VOLUME-8, ISSUE-7, JULY-2019 • PRINT ISSN No. 2277 - 8160

Original Research Paper

General Surgery

A PROSPECTIVE STUDY OF PEPTIC PERFORATION IN BUNDELKHAND REGION IN REFERENCE TO PREVALENCE OF HELICOBACTER PYLORI IN PEPTIC PERFORATION

Dr. Ramesh Chandra Arun — Assistant Professor, Department of Surgery, Government Medical College, Banda

Dr. Surya Prakash* — Associate Professor, Department of Surgery, M.L.B. Medical College, Jhansi
*Corresponding Author

ABSTRACT

Purpose: The main aims of study were-Peptic perforation in reference to prevalence of H. pylori infection, age distribution of the patients with peptic perforation, sex distribution of H.pylori in peptic perforation, size and site of perforation, residential living of the patients.

Method: A total of 51 Patients who were diagnosed as a case of peptic perforations, were included in this prospective study conducted in the Department of surgery, Maharani Laxmi Bai Medical College, Jhansi over a period of June 2015 to July. 2017. Proper history, preoperative assessment, intra-operative evaluation and biopsy were taken and Rapid ureas test (RUT) was done.

Results: Highest incidence of perforated peptic ulcer was between 31 to 60 years, 70.58% of patients fell in this group. The mean age of presentation was 40 years. Male to female ratio in peptic perforation was 5:1. 70.58% patients were smokers and (60.78%) patients were drinker. 32 (62.74%) were rural and rest of 19 (37.25%) were urban residents. Size of perforation is less than 1 cm in 41 (80.39%) patients and 1 to 2 cm in 10 (19.60%) patients. In present study patients presenting with acute perforation of peptic ulcer, prevalence of H. pylori is 92.15%.

Conclusion: In this study perforated peptic ulcers are clearly associated with H. pylori infection as a strong etiological factor. Most common peptic perforation was prepyloric perforation. Commonest age of presentation of peptic perforation in Bundelkhand region was 30-60 years. Three decades after the discovery of Hp, the etiologies of bleeding peptic ulcers are changing. However, diagnosis of Hp infection is still the rst priority in these patients. Invasive RUT is most frequently used

KEYWORDS : Bleeding peptic ulcer, H. pylori, Peptic perforation, peptic ulcer, Rapid ureas test (RUT)

INTRODUCTION

Peptic ulcers are sore that develop in the lining of the stomach, lower esophagus, or small intestine (the duodenum), usually as a result of inflammation caused by the bacteria H. pylori, as well as from erosion from stomach acids. Peptic ulcers are a fairly common health problem. There are three types of peptic ulcers:

- Gastric ulcers:
- Esophageal ulcers:
- Duodenal ulcers:

An ulcer is defined as persistent discontinuity of an epithelial surface that can occur in skin or mucus membrane. Peptic ulcers are so common in industrialized nation that they virtually represent stigma of civilization.

Perforation is one of the most catastrophic complications of peptic ulcer. In spite of modern advance in surgical, anesthetic and ancillary facilities, it still assumes life-threatening dimension. Prompt recognition of the condition is of paramount importance, because with diagnosis and treatment it is possible to reduce that still relative high mortality.

A perforated ulcer, is a condition where an untreated ulcer can burn through the wall of the stomach (or other areas of the gastrointestinal tract), allowing digestive juices and food to leak into the abdominal cavity. Treatment generally requires immediate surgery. The ulcer is known initially as a peptic ulcer before the ulcer burns through the full thickness of the stomach or duodenal wall. A diagnosis is made by taking an erect abdominal/chest X-ray (seeking air under the diaphragm). This is in fact one of the very few occasions in modern times where surgery is undertaken to treat an ulcer. Many of the perforated ulcers have been attributed to the bacterium Helicobacter pylori. The incidence of perforated ulcer is steadily declining, though there are still incidents where it occurs. Causes include smoking and non-steroidal anti-inflammatory drugs (NSAIDs). A perforated ulcer can be grouped into a stercoral perforation which involves a number of different things that causes perforation of the intestine wall. The gold standard for diagnosis of H.pylori infection has been biopsy obtained during endoscopy. However, no single test has yet emerged as definitive in daily clinical practice for several reasons.

