septicemia or respiratory complications. SushmaSurapaneni, et al reported that most patients in southern India had reached the hospital within 12 hours [27]. Ugochukwi A J, et al reported that 51.3% patients reach the health care centre within 24 to 48 hours [17]. The delay in our series can be attributed to the availability of vehicle, distance of our hospital from the rural areas from where most patients come. Most patients take home remedies for discomfort, visit local health workers and wait for discomfort to subside. The idea of emergency surgical intervention is not appealing to most patients because of lack of awareness.

In our study, 84% of P.P.U. had history of peptic ulcer symptoms. 100% of H. pylori +ve cases had history of peptic ulcer symptoms while 80% of H. pylori –ve patients had no history of PUS. The difference was extremely significant statistically ( $P = <0.0001$ ), thus establishing a strong relation of H. pylori as important risk factor for peptic ulcer and its complications. Barksdale A R, et al reported that 50% of the patients of peptic perforation had history of associated peptic ulcer disease [28].KjetilSoride, Kenneth Thorsen, et al reported majority of the patients of peptic perforation have an association with peptic ulcer disease [15]. The finding of this series coincides with findings of the above workers.

In our study only 10% of P.P.U. had history of NSAIDs ingestion. 100% of H. pylori +ve cases had no history of NSAIDS intake while 50% of H. pylori –ve cases had history of NSAIDS intake. The difference was extremely significant statistically ( $P = 0.0001$ ) making H. pylori important determinant in non- NSAIDS user peptic perforation. The history of NSAIDS users were more in >50 years age group (15.4% vs 8.1%) (Table 3). There was female preponderance in NSAIDS user group (60%) as well as mortality was high (20%) in comparison to H. pylori group(10%) (Table 2). In a study from Swedish populationsuggested that NSAIDS had little influence on peptic ulcer complications reflecting declining incidences of peptic ulcer complication despite rising NSAIDS prescription after PPI introduction [29].In another study by Yang YJ, et al the proportion of patients taking NSAIDS ( 2.9% vs 30%) was significantly higher in older age group, whereas the proportion of patient with H. pylori was significantly younger (50.4% vs 26.8%) along with female dominance, high complications and mortality [14], which was in agreement with our study.

In our study, 26 % of PPU had history of alcohol consumption while 32% had smoking history. Non H. pylori Non-NSAIDS group had 100% history of alcohol and smoking, making alcohol and smoking as important risk factor in this group. The association between H. pylori and alcohol & smoking could not be established significantly. Parikh SS, et al reported that tobacco chewing to be associated with majority of gastric ulcers and its complication. Tobacco had been found to have a high association with gastric mucosa erosion [30]. AtishBansod, et al reported 55.71% of duodenal perforation patients having addiction to smoking tobacco [31]. Yang YJ, et al reported alcohol consumption as important associated risk factor for Non H. pylori Non-NSAIDS group [14]. In this region the abuse of tobacco in form of smoking cigarette or bidi or chewing alone or with betel nuts is very common. The finding of this series coincides with findings of the above workers.

Biopsy were taken from the margins of the perforation. Per-op RUT was done and other specimen was sent for histopathological examination. 40 (80%) were positive showing color change to pink within 24 hours.All the HPE reports showed chronic inflammatory lesions with lymphocyte predominance having no evidence of malignancy.All the 40 H. pylori +ve cases were also positive with Modified Warthin Starry stain but only 38 were positive with Giemsa and H&E stain, thus establishing the fact that detection by Modified Warthin Starry (silver) staining has better positive predictive value than Giemsa stain. Also, Rapid Urease Assay has high sensitivity and specificity. Other studies also suggest same thing [1,9].All H. pylori +ve cases were given anti-H. pylori therapy (3 drug regime compromising of clarithromycin, pantoprazole & amoxicillin) for 14 days at the time of discharge as recurrence rate decreases with therapy [4,5,6,7].

In our study, 5 (10%) patients died out of which 4 due to septicemia and 1 due to respiratory failure. NSAIDS user group had highest mortality rate of 20% while H. pylori +ve group had 10%. All the mortality was in >50 years age group. 38.5% of >50 years age group succumbed to the disease either due to septicemia or respiratory failure. The difference was extremely significant statistically ( $P = 0.0006$ ). Kocer B, et al reported a mortality rate of 37.7% in age above 65 years [32].Lau J Y, et al reported mortality in peptic perforation to be around 30% [33].Buck D L, et al reported a mortality rate of 28% in elderly patients. Sarcide K, Thorsen K, et al reported mortality rate from 20-30% as age advances [15]. RajshekherPatif, et al reported a mortality rate of



44% on age group above 60 years [34].The finding of this series is in accordance with the findings of the above workers.

### V. Conclusion

H. pylori is still the common cause of complicated peptic ulcer disease i.e. of P.P.U. Males are most commonly affected. The most common site of perforation is 1<sup>st</sup> part of duodenum. Elderly females are more associated with NSAIDs-associated P.P.U. Alcohol and Smoking are important risk factors in Non-*H. pylori*, non-NSAID P.P.U. Rapid Urease Assay has high sensitivity and specificity. Modified Warthin Starry (silver) staining has better positive predictive value than Giemsa stain for *H. pylori*.

### Limitations of the study

The conclusion is based on a relatively small number of patients and a large preferably multicenter study, is therefore warranted.

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### Disclosure

The authors declare no conflict of interest.

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