



A PROSPECTIVE STUDY OF PEPTIC ULCER PERFORATION IN BUNDELKHAND REGION IN REFERENCE TO PREVALENCE OF H. PYLORI IN PEPTIC ULCER PERFORATION

General Surgery

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ABSTRACT

INTRODUCTION: Peptic ulcer perforation is the commonest surgical emergencies in India. Recent emergency surgical procedures show an increasing trend in peptic ulcer perforation surgery in young adults. This study is carried out with an aim to understand the trend, causation and complications of peptic ulcer perforation in young Indians.

AIM: To evaluate the prevalence of H.pylori in perforated peptic ulcer using urease test, Possible cause of ulceration /precipitation of perforation.

MATERIALANDMETHODS: This study was conducted on patients with clinical diagnosis of peptic ulcer perforation presenting in emergency and O.P.D. of Maharani Laxmi Bai Medical College, Jhansi in Department of Surgery from June 2019 to September 2020. To see H. Pylori, infection, intra operative biopsy was taken from the margins of perforation and tested for urease positivity via rapid urease kit.

RESULT: In my study mean age of incidence was 51.18years, with maximum age being 82 years and minimum age being 16 years. 22% patients had positive history of peptic ulcer disease. 18% patients of my study had positive history of NSAIDs use. 42% patients i.e.21 patients had perforation of size 5x5mm. After doing Rapid Urease Test on the intraoperative biopsies, 86% of patients were positive for it. Data regarding H. Pylori infection rate in perforated peptic ulcer is highly variable ranging from 40-92%.

CONCLUSION: Commonest age of presentation of peptic perforation in Bundelkhand region was 61-70 years (22%).Men were affected more than females with the ratio of male is to female being 4:1. H.pylori infection is an important association which leads to prepyloric perforation.

KEYWORDS

H. pylori, Peptic perforation, Bleeding peptic ulcer.

INTRODUCTION

Perforated Peptic Ulcer Disease is the second most frequent abdominal emergency requiring surgical treatment. Perhaps the earliest example of death caused by a gastric ulcer was found in the 1670 post-mortem report of the exhumed body of a Chinese man who died in 167 BC^[1]. A contemporary physician, Robert Squirrell, described the symptoms of peptic ulcer disease as follows; 'Diminution or total loss of appetite, sometimes vomiting, especially in the morning, bad taste in the mouth, foul tongue, distension, and pain in the stomach and bowels, particularly after meals, eructations^[2]. Symptoms of dyspepsia or indigestion have affected more than twenty percent of general population in developing countries and has attracted the involvement of many medical practitioners and others with the provision of health care. Within this group of symptomatic dyspeptic patients were to be found gastric and duodenal ulcers which were capable of causing serious health problems. However the prevalence of gastric and duodenal peptic ulcers has declined markedly during the time course, peptic ulcers may still have a fatal outcome, they now are considered to be curable conditions for the majority of patients who suffer from them in the developing countries. The word 'peptic' is derived from the Greek 'peptin' which means 'to digest' and there is an implication by its conjunction with 'ulcer disease' that the digestive processes themselves play a part in the formation of an ulcer. Gastrointestinal perforations constitute one of the commonest surgical emergency encountered by surgeons^[3-4]. Acute perforation is one of the complications of chronic peptic ulcer and occurs in about 10-15% of all recognized chronic peptic ulcers. Lord Moynihan has stated that "perforation of peptic or gastric ulcer is one of the most serious and most overwhelming catastrophes that can befall a human being"^[5]. A detailed history with regard to the symptomatology of the patient, a meticulous examination of the patient, radiological and biochemical investigations help to arrive at a correct diagnosis of perforation. Operative method is still the treatment of choice and simple closure of perforation with omental patch is the method followed in most of the surgical centers.

AIMANDOBJECTIVES

Aim:

- To evaluate the prevalence of H.pylori in perforated peptic ulcer using urease test.

- Possible cause of ulceration / precipitation of perforation.

Other parameters will be studied:

- Site of perforation.
- Size of perforation in millimeters.
- Age distribution of peptic perforation
- Sex distribution of H.pylori in peptic perforation.

MATERIALANDMETHODS

This study was conducted on patients with clinical diagnosis of peptic ulcer perforation presenting in emergency and O.P.D. of Maharani Laxmi Bai Medical College, Jhansi in Department of Surgery from June 2019 to September 2020. To see H. Pylori, infection, intra operative biopsy was taken from the margins of perforation and tested for urease positivity via rapid urease kit.

