



**ORIGINAL RESEARCH PAPER**

**Gastroenterology**

**CLINICAL PROFILE AND RISK FACTORS FOR BENIGN PEPTIC ULCER DISEASE IN A TERTIARY CARE CENTRE IN THE SUB-HIMALAYAN RANGES OF NORTH INDIA**

**KEY WORDS:** PUD - Peptic Ulcer Disease, DU – Duodenal Ulcer, GU – Gastric Ulcer, NSAIDS – Non –steroidal anti-inflammatory drugs.

|                           |   |
|---------------------------|---|
| <b>Dr. Vishal Bodh</b>    | Assistant Professor , Department of Gastroenterology, Indira Gandhi Medical College, Shimla. (H.P.)                     |
| <b>Dr. Rajesh Sharma*</b> | Associate Professor, Department of Gastroenterology, Indira Gandhi Medical College, Shimla (H.P.) *Corresponding Author |
| <b>Dr. Brij Sharma</b>    | Professor, Department of Gastroenterology, Indira Gandhi Medical College, Shimla(H.P)                                   |

**ABSTRACT**

**Background:** To study the clinical profile and risk factors for benign peptic ulcer disease.

**Material and Methods:** A total of 200 patients of peptic ulcer disease (PUD) diagnosed on upper gastrointestinal endoscopy were included. The socio-demographic profile, risk factors, clinical and endoscopic findings were recorded.

**Results:** A total of 200 patients of peptic ulcer disease were included, out of which 168(84%) were males, while 32 (16%) were females. Most of the patients (61%) were between age 31-60 years with mean age of 47 years. Most of patients were farmers from rural areas and belonged to low socioeconomic status. History of smoking and alcohol intake was present in 106(53%) and 70( 35 %) patients respectively. Most common presenting complaints were epigastric pain and/or burning in 72 (36%) , followed by upper abdomen discomfort 70(35%) and upper gastrointestinal bleed 58(29%). Duodenal ulcer (DU) was present in 152 (76%), gastric ulcer(GU) in 30 (15%) while 18 (9%) had both DU and GU. Most of the patients had Forrest III ulcer 167 (83.5%) followed by Forrest IIc ulcer 13 (6.5%). *H. pylori* was detected by rapid urease test on endoscopic biopsy specimen in 156 (78 %) of the total 200 patients of peptic ulcer disease. *H. pylori* was detected in 78.94 % case of DU, 60% case of GU and 100% cases of both DU and GU.

**Conclusion:** PUD is a multifactorial health problem affecting almost all populations worldwide. . The major risk factors associated with PUD included tobacco and alcohol consumption besides low socioeconomic status, rural background and occupation of farming. Our findings indicate the substantial role of *H. pylori* and painkiller ingestion in the pathogenesis of PUD. Duodenal ulcer is most common type followed by gastric ulcer. Most had Forrest III ulcer followed by Forrest IIc.

**INTRODUCTION**

An ulcer in the gastrointestinal (GI) tract may be defined as a break in the lining of the mucosa, with appreciable depth at endoscopy or histologic evidence of involvement of the submucosa. The term Peptic Ulcer Disease (PUD) is used broadly to include ulcerations and erosions in the stomach and duodenum from a number of causes.[1]. PUD is a multifactorial disorder resulting from imbalance between various aggressive (acid, pepsin) and defensive factors (mucus, bicarbonate, prostaglandins, cell regeneration and blood flow). The main risk factors for PUD are *Helicobacter pylori* (*H. pylori*) and NSAID use, however not all individuals infected with *H. pylori* or taking NSAIDs develop PUD [1, 2]. The incidence of peptic ulcer disease is decreasing This is most likely secondary to a decline in *H. pylori* infections due to treatment and improved hygiene[3,4] and over the counter use of proton pump inhibitors(PPI).

Himachal Pradesh is a hilly state in northern India, situated in sub Himalaya, with predominantly agricultural economy. The life style and dietary habits of population in the area differs from those living in plains. This study was planned to find out the socio-demographic profile, risk factors, clinical and endoscopic findings of the patient with PUD from natives of this region, diagnosed on Upper Gastrointestinal Endoscopy (UGIE).