An FDA advisory committee has recommended the 14C-labeled urease breath tests for marketing, and agency action in imminent. The urease test is specific for current. H.pylori activity, provides results in 20 minutes, and may be used in physician office. It is expected to provide an alternative to endoscopy in many patients.

Peptic ulcer disease current scientific evidence point to a strong association between H. pylori and peptic ulcer disease. Cure of the infection result in a market reduction in ulcer recurrence. Permanent cure of the peptic duodenal ulcer patients who are infected with H.pylori should be given eradication therapy whether the ulcer is active or in a remission. This also applied to patients with a history of ulcer bleeding in complicated peptic ulcer disease, eradication of H.pylori should be confirmed. the urea breath test is the ideal test to demonstrate H.pylori.

Causes of peptic ulcers:

Different factors can >cause the lining of the stomach, the esophagus, and the small intestine to break down. These include:

- Helicobacter pylori (H. pylori): a bacteria that can cause a stomach infection and inflammation. Frequent use of aspirin, ibuprofen, and other anti-inflammatory drugs (risk associated with this behavior increases in women and people over the age of 60)
- Smoking
- Drinking too much alcohol
- Radiation therapy
- Stomach cancer

The most common symptom of a peptic ulcer is burning abdominal pain that extends from the navel to the chest, which can range from mild to severe. In some cases, the pain may wake you up at night. Small peptic ulcers may not produce any symptoms in the early phases.

Other common features of a peptic ulcer include:
- Changes in appetite
- Nausea
- Bloody or dark stools (melena)
- Unexplained weight loss
- Indigestion
- Vomiting
- Chest pain

Tests and exams for peptic ulcers:
Two types of tests are available to diagnose a peptic ulcer. They are called upper endoscopy and upper gastrointestinal (GI) series.

Upper Endoscopy:
In this procedure, a long tube with a camera inserted down the throat and into the stomach and small intestine to examine the area for ulcers. This instrument also allows to remove tissue samples for examination.

Not all cases require an upper endoscopy. However, this procedure is recommended for people with a higher risk of stomach cancer. This includes people over the age of 45, as well as those who experience:
- Anemia
- Weight loss
- Gastrointestinal bleeding
- Difficulty swallowing

Upper GI:
For this procedure patients drink barium, and then a technician will take an X-ray of his stomach, esophagus, and small intestine. The liquid will make it possible for view and treat the ulcer.

Because H. pylori is a cause of peptic ulcers, test is run to check for this infection in patients stomach.

How to Treat a Peptic Ulcer:
Treatment will depend on the underlying cause of patient's ulcer. If tests show that patients have an H. pylori infection, we will prescribe a combination of medication, which patients have to take for up to two weeks. The medications include antibiotics to help kill infections, and proton pump inhibitors (PPIs) to help reduce stomach acid.

Complications of a Peptic Ulcer:
Untreated ulcers can become worse over time and lead to other, more serious health complications, such as:
- **Perforation:** A hole develops in the lining of the stomach or small intestine and causes an infection. A sign of a perforated ulcer is sudden, severe abdominal pain.
- **Internal bleeding:** Bleeding ulcers can result in significant blood loss and thus require hospitalization. Signs of a bleeding ulcer include light headedness, dizziness, and black stools.
- **Scar tissue:** This is thick tissue that develops after an injury. This tissue makes it difficult for food to pass through digestive tract. Signs of scar tissue include vomiting and weight loss.
- All three complications are medical emergencies that require surgery. If patient feels dizzy or if symptoms return, urgent medical attention is given, if following symptoms are present:
- Sudden, sharp abdominal pain
- Fainting, excessive sweating, or confusion, as these may be signs of shock
- Blood in vomit or stool
- Abdomen that's hard to the touch

Outlook for Peptic Ulcers:
With proper treatment, most peptic ulcers heal. However, ulcer may not heal if patient stops taking his medication early or continue to use tobacco. A follow-up is done after initial treatment to evaluate recovery.

