www.jmscr.igmpublication.org
Impact Factor (SJIF): 6.379
Index Copernicus Value: 71.58
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossrefDOI: https://dx.doi.org/10.18535/jmscr/v6i7.108

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

# Clinical Profile and Risk factor of Peptic ulcer disease in coastal eastern India

Authors
**Manas Kumar Panigrahi[1], Ayaskanta Singh[1], Kanishka Uthansingh[1], Debasis Misra[1], Debasmita Behera[2], Mitali Rath[3], Mahesh Chandra Sahu[4], Manoj Kumar Sahu[1]***
[1]Departement of Gastroenterology, IMS & SUM Hospital, Siksha 'O' Anusandhan University, K-8, Shampur, Bhuabaneswar, Odisha, 751003
[2]Department of Skin & VD, IMS & SUM Hospital, Siksha 'O' Anusandhan University, K-8, Shampur, Bhuabaneswar, Odisha, 751003
[3]Department of Pathology, IMS & SUM Hospital, Siksha 'O' Anusandhan University, K-8, Shampur, Bhuabaneswar, Odisha, 751003
[4]Medical Research Laboratory, IMS & SUM Hospital, Siksha 'O' Anusandhan University, K-8, Shampur, Bhuabaneswar, Odisha, 751003
*Corresponding Author
**Dr Manoj Kumar Sahu**
Prof & HOD, Gastroenterology, IMS & SUM Hospitl, Siksha 'O' Anusandhan University, Bhubaneswar, Odisha, 751003, India
Email: *manojsahu427@gmail.com*

**Abstract**
**Background**: *Peptic ulcer patients increased day by day in eastern Odisha. Here we assessed the impact of multiple risk factors, including* Helicobacter pylori *infection, on the incidence of peptic ulcer disease (PUD).*
**Aims:** *The aim of the study was to access the clinical profile, complications involvement, risk factors and possible associations with in peptic ulcer diseases of respective patients.*
**Material and Method:** *It was an observational study done for a period of 1 year. Consecutive patients having peptic ulcer diagnosed during upper gastrointestinal (UGI) endoscopy were enrolled. The ulcer particulars, Forrest class, clinical presentation, complications, therapy and possible dietary and environmental risk factors were noted in pre designed questionnaire. Rapid urease test (RUT) was done to detect H. pylori infection.*
**Results:** *Among 1015 patients 633 (55%) had duodenal ulcer while 437 (38%) had gastric ulcer and 81 (7%) had both. Three fourths (75%) of the patients with peptic ulcer disease were males. The mean age of presentation was around 47 years. The most common presentation was pain abdomen (69%) and gastro intestinal bleed (31%). The ulcers of 903 patients (88%) were classified as Forrest III. Endotherapy was done in 28 patients (2.7%), those with Forrest I and Forrest IIa, IIb ulcers. H. Pylori infection was positive in 49% with PUD; while 18% of the patients gave history of NSAIDS consumption. There is a high proportion of non-NSAID, non-H.pylori peptic ulcer disease (~41%). Diabetes, hypertension, and chronic kidney disease were present in 7%, 12% and 2% respectively. It was seen that male gender (OR-1.5) and addiction to alcohol (OR-1.7); smoking (OR- 5.6) and Pan Masala (OR-1.5) were significantly associated with peptic ulcer disease as compared to controls.*
**Conclusion:** *The prevalence of peptic ulcer in endoscopy data remains high (8.2%) in coastal eastern India. Duodenal ulcer is commoner than gastric ulcer although the proportion has reached similar level (1.3:1). Not all patients present with pain abdomen. H. pylori infection and NSAIDS intake history is strongly associated with PUD. The proportion of idiopathic peptic ulcer (Non NSAIDS, Non H. Pylori) is around 41%.*
**Keywords**: *Clinical profile, risk factors, peptic ulcer disease, H. pylori.*