**METHODS**

This was a prospective hospital based observational study carried out at Indira Gandhi Medical College, Shimla (Himachal Pradesh) in Department of Gastroenterology from June 2019 to January 2020. Patients between 18 to 80 years of age diagnosed to have peptic ulcer disease on Esophagogastroduodenoscopy(EGD) performed for various indications were included. Patients having malignant looking ulcers and history of previous surgery for ulcer disease were excluded EGD was done after overnight fasting (or in patients who had been fasting for a minimum duration of 6 hrs) with

Olympus EXERA II GIF-H180 gastroscope . EGD was done under local anesthesia with 10% xylocaine spray. A total of 200 patients were included, and there socio-demographic, clinical and endoscopic data were recorded. Grading of the ulcer disease was done with Forrest grade [5]. Endoscopic biopsy specimens were obtained from the antral and body region of the stomach and immersed in Rapid Urease Test (RUT) medium. RUT was considered positive when the color of the indicator changed from yellow to magenta red after 30 minutes of observation. The socio-demographic parameters including age, gender, locality, socioeconomic status, occupation, and the addiction patterns of the patients were studied. Socio-economic status was assessed by the modified BG Prasad classification [6]. Nonsmokers were defined as having smoked fewer than 100 cigarettes in their lifetime or less than one cigarette per day for 6 months or more [7]. All others were counted as smokers for the purpose of recording in the history sheet. To assess alcohol consumption, subjects were asked about their usual intake of beer, wine, and liquor from the age at which they started drinking and a drinker was defined as having consumed at least one alcoholic beverage per month. A never drinker was defined as having consumed less than one drink per month [7].

All statistical analysis was performed by using SPSS (statistical package for social sciences) software version 20 and MS EXCEL 2007. Descriptive statistic values were presented as in the form mean ± SD and percentages. Chi-square test was performed to assess the association among different categorical variables.

**RESULTS**

Out of 200 patients, 168 (84%) were males, while 32 (16%) were females, with male to female ratio of 5.2:1. Most of patients 132 (61%) were between 31-60 years with mean age of 47 years. Most of the patients comes from rural areas (82%) and belonged to the low socioeconomic status. As per the modified BG Prasad classification, 38% of the patients

belonged to lower class, followed by 26% upper lower class, 23% lower middle class, 12% upper middle class while only 1% was from upper class [Table I]. Most of the patients were illiterate (42%) and were involved in farming works (52 %). History of smoking was present in 106(53%). History of alcohol intake was present in 70 (35% ) [Table I]. Forty patients (20%) had past history of PUD. History of NSAID/acetylsalicylic acid (ASA) intake was present in 41%[n=82] [Table I].

Most common presenting complaints were epigastric pain and /or epigastric burning 72 (36%), followed by upper abdomen discomfort 70 (35%), and upper GI bleed 58 (29%)[Table II]. Twenty (10%) patients had associated comorbidities like chronic obstructive airway disease, chronic kidney disease and coronary artery disease. Duodenal ulcer was present in 152 (76%), gastric ulcer in 30 (15%) while 18 (9%) had both DU and GU. Most of the patients had Forrest III ulcer 167 (83.5%) followed by Forrest IIc ulcer 13 (6.5%) [Table II]. *H. pylori* was detected by rapid urease test on endoscopic biopsy specimen in 156 (78 %) of the total 200 patients of peptic ulcer disease. *H. pylori* was detected in 78.94 % case of DU, 60% case of GU and 100% cases of both DU and GU [Table II].

**Table -i – Socio-demographic Parameters And Risk Factors OfThe Peptic Ulcer Disease Patients**

| SOCIODEMOGRAPHIC DETERMINANT | NUMBER | PERCENTAGE (%) |
|------------------------------|--------|----------------|
| <b>GENDER</b>                |        |                |
| MALE                         | 168    | 84             |
| FEMALE                       | 32     | 16             |
| <b>LOCALITY</b>              |        |                |
| RURAL                        | 164    | 82             |
| URBAN                        | 36     | 18             |
| <b>SOCIOECONOMIC STATUS</b>  |        |                |
| UPPER                        | 2      | 1              |
| UPPER MIDDLE                 | 24     | 12             |
| LOWER MIDDLE                 | 46     | 23             |
| UPPER LOWER                  | 52     | 26             |
| LOWER                        | 76     | 38             |
| <b>EDUCATION</b>             |        |                |
| ILLITERATE                   | 84     | 42             |
| PRIMARY                      | 56     | 28             |
| SECONDARY                    | 37     | 18.5           |
| GRADUATE                     | 23     | 11.5           |
| <b>OCCUPATION</b>            |        |                |
| FARMER                       | 104    | 52             |
| HOUSE WORK                   | 24     | 12             |
| SELF EMPLOYED                | 20     | 10             |
| LABOURER                     | 35     | 17.5           |
| SERVICE                      | 17     | 8.5            |
| <b>RISK FACTOR</b>           |        |                |
| SMOKING                      | 106    | 53             |
| ALCOHOL                      | 70     | 35             |
| PAST HISTORY OF PUD          | 40     | 20             |
| <b>DRUG EXPOSURE</b>         |        |                |
| NSAIDS                       | 73     | 36.5           |
| ANTIPLATELET                 | 11     | 5.5            |

