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Study on Etiology of Gastroduodenal Perforation in a Tertiary Care Hospital in Northern State of India

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Abstract: ***Background**: Peptic ulcer perforation is a common surgical emergency. The perforation usually involves the first part of duodenum. Early diagnosis and prompt surgical intervention (closure, omentoplasty and toileting) after resuscitation is the key in dealing the threatening perforated peptic ulcer. This study evaluates the prevalence of gastroduodenal perforation in northern state of India. **Methods**: This is a cross - sectional study conducted at Indira Gandhi Medical College, Shimla on hundred patients who underwent surgery for benign perforated peptic ulcer. Data from 100 patients was retrieved, compiled, summarised and analysed statistically. **Result**: Hundred patients were included in the study.93% were males and 7% were females. Maximum patients i. e., 28% were in 2nd decade. Male to female ratio of 13.3: 1.76% of the patients were tested positive for H. Pylori Infection and majority of the patients had perforation in duodenum (88%) with low socioeconomic status (79%).32% patients were taking NSAIDs, 75% patients were smokers and 53% patients were used to consume alcohol. **Conclusion**: Peptic ulcer perforation is common among young males who belongs to low socio - economic status which is due to association of smoking, alcohol intake and H. Pylori infection.*

Keywords: Peptic ulcer disease, H. pylori, Gastroduodenal, Perforation, Duodenal ulcer.

1. Introduction

Perforative peritonitis is one of the commonest surgical emergencies faced by surgeons all over India. [1, 2] 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. [3] About 4 million people are affected in the world every year with peptic ulcer. [4] 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 pathogenesis involves an imbalance between the defensive (mucus - bicarbonate layer, prostaglandins, cellular renovation and blood flow) and aggressive factors (hydrochloric acid, pepsin, ethanol, bile salts, some medications etc.). The perforation are usually encountered in the first part of the duodenum anteriorly and in the pylorus of stomach. [5] Though the worldwide incidence of peptic ulcer disease and its complications have reduced, the rate of perforation is still increasing and has become one of the major health challenges especially in younger individuals. [6] Thus, the objective of our study was to determine the prevalence of gastroduodenal perforation in northern state of India.

2. Methods

This cross - sectional study was conducted in the Department of Surgery, Indira Gandhi Medical College, Shimla with involvement of 100 patients.

Inclusion criteria

- Gastric or duodenal perforation
- Age above 12 years

Exclusion criteria

- Hollow viscus perforation other than gastro - duodenal perforation
- Malignant perforation and tumor associated with perforations.
- Unfit for Anaesthesia.
- The patient who did not give consent.

3. Observation and Results

In the present study of 100 patients of peptic ulcer perforation, 93% were males and only 7% were females. Male to female ratio observed was 13.3: 1. In the study maximum age incidence of 28% was seen in 21 - 30 years of age group. The occurrence noted in 41 - 50 years age group was 20%. Least incidence was found in 71 - 80 years age group of around 3%. In our study, youngest patient was of 16 years and eldest was of 75 years.74% patients were below 50 years of age. In this study, 76% of the patients were tested positive for H. Pylori Infection via RUT method. Most common site of perforation was duodenum (first part), found in 88% of the patients.

In our study, 32% of the patients were using the NSAIDs and 8% were using the NSAIDs without any medical prescription.75% of the patients had a history of smoking tobacco out of which 61% are current smokers and 14% were ex - smokers.53% of the patients had a history of taking alcohol.

In this study, majority of the patients were belonged to low socio - economic status i.e., 79% according to modified Kuppuswamy scale.13% of the patients were belonged to upper lower socioeconomic status and 8% lower middle socioeconomic status. Most of the patients were laborer (35%) and farmer (27%) by occupation.

Table 1: Distribution of study participants based on their age

Age Category	Frequency
11 - 20	8
21 - 30	28
31 - 40	18
41 - 50	20
51 - 60	13
61 - 70	10
71 - 80	3
Grand Total	100

Table 2: Distribution of study participants based on their Sex

Sex	Frequency
Male	93
Female	7
Total	100

Table 3: Distribution of H. Pylori infection among the study participants

H. Pylori infection	Frequency
Absent	24
Present	76
Grand Total	100

Table 4: Distribution of NSAIDS among the study participants

NSAIDS USE	Frequency
Don't use	68
Recent Use	17
Recent Significant intake	4
Long term use	3
Use without Medical Prescription	8
Grand Total	100

Table 5: Distribution of smoking habit among the study participants

Smoking	Frequency
Current Smoker	61
Ex - Smoker	14
Non - Smoker	25
Grand Total	100