## Introduction

Peptic ulcer disease [PUD] is a pan geographic problem. Gastrointestinal bleed and perforation are the major complications of peptic ulcer disease and these complications are associated with significant morbidity and mortality. There are variations in the geographical distribution, time trends, gender and ulcer ratios, seasonal rates and behavioral response to treatment[1]. In 1979 Tovey et al reported that there was high prevalence of PUD in Odisha[2]. This fact was further supported recently by Singh et al where it was shown that, the most common cause of upper gastro intestinal (GI) bleed is peptic ulcer[3]. This is quite surprising because the commonest cause of GI bleed in studies from other parts of the country is variceal bleed[3]. Though the incidence of peptic ulcer disease is declining with recent improvement of hygiene and availability of potent anti secretary and anti ulcerogenic drugs,[4] still it poses a major challenge in coastal eastern India. Apart from the genetic factors, the environmental factors that can cause peptic ulcer are H. pylori infection, non-steroidal anti-inflammatory drugs (NSAIDs), cigarette smoking, environmental stress and diet. [4,5,6].

As there is regional variation in the presentation and prevalence of peptic ulcer disease, identification of the modifiable risk factors in this part of the country will serve to reduce the disease burden.

The aim of the study was to determine the epidemiology and clinical profile of peptic ulcer disease in a cohort of patients undergoing gastroduodenoscopy in a tertiary care centre. The second objective was to identify the risk factors of peptic ulcer including *H. Pylori* infection; NSAIDS and diet. The third objective was to look at the proportions of patients with "idiopathic peptic ulcer", i.e unrelated to *H. Pylori*, NSAIDS or alcohol.

## Material and Methods

This prospective study was done at the department of Gastroenterology, IMS and SUM Hospital, Bhubaneswar for a period of one year [Oct 2015-Oct 2016]. Inclusion Criteria: Consecutive patients having peptic ulcer disease diagnosed routinely during upper gastro intestinal [UGI] endoscopy were enrolled in the study. Peptic ulcer was defined as a mucosal break at least 3 mm in diameter (measured by a biopsy forceps), with or without a necrotic base in the middle of the lesion, in either the stomach (gastric) or the duodenum (duodenal). Age matched controls were included. Controls were those patients of non ulcer dyspepsia [who had normal mucosal study on UGIE]. Dyspepsia was defined as troublesome pain or discomfort in the upper part of the abdomen, or uncomfortable feeling of fullness, bloating and early satiety.

**Exclusion criteria**: The following patients and controls were excluded from the study.

1. Chronic liver disease patients or those patients having esophageal or gastric varices, congestive gastropathy
2. Patients of Carcinoma esophagus or carcinoma stomach
3. Patients with gastric outlet obstruction and perforation
4. Patients who refused to participate.

After obtaining appropriate consent, the patients were asked about their dietary habits, addictions, habituations, symptoms, clinical presentation and associated co morbidities in a pre designed questionnaire. Subjects were asked about the consumption of cereals (whether rice based or wheat based diet) and the frequency of consumption of spicy food. They were also inquired about their smoking habits and their consumption of paan masala. Paan is a balanced mixture of betel leaf with lime, areca nut, clove, cardamom, mint, tobacco, essence and other ingredients. For all dietary items, the frequency was categorized as never, 1–2 times per week (infrequent), and >3 times per week (frequent). Subjects were asked about whether they took spices in their diet; they were asked to classify the intensity of spicy diet on a subjective

basis as mild, moderate or severe. A questionnaire addressing all these questions was filled up.

Detailed drug history was also taken. The ulcer particulars, ie size and site, Forrest class, complications and therapy given to the peptic ulcer patients were also noted. *H. Pylori* infection was detected using rapid urease test (RUT) (Pylotest™, Halifax Research Laboratory, Kolkata) taking two bits of biopsy samples from the antrum. The tests were read at room temperature after four hours. Those patients with gastric ulcers, biopsies were taken from ulcer margins to rule out early malignancy and those patients positive for malignancy were excluded from the study.The study was approved by the institutional ethical committee.

**Statistical analysis**: Data were analyzed using simple statistical mean, average, percentage and standard deviation. The $\chi 2$ test was used for testing association between qualitative variables and the't' test was used for quantitative variables. Microsoft Excel and Epi Info software were used for statistical analysis.

**Results**

During the period October 2015- October 2016; a total number of 12,291 upper GI endoscopies were done in the institution. 1015 consecutive patients (8.2%) had peptic ulcer disease. There were seven hundred patients (5.6%) who did not have the known risk factors like NSAIDS or alcohol consumption. 633 patients (55%) had duodenal ulcer while 437 (38%) had gastric ulcer and 81 patients (7%) had both gastric and duodenal ulcers. The duodenal: gastric ulcer ratio was 1.3:1. Around 3/4$^{th}$ of the peptic ulcer patients were males. 30% of the patients belong to age group of 20-40 years, 40% were in the age group 40-60 years while only 23% were > 60 years. The mean age was around 47 years.

