



A HOSPITAL BASED STUDY OF INCIDENCE OF PEPTIC ULCER PERFORATION IN YOUNG ADULTS

Surgery

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ABSTRACT

Background: Peptic ulcer formation affects about 2-10% of world population every year with higher incidence in younger individuals. Being a surgical emergency, it has higher mortality and morbidity. Thus, the aim of our study was to evaluate the incidence of peptic ulcer perforation based on gender, age and also to study its associated risk factors, clinical presentations, site along with surgical management and complications.

Materials & Methods: 75 patients diagnosed with perforated peptic ulcer were included and this study was conducted in the Upgraded Department of Surgery, Darbhanga Medical College and Hospital, Laheriasarai, Bihar. Structured proforma was prepared to obtain details of patients.

Results: 76% of patients in our study were males and 24% were females with male and female ratio 1:3.16. The prevalence of perforation was high in age group 20-30 years (30.7%). 62.7% of cases had positive family history and the incidence was in the patients who consumed non-vegetarian (84.8%), spicy (61.4%) and oily (69.5%) foods. Frequently observed clinical presentation were abdominal pain followed by tenderness and rigidity and gas under diaphragm. The common site of perforation was duodenum (62.7%) and most of the cases were treated by closure with omental patch (81.3%). The post-surgical complications frequently observed were wound infection (30.6%) and chest infection (28%).

Conclusion: Peptic ulcer perforation is common disorder of gastrointestinal tract, now affecting younger adults with male preponderance. It is associated with unwanted health and economic issues. Therefore, earlier management is only the way to minimize complications and mortality.

KEYWORDS

PUD, Duodenal Perforation, Perforation, NSAIDS

INTRODUCTION

Peptic ulcer disease (PUD) is the ulceration in gastrointestinal tract caused by acidity that results in mucosal erosion, extreme pain and discomfort. The erosion must be ≥ 0.5 cm and occurs due to imbalance between digestive secretion in stomach and duodenum. Acidity, spicy food and stress however are not the mere causes of peptic ulcer as most ulcers also occur due to *Helicobacter pylori* infection. Stomach and duodenum consists of mucosal lining that protects them from digestive secretions. Peptic ulcers can be categorized as gastric or duodenal ulcer (more common). Another type of PUD also has been described namely idiopathic PUD which is defined as the ulcer without definite causes. Eg. *Helicobacter pylori* infection, family history, NSAIDS abuse, hyper-gastrinemia etc.

Risk factors or etiological factors of PUD may be *Helicobacter pylori* infection, stress, family history, spicy diet, age, gender, smoking, alcohol consumption or tumors that results in excess acid production. The common symptoms of PUD include nausea, vomiting, heart burn, burning pain in stomach while in severe cases vomiting of blood, black stool or severe pain in stomach can be observed.

Peptic ulcer disease, though incidence has decreased in recent years with the advent of anti-bacterial therapy and proton pump inhibitors, is still a common health problem worldwide. About 4 million people are affected in the world every year with peptic ulcer. In India, it is more prevalent in southern part and about 10-20% patients encounter complications of which 2-14% cases are reported with perforations. The common site of perforation is prepyloric, pyloric and duodenal region. In spite of recent advances in the diagnosis and management of peptic ulcer, the rate of perforation is still increasing and has become one of the major health challenges especially in younger individuals.^[1] Thus, the objective of our study was to determine the prevalence of perforated peptic ulcer based on age, gender, family history, dietary habits and also to study the associated risk factors, clinical presentations, perforation site, surgical management and complications.

MATERIAL AND METHODS

This cross-sectional study was conducted in the Upgraded Department of surgery, Darbhanga Medical College and Hospital, Laheriasarai, Bihar with involvement of 75 patients,

INCLUSION CRITERIA

- Patient with peptic ulcer perforation (both gastric and duodenal)
- Patients without malignancy

EXCLUSION CRITERIA

- Patients without the abdominal pain
- Patients who were not willing to participate

A detailed history of patient was taken in a structured proforma that included informations regarding age, gender, clinical presentation, site of perforation, management and complications. Each patients was followed for upto 30 days.

RESULTS

The results of our study showed that of 75 cases of perforated peptic ulcer 76% were males and 24% were females with male: female ratio 3.16:1. The incidence of perforation was high in the age group of 20-30 (30.7%) years followed by that in 30-40 years (24%). About 62.7% of patients included had positive family history of PUD while 37.3% did not. 84.8%, 61.4% and 69.5% of patients had vegetarian, spicy and oily diets respectively while 64.7%, 31.7% and 43.25% of the patients consumed cigarette, tobacco and alcohol. About 45.145 of the patients were on NSAIDS abuse.