Some ulcers, called refractory ulcers, don't heal with treatment. If patients ulcer doesn't heal with the initial treatment, this can indicate:
- An excessive production of stomach acid
- Presence of bacteria other than H. Pylori in the stomach
- Another disease, such as stomach cancer or Crohn's disease

A different method of treatment is offered or additional tests are done to rule out stomach cancer and other gastrointestinal diseases.

How to Prevent Peptic Ulcers:
Certain lifestyle choices and habits can reduce risk of developing peptic ulcers. These include:
- Not drinking more than two alcoholic beverages a day
- Not mixing alcohol with medication
- Washing hands frequently to avoid infections
- Limiting use of ibuprofen, aspirin, naproxen sodium and other NSAIDS Maintaining a healthy lifestyle through a balanced diet rich in fruits, vegetables, and whole grains, and quitting smoking and other tobacco use will also help to prevent developing a peptic ulcer.

AIMS AND OBJECTIVES:
- 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:
- Age distribution of peptic peroration
- Sex distribution of H.pylori in peptic perforation.
- Size of perforation in millimeters.
- Site of perforation.
- Residential living.

MATERIALS AND METHODS:
The present study was be conducted on patients with clinical diagnosis of peptic, duodenal ulcer perforation presenting in emergency and O.P.D. of M.L.B. Medical College, Jhansi in Department of Surgery from June 2015 to July 2017. To see H. Pylori, intra operative biopsy will be taken.

Following plan of work was followed :-

1. Preoperative work up (Clinical and Biochemical)

a. Evaluation and analysis of symptoms in order to find out duration of perforation and incidence of each symptoms :-

i. Pain in abdomen
ii. Fever
iii. Absolute constipation
iv. Vomiting
v. Distension of abdomen

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

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

3. Presence /absence of psychological factor (stress, anxiety)

4. Family history
5. General examination and systemic examination in order to assess general condition of patients suitable for anesthesia and surgery.

i. General condition
ii. Blood pressure (m Hg)
iii. Pulse rate (per min)
iv. Respiratory rate (per min)
v. Anemia
vi. Jaundice
vii. Urine Output
viii. Cardiovascular examination
ix. Respiratory examination.

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

i. Board like rigidity
ii. Tenderness
iii. Guarding
iv. Distension of abdomen
v. Masking of liver dullness

7. Investigation

i. Hemogram — Hb, TLC, DLC
ii. Renal function :
1. B.Urea (mg')/0)
2. S.Creatinine (mg%)

8. S. Elelctrolyte
1. S.Na+ (Meq/L)
2. S.K+ (Meq/L)

1. Radiology

- Plain X-ray abdomen erect A.P. view including both loves or diaphragm
- USG finding
- All patients were resuscitated with :-
- Intravenous fluids.
- Appropriate antibodies
- Nasogastric decompression for Ryles tube

2. Pre-operative work up:-

All of the patients were operated under general anesthesia and preferable incision was midlines.

During operation following point were recorded.

- Size of perforation diameter.
- Site of perforation
- Surrounding wall of duodenum
- Condition of omentum
- Any additional finding on exploration.

3. Post Operative Work Up :-

- IV fluids.
- IV antibodies
- Active ryles tube suction.
- Assessment of vitals viz. Blood pressure, pulse rate, respiratory rate, Urine output.
- During repair of perforation intra operative biopsy will be taken.

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

- Biopsy is put on the rapid ureas test kit.
- The result in form of color changes read.
- Results are read as positive when color changes to pink in the kit.

Procedure:

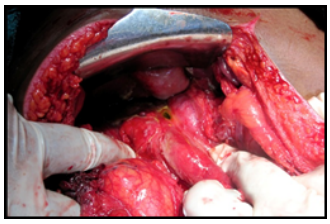

Figure 1: Intraoperative image of prepyloric perforation.

Figure 2: Intraoperative image of duodenal perforation.

Figure 3: RUT kit with positive result.

Figure 4: RUT kit with negative result.

OBSERVATIONS AND RESULTS:

The present study has been carried out on 51 patients of peptic perforations cases confirmed per operatively admitted in General Surgery Department of M.L.B. Medical and Hospital, Jhansi between June 2015 to July 2017.

All the patients were operated in emergency operation theater. Biopsy taken per operative on the table at the time of operation.