**Table – II – Clinical And Endoscopic Characteristics Of The Peptic Ulcer Disease Patients**

| PRESENTING COMPLAINTS               | NUMBER | PERCENTAGE (%) |
|-------------------------------------|--------|----------------|
| EPIGASTRIC PAIN AND/OR BURNING      | 72     | 36             |
| EPIGASTRIC DISCOMFORT               | 70     | 35             |
| UPPER GASTROINTESTINAL BLEED        | 58     | 29             |
| <b>SITE OF PEPTIC ULCER DISEASE</b> |        |                |
| DUODENAL ULCER (DU)                 | 152    | 76             |

|                                  |     |      |
|----------------------------------|-----|------|
| GASTRIC ULCER (GU)               | 30  | 15   |
| Both DU and GU                   | 18  | 9    |
| <b>FORREST GRADING OF PUD</b>    |     |      |
| Ia                               | 2   | 1    |
| Ib                               | 5   | 2.5  |
| IIa                              | 4   | 2    |
| IIb                              | 9   | 4.5  |
| IIc                              | 13  | 6.5  |
| III                              | 167 | 83.5 |
| <b>RUT TESTING FOR H. PYLORI</b> |     |      |
| All patient with PUD             | 156 | 78   |

**DISCUSSION**

Peptic ulcer disease is a multi-factorial health problem affecting almost all populations worldwide. In our study male preponderance was seen with Male to Female ratio of 5.2:1. Similar male predominance is seen in other studies of peptic ulcer disease in India [8,9,10]. Most of patients (61%) in our study were between 31-60 years with mean age of 47 years. Khuroo et al. has reported that prevalence of peptic ulcer increased with age, with steep rise in fourth decade as seen in our study [9]. Most of the patients in our study were illiterate and comes from rural areas and belonged to the low socioeconomic status. Low socioeconomic status and illiteracy has been linked to peptic ulcer disease in other studies as well [11]. Low SES is a risk factor for peptic ulcer disease independent of *H.pylori* infection and NSAID [11]. In our study, history of smoking was present in 53% while the history of alcohol intake was present in 35%. In a Spanish study the prevalence of peptic ulcer in smokers was double that of nonsmokers (p < 0.05) [12]. Concurrent consumption of alcohol and cigarette smoking significantly increases the risk of gastric ulcers. Cigarette smoking increases both the incidence and relapse rate of peptic ulcer diseases and also delays ulcer healing in humans [13]. In our study, history of NSAID/acetylsalicylic acid (ASA) intake was present in 41% patients of peptic ulcer disease. According to literature 15%-30% of the NSAIDs users have endoscopically confirmed GI ulcers [14]. The GI risk factors for NSAID induced PUD include age more than 65 years, a previous history of ulcer disease, and concomitant use of NSAIDs with anticoagulants, aspirin and clopidogrel [15].

Most common clinical presentation in our study was epigastric pain and /or burning (36%) followed by epigastric discomfort (35%) and upper gastrointestinal bleed (29%). In a study by Ramesh Roop Rai et al. [16], epigastric pain/discomfort was seen in 72.3% of the patient with peptic ulcer disease. In study by khuroo et al 24 % patients presented with GI bleed [9].

In our study, duodenal ulcer was more common with ratio of duodenal ulcer to gastric ulcer of 5:1 , which is very less as compared to 17:1 as shown in study by Khuroo et al[9]. This may indicate the decrease in incidence of DU, as epidemiology of PUD in India have changed in the past two decades with the incidence of duodenal ulcer declining more rapidly than that of gastric ulcer [17].

*H.pylori* was detected by Rapid urease test in 78.94 % cases of DU , 60% cases of GU , and 100% in patients who were having both DU and GU. This is similar to study done in Kashmir where *H.pylori* was present in 76.09% of DU, 50% of GU, whereas patients with duodenitis, channel ulcers, chronic active DU and those with multiple ulcers were 100% *H. pylori* positive[10].

In the study the histopathological confirmation of the *H.pylori* was not done which is the limitation of the study.