Abdominal pain, abdominal tenderness, abdominal rigidity and distension were presented by 100%, 85.3%, 94.6% and 73.3% of patients respectively while nausea/vomiting, fever, rebound tenderness, gas beneath diaphragm and dyspepsia were observed in 64%, 53.3%, 89.85%, 80%, and 74.6% of cases respectively.

About 36% of patients were admitted to hospital within 24 hours of symptom onset while 37.3% and 26.7% were admitted between 24-48 hours and after 48 hours respectively. The most common ulceration site was duodenum 62.7% followed by stomach 34.7%. 2.6% of patients showed perforation in both the sites.

Most of the perforated ulcer was treated by closure with omental patch (81.3%). 16% required two layered sutures and gastro-jejunostomy was done in 2.7% of cases. The complications post-surgery frequently observed were wound infection (30.6%) and chest infection (28%) followed by peritonitis (9.3%), septicemia (8%), fever (4%) and residual abscess (2.6%). About 2.6% of patients died post-surgery.

Table 1 : Gender wise distribution of patients

Gender	N(%)	Ratio
Male	57(76%)	3.16:1
Female	18(24%)	

Table 2 : Age wise distribution of patients

Age (years)	N(%)
10-20	6(8%)
20-30	23(30.7%)
30-40	18(24%)
40-50	15(20%)
50-60	7(9.3%)
>60	6(8%)

Table 3 : Table showing family history of patients

History	N(%)
Present	47(62.7%)
Absent	28(37.3%)

Table 4 : Distribution of patients according to risk factors

Risk factors	N(%)
Non-vegetarian diet	63(84%)
Spicy food	46(61.3%)
Oily food	52(69.3%)
Smokers	48(64%)
Tobacco	23(30.6%)
Alcohol	33(44%)
NSAIDS	34(46.6%)

Table 5 : Distribution of patients based on clinical presentation

Symptoms	N(%)
Abdominal pain	75(100%)
Abdominal tenderness	64(85.3%)
Abdominal rigidity	71(94.6%)
Abdominal distension	55(73.3%)
Rebound tenderness	67(89.3%)
Nausea/vomiting	48(64%)
High temperature/fever	40(53.3%)
Gas under diaphragm	60(80%)
Dyspepsia	56(74.6%)

Table 6 : Time of presentation of patients after onset of symptoms

Time	N(%)
Within 24 hours	27(36%)
Between 24-48 hours	28(37.3%)
More than 48 hours	20(26.7%)

Table 7 : Site of ulceration

Site	N(%)
Gastric	26(34.7%)
Duodenal	47(62.7%)
Both	2(2.6%)

Table 8 : Surgical management

Management	N(%)
Close with omental patch	61(81.3%)
Gastro jejunostomy	2(2.7%)
Two layered closure	12(16%)

Table 9 : Post-surgical complications

Complications	N(%)
Wound infection	23(30.6%)
Chest infection	21(28%)
Septicemia	6(8%)
Residual abscess	2(2.6%)
Fever	3(4%)
Peritonitis	7(9.3%)
Death	2(2.6%)

DISCUSSION

In our study 76% of males and 24% of female had perforated peptic ulcer with the male to female ratio 3.16:1. This indicated that peptic ulcer and its perforation is most common in males. Study of Ugochukwu AI et al also demonstrate peptic ulcer disease to be more frequent among males (76.3%) compared to females (23.7%). The observed the ratio to be 3.2:1. Similar observation was obtained by Everette al with male, female ratio of 6.5:1. In contrast to these result.

Thorsen et al found slightly higher incidence in females (male to female ratio=1:1.42). This difference may be due to regional variation. We found predominance of PUD in the age group of 20-30 years (30.7%), while studies of other authors like Hannan et al and Bharti et al showed higher prevalence among the patients between 30-40 (34%) and 31-40 (48%) years of age respectively. About 2/3rd of the patients included in the study of Everette et al belonged the age group of less than 30-60 years which was similar to our findings. Bansod et al reported that majority of PUD occurs in the ages between 21-50 years. Chalya et al also peptic ulcer perforation to be more frequent in the age group of 21-30 years (41%) which was supported by our study. MS Khurso et al demonstrated that there steep rise in the incidence of peptic ulcer at 4th decade of life. The peak age in male for gastric ulcer was 31-40 years and for duodenal ulcer was 21-50 years while for females it was 21-30 years for both ulcer. 62.7% patients included in our study had positive family history of PUD indicating the genetic influence of the disorders. However, this should be further elucidated by further cross-sectional studies.