Other parameters will be studied:

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

Parameters		Number	Percentage
AGE (YEARS)	1-10	02	03.92%
	11-20	05	09.80%
	21-30	08	15.68%
	31-40	13	25.49%
	41-50	10	19.60%
	51-60	04	07.84%
	>60	09	17.64%
SEX	Male	42	82.35%
	Female	09	17.64%
PATIENTS WITH ALCOHOL	Present	31	60.78%
	Absent	20	39.21%
PATIENTS WITH SMOKING	Present	36	70.58%
	Absent	15	29.41%

PATIENTS WITH RESIDENTIAL LIVING	Rural	32	62.74%
	Urban	19	37.25%
PATIENTS WITH PREVIOUS H/O PEPTIC ULCER	Yes	14	27.45%
	No	37	72.54%
PATIENTS WITH SITE OF PERFORATION	Duodenal	05	09.80%
	Pre-Pyloric	46	90.19%
PATIENTS WITH SIZE OF PERFORATION (MM)	3 mm	14	27.45%
	5 mm	21	41.17%
	6 mm	01	01.96%
	8 mm	05	09.80%
	10 mm	7	13.72%
	15 mm	3	05.88%

DISCUSSION:

Age distribution:

In the present study of 51 cases the highest incidence of perforated peptic ulcer was between 31 to 60 years, 70.58% of patients fell in this group. The mean age of presentation was 40 years.

A study done on 23 patients at EAST BIRMINGHAM HOSPITAL in 1981-82 showed the mean age of presentation of 56 years. This might be due to the different trends of this entity in the Western countries where the elderly patients are the primary victims.

Various case series in India and abroad have mean age of presentation between 40-60 years, and in our study between 30-60 years.

I.G.Medical College, Shimla in 1983-92, showed the mean age of presentations between 41-50 years, this is consistent with that of our study.

A study on perforated peptic ulcer done in JLN Medical College Ajmer RAJASTHAN, showed the maximum age incidence between 30-40 years, this figure is again compatible to our study.

Gender distribution:

In the present study 42 (82.35%) were male and 9 (17.64%) were female. Male to female ratio in peptic perforation was 5:1. Present study shows high incidence of peptic perforation in male A study in I.G. Medical College Shimla over the period of 10 years from 1983-1992, showed male to female ratio of 17:1. This ratio shows the very high incidence in male patients, which is shown in our study.

A prospective study done in JLN Medical College, AJMER (RAJASTHAN), on 43patients, all the patients in that study were male and none of patient were female. Various other study conducted abroad confirms the increasing incidence as well as very high incidence of perforated peptic ulcer in male gender.

H/O Smoking:

In our study 70.58% patients were smokers were smoking 20 biree/day and 29.41% were non-smoker. Although erratic, it seems that disease incidence is increasing among non-smokers. The association of smoking to peptic disease does not need emphasizing. These data shows the finding of multi factorial etiology of peptic ulcer smoking and peptic perforation.

H/O alcohol intake:

Out of 51 patients 31 (60.78%) patients were drinker and 20 (39.21%) patients were non drinker.

Although alcohol is always mentioned as a cause of peptic ulcer no study so far shows any definite association between alcohol intake and peptic ulcer disease (Schwartz 8th ed, 958). In our study there is increased incidence of peptic ulcer perforation in alcoholic group than non-alcoholic group.

Residential living:

In our study 32 (62.74%) were rural and rest of 19 (37.25%) were urban residents.

So, from above data's can be safely said that in Bundelkhand region the perforation is more common in rural areas.

Size of perforation:

Out of 51 patients, size of perforation is less than 1 cm in 41 (80.39%) patients and 1 to 2 cm in 10 (19.60%) patients.

Radiological features:

In this study all the cases were having gas under diaphragm in there, X-ray abdomen erect view.

In one study conducted in J.L.N Medical College Ajmer 8 of 25 patients plain skiagram abdomen in erect view did not demonstrated free gas under diaphragm.

The demonstration of pneumoperitonium following perforated viscous is however not invariable and most series show that in only 75-80% of perforation free gas is demonstrated. A number of reason for this have been suggested including:-

1. Sealing of perforation.
2. Lack of gas, at the site of perforation.
3. Adhesion around perforation.
4. Faulty technique.

