

ORIGINAL RESEARCH**Study of Risk Factors for Recurrence of Peptic Ulcer Disease****¹Dr. Abhishek Deepak, ²Dr. Subhendu Mohanty, ³Dr. Esha Singhal,
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ABSTRACT**Background:** To study the risk factors for recurrence of peptic ulcer disease.**Materials & methods:** A total of 100 subjects were enrolled. The age group included was 15 to 80 years. Possible risk factors including nonsteroidal anti-inflammatory drugs (NSAIDs), aspirin and alcohol were analysed. Recurrence rate were assessed. Student's t-test was used to compare means, chi-square test was performed. A P-value of <0.05 was considered statistically significant.**Results:** PUD was diagnosed using endoscopy and histology in 80 (80%) and by clinical diagnosis in 20 (20%) patients. The recurrence rate of PUD was 28% which was seen in 28 patients.**Conclusion:** The recurrence rate of PUD was 28%. The use of NSAID and H. pylori infection were risk factors for recurrence of PUD.**Keywords:** recurrence, peptic ulcer disease, risk factors.**INTRODUCTION**

Peptic ulcers are open sores involving the mucosa through the muscular layer of the stomach or the first portion of the duodenum. Peptic ulcer disease (PUD) is a common pathology in gastroenterology. The incidence rate of PUD ranges from 10% to 19% and impact 4 million people globally each year. One of the hallmarks of peptic ulcer symptoms is abdominal pain, which is usually relieved by food intake or antacids. ¹ The occurrence of PUD was recorded at about 1.5 percent to 3 percent. ¹ Perforated peptic ulcer (PPU) is a severe complication of PUD, and people with PPU also have severe abdomen with a high risk of long-term illness and fatality. ² Proton pump inhibitors such as omeprazole, pantoprazole, lansoprazole are widely recognized worldwide as the best pharmacological therapy for both gastric and duodenal ulcers of the stomach. ³

The main risk factors for PUD are H. pylori and NSAID use, however not all individuals infected with H. pylori or taking NSAIDs develop PUD. ^{4,5} Almost half of the world's population is colonized by H. pylori. ⁶ The organism is usually acquired in childhood and persists until treated. Risk factors for acquiring the infection include a lower socioeconomic status and unsanitary conditions or crowding. The prevalence of H. pylori is higher in

developing countries and more common in certain ethnicities. In the last five years in the United States, there has been a decline in the prevalence of *H.pylori* in all ages. Yet, there are differences based on ethnicity with rates of infection that are over 60% in Mexican Americans versus 30% in the non-Hispanic white population.⁷ Peptic ulcer disease is common with a lifetime prevalence in the general population of 5-10% and an incidence of 0.1–0.3% per year.⁸ Peptic ulceration occurs due to acid peptic damage to the gastro-duodenal mucosa, resulting in mucosal erosion that exposes the underlying tissues to the digestive action of gastro-duodenal secretions. This pathology was traditionally related to a hypersecretory acid environment, dietary factors and stress. However, the increasing incidence of the *Helicobacter pylori* infection, the extensive use of NSAIDs, and the increase in alcohol and smoking abuse have changed the epidemiology of this disease. Despite a sharp reduction in incidence and rates of hospital admission and mortality over the past 30 years⁹⁻¹¹, complications are still encountered in 10–20% of these patients.¹² Hence, this study was conducted to study the risk factors for recurrence of peptic ulcer disease.

MATERIALS & METHODS

A total of 100 subjects were enrolled. The age group included was 15 to 80 years. Possible risk factors including nonsteroidal anti-inflammatory drugs (NSAIDs), aspirin and alcohol were analysed. Recurrence rate were assessed. Student's t-test was used to compare means, chi-square test was performed. Multivariate logistic regression was done with peptic ulcer recurrence as the dependent variable and age, gender, comorbidities, NSAID, Aspirin and Alcohol. The result was analysed using SPSS software. A P-value of <0.05 was considered statistically significant.

RESULTS

A total of 100 patients were enrolled. 70 patients were males, and 30 were females. The age of the study population ranged from 15 to 80 years. PUD was diagnosed using endoscopy and histology in 80 (80%) and by clinical diagnosis in 20 (20%) patients. The recurrence rate of PUD was 28% which was seen in 28 patients.

Table 1: Risk factors associated with 5-years recurrence of Peptic ulcer disease.