Table 6: Distribution of Alcohol consumption among the study participants

Alcohol consumption	Frequency
<21 units of alcohol	37
>21 units of alcohol	16
Non - Alcoholic	47
Grand Total	100

Table 7: Socioeconomic of the study participants

Socioeconomic Status	Frequency
Lower	79
Upper Lower	13
Lower Middle	8
Upper Middle	0
Upper	0
Total	100

Table 8: Distribution of occupation among the study participants

Occupation	Frequency
Dependent	4
Employee	14
Farmer	27
Housewife	4
Laborer	35
Student	16
Grand Total	**100**

Table 9: Distribution of study participants based on the location of perforation

Location of Perforation	Frequency
Duodenum	88
Gastric	12
Total	100

4. Discussion

The peptic ulcer perforation with peritonitis is the most common presentation among all kind of peritonitis encountered in emergency by practicing surgeons in all over India and abroad. This life - threatening complication had remained a challenge unless early diagnosis and prompt surgical intervention after resuscitation is not undertaken.

Although peptic ulcer disease has shown decline due to the use of medical therapy, but this complication of perforation is increasing more and more due to many underlying etiological factors. Therefore, it is of prime importance to study these factors in detail along with its extent of influencing the disease. These factors are either preventable and treatable with medical therapy to reduce the morbidity and mortality of this complication.

In the present study, 66% of the patients fall between 20 to 50 years of age thereby involving young adult and middle age which is similar to most of the studies including Atish Bansod et al [7] study with male preponderance of 13.3: 1. There were only 3 patients found above 70 years of age in this study.

In this study, duodenal ulcer was seen in 88% of patients which is more than 7 times the gastric perforation which is in concordance with most of the studies.

Peptic ulcer perforation in the present study showed H. pylori infection in 76% of the patients overall and 79% of the patients belonging to lower socio - economic status. It has clearly been established that high incidence of peptic ulcer perforation is seen among low socio - economic status group as in study of Dinesh Singh Chauhan and Sanjay Kumar Bhasin [8] where they reported 94.87% belonged to lower socio - economic status. However, Kalyanakrishnan Ramakrishnan and Robert C Salinas [9] (2007) of United States showed H. pylori infection only in 48% of patients, which is in contradiction to our study. This is probably due to high socioeconomic status of people residing in United States. Goran Begovic and Redzep Selmani [10] (2015) indicated prevalence of H. pylori infection varies from 40 to 60% in developed countries and 80 to 90% in developing countries.

In the present study, 32% of the patients used NSAIDs in different ways (long term use, without prescription use, recent use and recent significant use) which is in accordance with C Svanes et al [11]. Goran Begovic and Redzep Selmani [10] who observed every third person has used NSAIDs and every sixth person had used aspirin. C Svanes et al [11] also in his study observed that every 4th perforated ulcer is as a result of NSAIDs as etiological factor which is important among the elderly age group. Similarly, D ST J COLLIER and J A Pain [12] stressed upon association of NSAIDs with peptic ulcer perforation in women aged over 65 years.

Besides, above discussed two potent factors, smoking which destroys the protective factors over the mucosa as well as causes vasoconstriction to decrease the blood supply of mucosa of stomach and duodenum is established as potent causing agent for peptic ulceration. In our study, 75% of cases had history of smoking presently or in the recent past. Study of C Svanes et al [11] in Norway had already shown strong association of smoking and peptic ulceration. To substantiate it, Prince Muzafer Wani et al [13] et al studied isolated smoking factor by doing endoscopies and found 23 cases had duodenal erosion or ulceration out of 66 smokers i. e., 34.84% had silent peptic ulcer or erosions who otherwise do not had past history of peptic ulcer disease. Similarly, Dr Abulqadir Maghded Zangana and Sherwan Ahmed Garota [14] (2009) observed high incidence of duodenal ulcer perforation in patient during Ramadan nights due to heavy smoking while patients were fasting. They stressed upon factors like fasting, stress and smoking are responsible for such an increase in incidence.

Alcohol in high concentration is known to cause damage to protective layer over mucosa of stomach and duodenum and repeated irritation and damaging effect of alcohol is known to cause ulceration. As seen in our study, 53 patients were consuming alcohol before perforation of peptic ulcer. Out of these 34 patients were smoking with alcohol consumption. Alcohol consumption was found similar to the study done by Atish Bansod et al [7] (2014) and Geeta Sabhnani and Akul Nyna Sindhu [5] (2018).

It was also observed, in the present study 62% of the patients came from either farmer or laborer background contributing towards low socio - economic status of our study.