Following plan of work will be followed:-

- Sample Size-
a. 50 patients are included in this study.
- Preoperative work up (Clinical and Biochemical) - Evaluation and analysis of symptoms in order to find out duration of perforation and incidence of each symptom :-

Pain in abdomen	
Fever	
Absolute constipation	
Vomiting	
Distension of abdomen	

- Past history in order to find out high risk cases and incidence of acid peptic disease.

Diabetes mellitus	
Hypertension	
History suggestive of acid peptic disease.	
Drug intake like NSAIDS & steroids.	

- Presence /absence of psychological factor (stress, anxiety)
- Family history
- General examination and systemic examination in order to assess general condition of patients suitable for anesthesia and surgery.

General condition	
Pulse rate(per min)	
Blood pressure(mm Hg)	
Respiratory rate(per min)	
Oxygen saturation	
Pallor	
Icterus	
Urine output(ml)	

7. Local examination of abdomen to make clinical diagnosis and analysis of signs in order to evaluate incidence of each sign :-

Board like rigidity	
Tenderness	
Guarding	
Distension of abdomen	
Masking of liver dullness	

8. Investigation

Haemogram -
Haemoglobin (g/dl)
Total leucocyte count (cells/mm ³)
Differential leucocyte count (%)
Renal function-
B.Urea (mg'/dl)
S.Creatinine(mg/dl)

9. Electrolyte

S. Sodium (mEq/L)	
S. potassium (mEq/L)	

10. Radiology

- Plain X-ray abdomen erect A.P. view including both domes of diaphragm
- USG whole abdomen findings.

All patients were adequately resuscitated with:-

- Intravenous fluids.
- Appropriate antibiotics .
- Nasogastric decompression by Ryles tube .

Pre-operative work up:-

All of the patients were operated under general anesthesia/ spinal anesthesia/ epidural anesthesia and preferable incision was midline.

- During operation following point were recorded.
 - Site of perforation
 - Size of perforation (diameters both horizontal and vertical).
 - Surrounding wall of duodenum
 - Condition of omentum
 - Any additional findings on exploration.
- Post Operative management :-
 - IV fluids.
 - IV antibiotics
 - Active ryles tube suction.
 - Assessment of vitals viz. Blood pressure, pulse rate, respiratory rate, Urine output.
 - During repair of perforation intra operative biopsy was taken.

Postoperative patients were kept nil orally along with ryles tubes aspiration till bowel sounds are heard and flatus appreciated by the patients. Drains were taken out according to the amount of drainage. Ryles tube were removed after 3-5 days. Patients were called for follow up after 7 days of discharge from hospital.

Procedure of rapid urease test –

- Biopsy sample incubated on an agar based medium containing urea.
- If H. pylori is present in sample, bacterial urease converts urea to ammonia, color change indicator detects the subsequent pH rise in the medium.
- Results are read as positive when color changes to pink in the kit.



Figure 1: Prepyloric perforation



Figure 2: Modified Graham's patch repair



Figure 3: Rapid urease Kit



Figure 4: Rapid urease kit positive

RESULT

Table 1: Age wise distribution

Age (years)	Number of patients	Percentage (%)
11-20	02	04.00%
21-30	04	08.00%
31-40	09	18.00%
41-50	09	18.00%
51-60	10	20.00%
61-70	11	22.00%
71-80	04	08.00%
>80	01	02.00%
Mean+ SD	51.18±16.254	

Table 2: Sex distribution

Sex	Total	Percentage (%)
Male	41	82.00%
Female	09	18.00%

Table 3: Patients with positive alcohol history

Alcohol	Number of patients	Percentage (%)
Present	39	78.00%
Absent	11	22.00%

Table 4: Patients with chronic smoking history

Smoking	Number of patients	Percentage (%)
Present	39	78.00%
Absent	11	22.00%

Table 5: Patients with history of peptic ulcer disease

Previous H/O Peptic Ulcer	Number of patients	Percentage (%)
Yes	11	22.00%
No	39	78.00%

Table 6: Patients with history of NSAIDs use

Patients with H/O NSAIDs use	Number of patients	Percentage (%)
Yes	09	18.00%
No	41	82.00%

Table 7: Site of peptic ulcer perforation

Site of Perforation	Number of patients	Percentage (%)
Duodenal	04	08.00%
Pre-Pyloric	46	92.00%

Table 8: Size of peptic ulcer perforation (mm)

Size of Perforation (mm)	Number of patients	Percentage (%)
5 mm	21	42.00%
8 mm	09	18.00%
10 mm	16	32.00%
15 mm	03	06.00%
20 mm	01	02.00%

Table 9: Rapid urease test \

Rapid urease test	Number of patients	Percentage (%)
Positive	43	86.00%
Negative	07	14.00%

DISCUSSION

In my study I included 50 patients of peptic ulcer perforation who presented in the emergency centre of Maharani Laxmi Bai Medical College, Jhansi.