**Table** 1 depicts the clinical presentation of the peptic ulcer patients.

| PRESENTATION | GASTRIC ULCER (N=437 ) | % | DUODENAL ULCER(N=633) | **%** | OVERALL TOTAL (N=1015) GU+DU=81 | **%** |
|---|---|---|---|---|---|---|
| PAIN ABDOMEN | 303 | 77.57 | 436 | 68.87 | 702 | 69.16 |
| HEMATEMESIS | 62 | 14.18 | 93 | 14.69 | 145 | 14.28 |
| MELENA | 101 | 23.11 | 187 | 29.54 | 265 | 26.10 |
| Both | 40 | 9.15 | 61 | 9.63 | 94 | 9.26 |
| Vomiting | 136 | 31.12 | 203 | 32 | 317 | 31.23 |
| OTHER SYMTPOMS | 39 | 9 | 45 | 7 | 77 | 7.58 |

The most common presentation was pain abdomen (69%); GI bleed (31%) and vomiting (31%). Out of the 324 patients who had presented with GI bleed; 145 patients had hematemesis, 265 patients had melena while 86 patients had both hematemesis and melena. Out of these 324 patients, 219 patients had duodenal ulcers; 131 patients had gastric ulcers and 26 patients had both gastric and duodenal ulcers. The ulcers of 903 patients (88%) were classified as Forrest III. Endotherapy was done in 28 patients (2.7%) those with Forrest I; Forrest IIa and Forrest IIb ulcers. None of these patients required surgery. The number of patients who required hospitalization was 324; majority of which had presented with UGI Bleed (Table 1). Table 2 shows the relationship of *H. Pylori* infection and NSAIDS intake with Peptic ulcer.

**Table 2:** Relationship of H Pylori infection and NSAIDS intake with Peptic ulcer

| | PEPTIC ULCER TESTED RUT (n=913) | % | CONTROLS TESTED RUT(N=0) | % | OR; P Value |
|---|---|---|---|---|---|
| RUT +ve (H Pylori) | 448 | 49 | NA | | |
| RUT –ve | 465 | 51 | NA | | |
| NSAIDS USERS | 163 | 18 | 6 | 2.85 | **6.5[2.8-14.9]; p<0.005** |
| Non NSAIDS Non H Pylori | 465-76=389 | 42 | NA | | |

Rapid urease test was done in 913 patients with peptic ulcer. It was positive, suggesting *H. Pylori* infection, in 448 patients (49%). Out of those 913 patients who were tested for *H Pylori*; 163 patients (18%) gave history of NSAIDS consumption. Only 6 patients out of the 213 controls (2.9%) gave history of NSAID intake; suggesting that NSAIDS was strongly associated with peptic ulcer. Around 41% (378 patients out of 913) were non NSAIDS, non *H. Pylori* induced peptic ulcers. There were 409 patients out of 1015 patients (40.3%) who didn't have *H. Pylori* Infection neither had history of NSAIDS consumption or alcohol consumption. Out of the 324 bleeding peptic ulcer patients, 64 had history of NSAIDS consumption, 61 patients had history of alcohol consumption. There were 204 patients who had a bleeding peptic ulcer but didn't give any history of alcohol or NSAID consumption (Table 2). Table 3 shows the analysis of risk factors that are associated with peptic ulcer disease after excluding the known risk factors like alcohol and NSAID consumption.