Incidence in young and middle age group is due to change in lifestyle, westernization, stressful conditions, and habitual smoking and taking alcohol along with unprescribed drugs. Many critical illnesses like head injury, burn, pancreatitis, polytrauma, severe sepsis may predispose to bodily stress activating neuro - gastrointestinal axis and elevates serum cortisol levels, increasing HCl and pepsin secretions and vasoconstriction thereby predisposes for peptic ulceration by inducing mucosal injury.

5. Conclusion

A very high incidence of perforated peptic ulcer is continuing as threat for public health globally and more so in developing country like India involving young and middle - aged adults. This is despite increasingly use of medical therapy in peptic ulcer disease. Its association with H. pylori has been already established through numerous studies which shows more prevalence in low socioeconomic population due to crowding, insanitation, and lack of access to H. pylori eradication. Using irrational without prescription of NSAIDs has been the other contributory factor in elderly patients for different indications in aging process. At times, NSAIDs are used in high doses without prescription due to acute pain like toothache, headache and traumatic pain (as also seen in our study where NSAIDs has been used) in almost all ages. Change in lifestyle and consumption of alcohol and smoking is another contributory factor among the stressed young population. Early diagnosis and prompt surgical intervention (closure, omentoplasty and toileting) after resuscitation is the key in dealing the threatening perforated peptic ulcer to avoid all kind of mortality and morbidity in one hand and prevention of all discussed above etiological factors on the other hand. It is mandatory to mention as and when NSAIDs are required, it should be under cover of PPIs / H_2 blockers especially under the conditions of different types of stresses like during surgery, polytrauma, critical illness, burn, pancreatitis etc. Even after treatment of perforated peptic ulcer H. pylori eradication treatment is given to avoid recurrence of this disease. Any clinically suspected case of peptic ulcer in OPD basis should undergo routine endoscopy and further medical management to prevent such complication.

References

[1] Jhobta RJ, Attri AK, Kaushik R, Rajeev Sharma, Jhobta A. Spectrum of perforation peritonitis in India review of 504 consecutive cases. World J Emerg Surg.2006; 1: 26.
[2] Dorairajan LN, Gupta S, Deo SVS, Chumber S, Sharma L. Peritonitis in India - A decade's experience. Trop Gastroenterol.1995; 16 (1): 33 - 8.
[3] Lau JY, Sung J, Hill C, Henderson C, Howden CW, Metz DC. Systematic review of the epidemiology of complicated peptic ulcer disease: incidence, recurrence, risk factors and mortality. Digestion, 2011; 84 (2): 102 - 13.
[4] Zelickson MS, Bronder CM, Johnson BL, Camunas JA, Smith DE, Rawlinson D et al. Helicobacter pylori is not the predominant etiology for peptic ulcers requiring operation. Am Surg., 2011; 77 (8): 1054 - 60.
[5] Sabhnani G, Sindhu AN. Peptic ulcer perforation in young Indians the causation and the trend. International Surgery Journal.2017; 5 (1): 200.
[6] AI Ugochukwu, OC Amub, MA Nzegwu, UC Dilibe. Acute perforated peptic ulcer: On clinical experience in an urban tertiary hospital in southeast Nigeria. International Journal of Surgery, 2013; 11 (3): 223 - 7.
[7] Bansod A, Bansod S, Galande A, Shamkuwar A, Singh K. Study of incidence of peptic ulcer perforation in young adults. International Surgery Journal.2014; 1 (3): 144.
[8] Chauhan DD. Epidemiology of perforated peptic ulcer – a regional study. Journal of Medical Science And Clinical Research.2019Jan20; 7 (1): 587–92.
[9] Ramakrishnan K, Salinas RC. Peptic ulcer disease. Am Fam Physician.2007 Oct 1; 76 (7): 1005 - 12.
[10] Begovic G, Selmani R. Etiological factors in Urgent Gastroduodenal ulcer. PRILOZI.2015; 36 (2): 203–10.

[11] Svanes C, Søreide JA, Skarstein A, Fevang BT, Bakke P, Vollset SE, et al. Smoking and ulcer perforation. Gut.1997; 41 (2): 177–80.
[12] Collier DS, Pain JA. Non - steroidal anti - inflammatory drugs and peptic ulcer perforation. Gut.1985; 26 (4): 359–63.
[13] Wani PM, Shah RA. Association between smoking and silent peptic ulcer disease in the general population of Kashmir. Journal of Medical Science and Clinical Research.2015; 03 (08): 7161–5.
[14] Zangana A, Garota S. Risk factors for acute perforated duodenal ulcers in Erbil Governorate - Kurdistan, Iraq. Zanco Journal of Medical Sciences.2009; 13 (1): 1–5.