In my study mean age of incidence was 51.18 years, with maximum age being 82 years and minimum age being 16 years. In the study of

Thirupathaiah et al^[6], JIPMER which was carried out in March 2020, the mean age of incidence was 46.5 years which is comparable with my study.

The male is to female ratio of my study was 4:1, 40 patients being male and 10 patients being female. In the study of Thirupathaiah et al^[6], JIPMER the male is to female ratio was 5:1. In April 2006, Juan Carlos Zapata Colindres et al^[7] carried out a similar study where the ratio of male is to female was 3:1. So, both the studies are comparable to my study.

In my study 78% i.e.39 patients gave positive history for alcohol intake. In the study of Thirupathaiah et al^[6], JIPMER carried out in March 2020 66.3% patients gave positive history for alcohol, While in another study carried out by Young Joo Yang^[69] in April 2017 70.8% gave history of alcohol intake. Both the study had data less than that of my study.

78% patients of my study were chronic smoker which is comparable to the study of Thirupathaiah et al^[6], JIPMER, in which 76% patients were chronic smoker. Another study carried out in April 2017 by Young Joo Yang in Korea showed that 66% patients were chronic smoker.

In my study 22% patients had positive history of peptic ulcer disease. Juan Carlos Zapata Colindres et al^[7] carried out a study in April 2006 where 23% patients had positive history for peptic ulcer disease which is comparable to mine.

18% patients of my study had positive history of NSAIDs use. In the study of Thirupathaiah et al^[6], JIPMER 14.2% had positive NSAIDs use history. In April 2007, Zapata Colindres et al carried out a similar study where 20% patients had positive history of NSAIDs use. So, these studies are comparable to my study.

In my study 42% patients i.e.21 patients had carried out a study in June 2003 in which maximum number of patients i.e. 47% had perforation of size 5x5mm which is comparable to my study.

In my study after doing Rapid Urease Test on the intraoperative biopsies, 86% of patients were positive for it. Data regarding H. Pylori infection rate in perforated peptic ulcer is highly variable ranging from 40-92% in different studies as follows-

Authors	YEAR	Number of patients	H. Pylori positive (%)
Metzger et al ^[9]	2001	100	33
Javier ^[8]	2003	80	65
Ootani et al ^[10]	2006	110	76
Juan Carlos Zapata Colindres et al ^[7]	2006	90	40
Ugochuku et al ^[11]	2013	400	70
Dogra et al ^[12]	2014	140	92
John B et al ^[13]	2017	70	47
Thirupathaiah et al ^[6]	2020	48	87
Our study	2019-2020	50	86

Above mentioned table shows prevalence of H. Pylori infection in patients with perforated peptic ulcer in different studies performed during last 20 years carried out all over the world. Difference in type of population and the geographical area attribute to the variation in association of H. pylori infection with peptic ulcer perforation.

CONCLUSIONS

- Most common complication of peptic ulcer disease was prepyloric perforation.
- Commonest age of presentation of peptic perforation in Bundelkhand region was 61-70 years (22%).
- Men were affected more than females with the ratio of male is to female being 4:1
- According to study 78% patients were chronic smoker and same 78% patients were alcoholic.
- Only 22% had previous history of peptic ulcer disease.
- 62.74% of the patients were from rural areas.
- 18% patients gave history of chronic NSAIDs use.
- Gas under the diaphragm was the significant finding in X-ray abdomen AP erect with both domes of diaphragm of all the patients in study.

- The site of perforation was prepyloric in 92% patients and duodenal in 8% patients in study.
- Maximum size of perforation was 2cm in one patient while most patients (42%) had perforation of 5*5mm.
- Most of the patients (86%) had H. pylori infection which was detected by rapid urease test.
- Thus it can be concluded from the study that H.pylori infection is an important association which leads to prepyloric perforation.

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