**Table 3:** Risk factors association with peptic ulcer disease

| Risk factors | Peptic ulcer Patients N=700 | % | Controls N=182 | % | OR | P Value |
|---|---|---|---|---|---|---|
| Smoking | 165 | 23.6 | 9 | 4.9 | 5.928 [2.966- 11.85] | <0.005 |
| Pan Masala | 219 | 31.3 | 41 | 22 | 1.566 [1.068-2.296] | 0.021 |
| Rice based | 687 | 98 | 178 | 98 | 1.188 [0.3826-3.686] | 0.765 |
| Spicy food | 650 | 92.8 | 170 | 93.4 | 0.9176 [0.478-1.762] | 0.790 |
| Steroid | 5 | | 2 | | 0.6475 [0.1246-3.364] | 0.653 |

It was seen that male gender [OR-1.5]; smoking [OR 5.6]; Paan Masala consumption [OR-1.5] were significantly associated with peptic ulcer disease as compared to controls. Other dietary factors like the type of cereal consumption, spicy food were not associated with development of peptic ulcer (Table 3). Table 4 shows association of co morbidities with peptic ulcer disease.

**Table 4:** Association of comorbidity with peptic ulcer disease

| Co-morbidities | Peptic Ulcers(N=1015) | % | Controls(N=210) | % | Sign |
|---|---|---|---|---|---|
| Diabetes | 76 | 7.4 | 17 | 8 | NS |
| Hypertension | 130 | 12.8 | 27 | 12.8 | NS |
| Kidney | 25 | 2.4 | 5 | 2.3 | NS |
| Heart Disease | 37 | 3.6 | 6 | 2.8 | NS |
| COPD | 78 | 7.6 | 12 | 5.7 | NS |
| Arthritis | 247 | 24 | 12 | 5.7 | S [p<0.005] |
| Other | 11 | 1.08 | 4 | 1.9 | NS |

Diabetes, hypertension, and chronic kidney disease were present in 7%, 12% and 2% respectively. However these co morbidities were not significantly associated with peptic ulcer as compared to controls. Those patients with arthritis had more chances of peptic ulcer disease than controls (Table 4).

## Discussion

This study shows that the observed frequency of PUDs among the patients undergoing an esophago gastro duodenoscopy is around 8%. This percentage is quite high considering the fact that peptic ulcer disease is considered to be a disease of the past[7]. There has been dramatic decrease in the incidence of PUDs in the west[7]. Even the recent studies from India shows decrease in the epidemiology of PUD[8]. The decrease in the frequency of peptic ulcer has been attributed to the improvement in general hygiene and also to the availability of potent proton pumps inhibitor drugs. A study from Southern India by Dutta et al[8] emphasized on the fact that there has been decrease in the frequencies of peptic ulcer disease over the past two decades [from 17% in 1998 to 6% in 2008]. They also showed that the incidence

of duodenal ulcer is declining more rapidly than that of gastric ulcer. Similar observation has been made here where there is almost one to one ratio of duodenal to gastric ulcer. The patient population of the present study consist majority of those residing on the coastal belt of Odisha and West Bengal; probably ethnicity plays an important role in the epidemiology of PUDs; with coastal eastern India having an increased prevalence as compared to other parts of India[2].

Another interesting fact is that almost one fourth of the patients do not have pain abdomen. It is a well known that >90% of the patients of peptic ulcer present with pain abdomen[9]. A study by Singh et al on patients catering to same patient profile has shown that only 60 % of the bleeding peptic ulcer patients present with pain abdomen[3]. In order to know the cause of such high prevalence of peptic ulcer disease persisting in Eastern costal belt of India; dietary pattern and genetic factors need to be evaluated meticulously. Majority of these patients consume rice based diet (>98%). Apart from *H. Pylori* infection and NSAID intake; smoking; paan masala and alcohol consumption were significantly associated with peptic ulcer disease. Previous meta analysis and population based studies have identified *H.Pylori*; NSAIDS and smoking to be the risk factors for PUDs.[10,11]. However paan masala consumption has been identified an indigenous risk factor for peptic ulcer development in this part of the country.

Helicobacter pylori infection and the use of NSAIDs have for long been considered as important factors in the pathogenesis of peptic ulcer disease[10]. Previous studies from North India and Western India have shown that prevalence of helicobacter pylori infection to be as high as 80% and 60 % respectively in peptic ulcer patients[12,13]. A review of medical literature suggests that the proportion of *H.pylori* negative peptic ulcer disease has been increasing in developed countries[14]. A study by Goenka et al at a tertiary care centre in West Bengal, India has shown that the prevalence of these "idiopathic ulcers" to be as high as 40%[15]. Similar proportion [41%] has been found in our study.