The risk factors for PUD include dyspepsia, diet, alcohol, smoking, NSAIDS abuse etc. In this study 74.6% of patients had dyspepsia while 64%, 30.6% and 44% of patients consumed cigarette tobacco and alcohol. 84% of patients were non-vegetarian, 61.3% and 69.3% of patients consumed spicy and oily food respectively while 46.6% were on NSAIDS use. In the study of bo1 et al, 63.3% were smokers 54.6% were alcoholics and 57.7% had NSAIDS abuse. Smoking is one major risk factor of ulcer perforation and the risk increases by 10 folds in both male and female smokers compared to non-smokers. It is also elucidates that smoking contributes to 77% of ulcer proliferation in the individuals of age less than 75 years. Similarly, NSAIDS increases the risk of ulcer proliferation by 5-8 times. It accounts for 43% of etiology of peptic ulcer perforation while alcohol accounts for 23%. Diet also play important role in ulcer as certain food can causes dyspepsia. Non-vegetarian food though not an important cause, the method uses for cooking them (such as use of excess oil and spices) make them ulcerative. Roasted, Grilled and fried food increases the risk of ulcer as they increase gastric acidity and inflame stomach. These foods also produce NO that inhibits prostaglandin synthesis in stomach that may lead to ulcer formation. This fact has been confirmed by the study of SL Malhotra et al on the etiological factors of peptic ulcer. The clinical sign shown by patients were abdominal pain (100%), abdominal tenderness (85.3%), rigidity (94.6%), distension (73.3%), nausea or vomiting (64%), fever/high temperature (53.3%) and gas under diaphragm (80%). According to Everett et al, the most frequent complaint was abrupt agonizing and disabling pain in abdomen. Similarly Bansod et al also elicited that all the patients in their study reported abdominal pain with rigidity. They showed 100% of patients had epigastric pain, 96.2% had abdominal rigidity, 85.89% had abdominal tenderness, 83.12% had high temperature and 78.18% showed gas under diaphragm. We observed gas beneath diaphragm in 80.18% of patients. Mehboob et al and Philips et al showed it to be 75% and 65.8% respectively. Presence of gas under diaphragm indicated hollow organ perforation. It was reported that plain erect X-Ray of abdomen is the basis for diagnosis of peptic ulcer perforation. However, for the patients with hollow preparation and do not shows gas requires CT scan.

In our study, 36% of patients were admitted for treatment with 24 hrs of symptoms onset while 26.7% were admitted after 48 hrs. Of the patients included in the study of Everette et al, 68% were admitted within 24 hrs of symptom onset. Reducing the surgical delay is the primary factor of importance to treat the patients with PPU. Infact delay of each hour decreases the probability of survival by 2.4%. The most common site of ulceration in this study was duodenum (62.7%) followed by gastric (34.7%). About 2.6% of cases had ulceration in both regions. Duodenal and pyloric regions are the most common sites for peptic ulcer perforation compared to pre-pyloric and gastric regions which was in accordance with Svanes et al but contradictory to that Kenneth et al who found the common site to be gastric regions. Bansod A et al reported perforation in anterior part of duodenum in 82.42% and in gastric regions in 17.14% of cases while 1 patient had perforation in both duodenal and stomach. This was similar to that of Kenneth et al. Surgical technique applied was closure with omental patch in 81.3% of cases, two layered closure in 16% of cases and gastro-jejunostomy in 2.7% of cases. Laparoscopic treatment is safer and reliable modality with less morbidity and complications in comparison to open techniques as it requires less amount of analgesics, reduces hospital stay and enhances early return to normal diet.

Frequently observed post-surgical complications in our study was wound infection (30.6%) followed by chest infection (28%). About 2.6% of patients died after surgery due to cardiac arrest. Everette et al showed 27%, 16% and 11% of patients present chest infection, wound infection and wound dehiscence respectively after surgery. The mortality rate was 2.6% in our study. Seung et al showed it to be 3.17% which was lower than that of Everette et al and Kenneth et al.

CONCLUSION

Peptic ulcer perforation has become a common health problem that frequently affects young adults especially males. *Helicobacter pylori* infection, dietary habits like spicy and oily foods, smoking, alcoholism or drugs like NSAIDs are the risk factors associated. Perforations once occur require surgical emergency and the most commonly used treatment modality is closure with omental patch. Each treatment of perforated ulcer is the key factor to minimize complications and mortality.

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