Variable	Overall (n=100)	Recurrence (n= 28)	No recurrence (n= 72)	p- value
Gender				
Male	70	18 (64.3%)	48(68.5%)	0.5
Female	30	10 (33.4%)	24(80%)	
H. pylori infection				
Yes	20	9 (45%)	11(55%)	0.05
No	80	22 (27.5%)	58 (72.5%)	
NSAID use				
Yes	25	11 (44%)	14(56%)	0.006
No	75	22 (29.4%)	53 (70.6%)	

Different types of complications were seen. Gastrointestinal bleeding was 30% and fistula in 4% cases. 56% cases with no complications.

Table 2: Complication types of Peptic ulcer disease.

Type of complication	N (%)
Gastrointestinal bleeding	30 (30)
Fistula	4 (4)
Perforation	10 (10)
No complications	56 (56)

DISCUSSION

The consumption of Nonsteroidal anti-inflammatory drugs (NSAIDs) and acetylsalicylic acid (ASA), which leads to adverse gastrointestinal events such as peptic ulcers, are becoming more extensive. It is also conceivable that NSAID use is associated with peptic ulcer complications, such as upper gastrointestinal hemorrhage or perforation. Peptic ulcer disease also has a significant burden on health care costs. The overall cost of peptic ulcer disease in the USA, including actual expenses and loss of productivity at work, is estimated to be 5.65 billion USD per year.¹³ Consumption therapy (NSAIDs) is well known and is associated with an increased risk of peptic ulcers and non-variceal upper gastrointestinal bleeding. Findings also say that the colon may also be impaired because of excessive use of NSAIDs. Also, the use of these medications is increasing in a growing elderly population. Various studies demonstrated that using proton pump inhibitors (PPIs) reduces upper GI harm and the likelihood of upper GI complications but is not beneficial in avoiding minor intestinal mucosal damage associated with NSAIDs.¹⁴ Hence, this study was conducted to study the risk factors for recurrence of peptic ulcer disease.

In the present study, a total of 100 patients were enrolled. 70 patients were males, and 30 were females. The age of the study population ranged from 15 to 80 years. PUD was diagnosed using endoscopy and histology in 80 (80%) and by clinical diagnosis in 20 (20%) patients. The recurrence rate of PUD was 28% which was seen in 28 patients. A study by Alssinari YM et al, studied all patients with endoscopy-proved PUD were identified by reviewing medical records (Best-Care system). Possible risk factors including smoking, nonsteroidal anti-inflammatory drugs (NSAIDs), aspirin, alcohol, caffeine, and steroids were analyzed by multivariate analysis. Among 223 patients, there were 187 (83.8%) diagnosed with endoscopy-proved PUD and 36 (16.2%) diagnosed with clinical PUD. Among them, 126 (56.5%) patients were males, and the mean age was 62±2 years. The five years recurrence rate of PUD was 30.9%. There was no significant difference in the recurrence rate between the duodenal ulcer (33.3%) and the gastric ulcer (28.8%). The common complication of PUD was gastrointestinal bleeding (34.1%). Patients who had a complicated PUD were associated with a higher rate of recurrence (45.9%) compared to the uncomplicated PUD (19.2%) ($P > 0.05$).¹⁵

In the present study, different types of complications were seen. Gastrointestinal bleeding was 30% and fistula in 4% cases. 56% cases with no complications. Another study by Lund S et al studied retrospective cohort study at a tertiary care center from 2008 to 2019, identifying 175 patients who underwent operative repair of PPUD. Patients who developed a leak (17%) were compared to patients who did not. Both hypoalbuminemia (albumin < 3.5 g/dL) ($P = .03$) and duodenal ulcers ($P < .01$) were identified as significant risk factors for leak. No significant difference was found between leak and no leak groups for AAST disease severity grade, repair technique, or pre-operative use of tobacco, alcohol, or steroids. Post-operative leaks were associated with prolonged hospital stay (29 days compared to 10, $P < .01$), increased complication rates (77% compared to 48%, $P < .01$), and increased re-operation rates (73% compared to 26%, <0.01).¹⁶ NSAIDs induce mucosal injury by several mechanisms. The majority of NSAIDs are weak acids and become protonated and cross lipid membranes to enter epithelial cells when exposed to acidic gastric juice (pH 2). In the epithelial cell (pH 7.4), the NSAID ionizes and releases its H⁺ and cannot cross the lipid membrane and thus becomes trapped. This leads to uncoupling of oxidative phosphorylation, leading to decreased mitochondrial energy production, reduced cellular integrity, and increased cellular permeability. This can result in a topical injury and rapid epithelial cell death, superficial hemorrhage, and erosions.¹⁷

CONCLUSION

The recurrence rate of PUD was 28%. The use of NSAID and H. pylori infection were risk factors for recurrence of PUD.

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