Presence of co morbidities such as diabetes, hypertension and chronic kidney disease didn't have significant association with PUDs. However those patients with arthritis had more chances of developing ulcer than healthy controls. This is probably due to long term NSAIDS consumption by this group of patients.

There are few limitations of our study. It is a hospital based study rather than in a community to give the exact burden of peptic ulcer disease in the society. As RUT testing was done despite the fact some of these patients were taking PPIs and had presented during a bleeding episode; there must have been many false negative cases of *H. Pylori* infected patients. Another limitation of the study is that the locations of the peptic ulcer were not based on modified Johnson classification

Further studies are required in identifying the genetic basis of peptic ulcer especially in this part of the country in order to know the persistence of such high prevalence of peptic ulcer disease. Detailed dietary risk factor evaluation is also required.

**Conclusion**

To conclude, our study shows that the prevalence of peptic ulcer in endoscopied data remains high (8.2%) in coastal eastern India. The proportion of duodenal ulcer to gastric ulcer is almost similar. All the patients with peptic ulcer do not present with pain abdomen. *H. Pylori* infection is present in around half of the patients with peptic ulcer while NSAIDS intake history is present in around one fifth of the patients. There is a high proportion of idiopathic peptic ulcer (Non NSAIDS, Non H Pylori, Non Alcoholic). Other risk factors that are associated with peptic ulcer are male gender; smoking and paan masala consumption.

**Funding:** No funding sources.

**Conflict of Interest:** All authors read the manuscript and there is no conflict of interest in author sequence.

**References**


1. Lam sk. Differences in peptic ulcer between east and west. Baillieres Best pract Res clin Gastroentrol 2000; 14(1):41-52.
2. Tovey F. Peptic ulcer in India and Bangladesh. Gut 1979; 20(4):329.
3. Singh SP, Panigrahi MK. Spectrum of upper gastrointestinal hemorrhage in coastal Odisha. Tropical Gastroenterology 2013; 34(1):14-7.
4. Collier DStJ& Pain JA. Non-steroidal anti-inflammatory drugs and perforation. Gut 1985;26: 359- 63.
5. Hui WM, Lam SK, Shiu LP & Ng MMT. Semi-quantitative study of negative social events, stress and incidence of perforated peptic ulcer in Hong Kong over 24 years.Gastroenterology1990; 98: A61.
6. Hollander D , Tarnawski A. Dietary essential fatty acids and the decline in peptic ulcer disease in hypothesis. Gut 1986;27:239-42.
7. Sung JJ. Y., E. J. Kuipers, and H. B. EL-SERAG. "Systematic review: the global incidence and prevalence of peptic ulcer disease." Alimentary pharmacology & therapeutics 2009; 29 (9): 938-46.
8. Dutta AK, ChackoA, Baekuduru A, Sahu MK, Gangadharan SK. Indian J Gasroenterol 2012; 31(3):111-5.
9. Ramakrishnan, Kalyanakrishnan, and Robert C. Salinas. "Peptic ulcer disease. " Am Fam Physician 2007; 76(7):1005-12.
10. Huang JQ, Sridhar S, Hunt RH. Role of Helicobacter pylori infection and non-steroidal anti-inflammatory drugs in peptic-ulcer disease: a meta-analysis. The Lancet 2002; 359 (9300):14-22.
11. Rosenstock S, Jørgensen T, Bonnevie O et al. Risk factors for peptic ulcer disease: a population based prospective cohort study comprising 2416 Danish adults. Gut 2003 ;52(2):186-93.
12. Jain A, Buddhiraja S, Khurana B, Singhal R, Nair D, Arora P, et al. Risk factors for duodenal ulcer in north India. Trop Gastroenterol 1999; 20:36-9.
13. Singh, Virendra, et al. "Epidemiology of Helicobacter pylori and peptic ulcer in India." Journal of gastroenterology and hepatology 2002; 17(6): 659-65.
14. Arroyo MT, Forne M, de Argila CM, et al. The prevalence of peptic ulcer not related to Helicobacter pylori or non-steroidal anti inflammatory drug use is negligible in Southern Europe. Helicobacter 2004; 9: 249–54.
15. Goenka, Mahesh Kumar, et al. "Helicobacter pylori negative, non-steroidal anti-inflammatory drug-negative peptic ulcers in India." Indian Journal of Gastroenterology 2011; 30 (1): 33-37.