However radiographic technique and positioning is also important and it is recommended that a patient should be in position for 10 min, prior to film taken for it takes this time for free gas to rise to highest point in the abdomen, however it is not possible in abdominal catastrophe and it is seldom practiced by the radiologists.

If left lateral decubitus projection is included, this yield can be increased up to 90%, which is similar to sensitivity of U.S.G to demonstrate pneumoperitonium.

RELATION BETWEEN H. PYLORI AND PERFORATED PEPTIC ULCER:

Results of biopsy urease test:

In present study patients presenting with acute perforation of peptic ulcer, prevalence of H. pylori is 92.15%.

Data regarding H. Pylori infection rate in perforated peptic ulcer is highly variable ranging from 0-92% in different studies (see below table)

Authors	Years	No. of patients	H.P. Positive (%)
Debongnie	1995	36	56%
Ng	1996	73	70%
Chowdhary	1998	15	0%
Chu	1999	163	47%
Ng	2000	129	81%
Sharma	2000	44	61%
Metzger	2001	47	73%
Kumar	2004	86	50%
Our Study	2017	47	92.15%

Above mentioned table shows prevalence of H. Pylori infection in patients with perforated peptic ulcer in different studies performed during last 24 years.

Discrepancy between H. pylori infection rate found in different studies may be attributed in part to different population studied. For example,

Sebastian et al. reported an infection rate of 83% in a small group of young male from India with acute peptic ulcer, this

result is comparable to our findings.

Another study from India with 15 perforated duodenal ulcer patients showed on contrary that all patients were negative from H. pylori while Sharma et all found a prevalence of 61% among 44 patients from Chattishgarh region, India.

Metzger et al study reported a prevalence of 73% of H pylori infection in perforated peptic ulcer.

Papaziogas B, Pavlidis T, et al reported a prevalence of 62.5% of H pylori in perforated peptic ulcer.

Annuals of surgery 231 (2); 153-158, Feb. 2000, Ng, Enders K.W.MD, LAM, Y.H.MD et al reported a prevalence of 81% in perforated peptic ulcer.

Department of gastroenterology, PG institute of medical education and research, Chandigarh, India. Conducted study on 45 pts, 15 (34%) patients were in group of perforated peptic ulcer, none of them tested positive for H. pylori infection.

According to world journal gastroenterology 2013 a retrospective study was conducted on patients admitted with gastric and duodenal perforation at Stavanger university hospital between January 2001 to December 2010. In this study gastric perforation predominated and accounted for 112 of 172 patients. Prepyloric perforation represented 61 of 112 gastric perforation and 21 of 112 were located in the pylorus. In the corpus/fundus area 12 of 112 perforation were observed while 8 of 112 were located in the antrum. 1 perforation was located in an anastomosis and 9 of 112 perforation were missing but being classified as gastric perforation at operation.

In our study 46 (90.19%) patients were of prepyloric perforation and 05 (9.8%) were duodenal.

The no of NSAIDs users was stable during the decade study and were used by 76 of 172 patients. Also NSAIDs use was more common in >60 years age compare to younger patients.

In our study 14 (27.45%) patients used NSAIDs.

So in our study perforated peptic ulcer are clearly associated with H. pylori infection as a strong etiological factor

CONCLUSION:

1. Most common peptic perforation was prepyloric perforation.
2. Commonest age of presentation of peptic perforation in Bundelkhand region was 30-60 years (84.21%).
3. Most commonly men were more affected than females with the ratio of 5:1
4. According to study only 70.58% patients were chronic smoker.
5. Most of the patients were alcoholic (60.78%).
6. 62.74% of the patients were from rural areas.
7. 27.45% patients gave history of chronic NSAIDS use.
8. Gas under diaphragm was a significant finding in erect X-ray of abdomen in perforated peptic ulcer.
9. Most of the patients (92.15%) were infected with H. pylori detected by rapid urease test.
10. It can be concluded that H. pylori may be the causative factor for perforation of peptic ulcer.
11. In all factors studied H. pylori was most closely associated factor with perforated peptic ulcer.

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