**CONCLUSION**

PUD is a multi-factorial health problem affecting almost all populations worldwide. The major risk factors associated with PUD included tobacco and alcohol consumption besides

low socioeconomic status, rural background and occupation of farming. Our findings indicate the substantial role of *H. pylori* and painkiller ingestion in the pathogenesis of PUD. Duodenal ulcer is most common type followed by gastric ulcer. Most had Forrest III ulcer followed by Forrest Iic.

## REFERENCES

1. Feldman M, Friedman LS, Brandt LJ. Sleisenger and Fordtran's gastrointestinal and liver disease: pathophysiology/diagnosis/management. Tenth edition ed. 2 volumes. Philadelphia, PA: Saunders/Elsevier; 2016. p. xxxi.p. 2369.p. 2389.
2. Zhang BB, Li Y, Liu XQ, Wang PJ, Yang B, Bian DL. Association between vacA genotypes and the risk of duodenal ulcer: a meta-analysis. *Mol Biol Rep* 2014;41:7241-7254.
3. Sonnenberg A. Review article: historic changes of *Helicobacter pylori* associated diseases. *AlimentPharmacolTher* 2013;38:329-342.
4. Lanas A, Chan FKL. Peptic ulcer disease. *The Lancet* 2017;390:613-6.
5. Forrest, JA.; Finlayson, ND.; Shearman, DJ. (Aug 1974). 'Endoscopy in gastrointestinal bleeding'. *Lancet*. 2 (7877):394-7.
6. The text book of Preventive and Social Medicine. In: Mahajan, Gupta, editors. 3rd ed. 2003, p. 117-8.
7. Kapoor A, Kumar V et al. Sociodemographic Parameters of Esophageal Cancer in Northwest India: A Regional Cancer Center Experience of 10 Years. *Indian J Community Med*. 2015 Oct-Dec; 40(4):264-267.
8. Jijo Veliyappillil Cheria, Aravindh Somasundaram, Sivaraman Ramalingam, Venkataraman Jayanthi. Peptic ulcer disease in India - A 16 year trend analysis. *Tropical Gastroenterology* 2010;31(4):260-265
9. MS KHUROO, R MAHAJAN, S A ZARGAR, G JAVID, AND S MUNSHI. Prevalence of peptic ulcer in India: an endoscopic and epidemiological study in urban Kashmir. *Gut*, 1989, 30, 930-934.
10. GH. JEELANI ROMSHOO, G.M. MALIK, J.A. BASU, M. YOUSUF BHAT and A.R. KHAN. Prevalence of *Helicobacter pylori* Infection in Peptic Ulcer Patients of Highly Endemic Kashmir Valley A Preliminary Study. *Diagnostic and Therapeutic Endoscopy*, Vol. 6, pp. 31-36.
11. Denjagi B et al. PEPTIC ULCER DISEASE AND SOCIOECONOMIC STATUS. *ACTA MEDICA SALINIANA* Volume 45, No 1-2: 2016.
12. M Márquez, J A Ducóns, A Lanas, T Martínez, R Sainz, Prevalence of peptic ulcer in smokers and non-smokers in Aragón, [Article in Spanish] *Rev Esp Enferm Apar Dig*. 1989 Jun; 75(6 Pt 1):566-71.
13. J K Ko , C H Cho , Alcohol drinking and cigarette smoking: a "partner" for gastric ulceration, *Zhonghua Yi Xue Za Zhi (Taipei)* , 2000 Dec; 63(12):845-54.
14. Larkai EN, Smith JL, Lidsky MD, Graham DY. Gastroduodenal mucosa and dyspeptic symptoms in arthritic patients during chronic nonsteroidal anti-inflammatory drug use. *Am J Gastroenterol* 1987; 82: 1153-1158.
15. Wolfe MM, Lichtenstein DR, Singh G. Gastrointestinal toxicity of nonsteroidal antiinflammatory drugs. *N Engl J Med* 1999; 340: 1888-1899.
16. Rai RR, Gangadhar A, Mayabhate MM. Clinical profile of acid peptic disease in India: a cross-sectional survey of clinicians. *Int J Basic Clin Pharmacol* 2017; 6:194-202.
17. Amit Kumar Dutta , Ashok Chacko, Avinash Balekuduru, Manoj Kumar Sahu, Sajith Kattiparambil Gangadharan Time trends in epidemiology of peptic ulcer disease in India over two decades , *Indian J Gastroenterol* . 2012 Jun; 31(3):111-5.