(e) ISSN Online: 2321-9599

(p) ISSN Print: 2348-6805

ORIGINAL ARTICLE

A prospective study of peptic perforation in bundelkhand region in references to prevalence of H.pylori in peptic perforation

[1]Albail Singh Yadav, [2]Dinesh Pratap, [3]Rakesh Kumar Singh

[1]Assistant Professor, [2]Professor, [3]Junior Resident, Department of Surgery, M.L.B. Medical College, Jhansi, Uttar Pradesh, India

ABSTRACT:

Background: Perforated peptic ulcer is one of the most common surgical emergencies. Despite a definite association of H. pylori with peptic ulcer disease, its association with peptic ulcer perforation is still doubtful.The 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:** The present study was conducted on 57 patients with clinical diagnosis of perforation of chronic peptic duodenal ulcer presenting emergency ward of M.L.B Medical College, Jhansi in Department of Surgery from May 2004 (retrospective study) and Feb. 2010 to Sep. 2011 (prospective study). **Result:** Commonest age of presentation of peptic perforation in Bundelkhand region was 30-60years (84.21%). 8.77% patients were belonging to poor economic status 84.21% were belonging to Middle Class and only 7.02% patients were belong to high class. Most of the patients (73%) were from poor socioeconomic status. According to study only 30% patients were chronic smoker. Most of the patients were non-alcoholic (73.68%). Most of the patients were active workers (85.96%), sedentary workers were few (14.04%). Most of thepatients (87.72%) were poorly educated. 89.47% of the patients were from rural areas. Most of the patients (82.46%) were normotensive. Only 1.75% patient was suffering from Ischemic heart disease. Almost all the patients (93%) were non Tubercular. Most of the patients (80.7%) were infected with H. pylori detected by biopsy urease test. Eradication therapy was effective in 97.8% of H. pylori positive patients. So eradication of H. pylori may reduce the recurrence of peptic perforation. **Conclusion:** It can be concluded that H. pylori may be the causative factor for perforation of peptic ulcer. In all factors studied H. pylori was most closely associated factor with perforated peptic ulcer. Eradication therapy was effective in 97.8% of H. pylori positive patients. So eradication of H. pylori may reduce the recurrence of peptic perforation

Keywords: Helicobacter pylori, Peptic ulcer perforation, Perforated peptic ulcer, Prevalence

Corresponding author: Rakesh Kumar Singh, Junior Resident, Department of Surgery, M.L.B. Medical College, Jhansi, Uttar Pradesh, India

This article may be cited as: Yadav AS, Pratap D, Singh RK. A prospective study of peptic perforation in bundelkhand region in references to prevalence of H.pylori in peptic perforation. J Adv Med Dent Scie Res 2016;4(4):269-275.

INTRODUCTION

Peptic ulcers are most often solitary chronic lesions that can occur at any level of GI tract exposed to aggressive action of acid peptic juices or a decrease in the mucosal resistance. An ulcer is defined as a persistent discontinuity of an epithelial surface that can occur in skin or mucus membrane. Peptic ulcers are no 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 advances in surgical, anesthetic and ancillary facilities, it still assumes life-threatening dimensions. Prompt recognition of the condition is of paramount importance, as only by early diagnosis and treatment it is possible to reduce the still relatively high mortality.

Approximately 98-99% of peptic ulcers occur either in duodenum or in stomach in ratio of 4:1. Duodenal ulcer is the most common ulcer in the GI tract. Free perforation into the peritoneal cavity occurs in 2-3%. Perforation of duodenal ulcer is an emergency condition, which requires immediate surgical intervention. Peptic ulcers are remitting and relapsing lesions that are often diagnosed in middle aged to older adults (45 yrs. and above). 5-10% of patients have no recognizable prior ulcer symptoms and may appear after a period of weeks or months of active disease and heal with or without therapy. Thus it is difficult to express accurate data about frequency of active disease. The best estimate of peptic ulcer frequency is from autopsy studies and surveys of patients indicate a range of 6.14% for men and 2.6% for women. Perforation is one of the most are catastrophic complication of duodenal ulcer perforation of duodenal ulcer is most common perforation of upper GI tract. Ulcer that perforate mostly present on anterior aspect of first part of duodenum. However truly speaking perforation in found most commonly at gastro duodenal , junction rather than really on duodenum rarely an ulcer is present in posterior wall and perforates in lesser sac and adjacent structures, most often in pancreas, less commonly into liver, biliary tract or colon.

It is widely believed that it is silent chronic ulcer that perforates specially in patients who are being treated with steroid or NSAIDS for one or another reason usually symptoms of perforation occur with dramatic suddenness.

After perforation duodenal contents escape through the perforation into general peritoneal cavity resulting into the peritoneal reaction (Peritonism). Peritoneum reacts to this chemical irritation by secreting peritoneal fluid copiously, which dilutes the contents, and this gives relief of pain for short time. This stage lasts for 3-6 hours and is followed by diffused bacterial peritonitis.

AIMS AND OBJECTIVES

The 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.

MATERIALS AND METHODS

The present study was conducted on 57 patients with clinical diagnosis of perforation of chronic peptic duodenal ulcer presenting emergency ward of M.L.B Medical College, Jhansi in Department of Surgery from May 2004 (retrospective study) and Feb. 2010 to Sep. 2011 (prospective study).

INCLUSION CRITERIA

1. Patients with known diagnosis of peptic ulcer
2. Patients with previous history of upper GI bleed

EXCLUSION CRITERIA

1. Traumatic gastric perforations
2. Iatrogenic gastric perforations
3. Gastric perforations with known malignancies

PROCEDURE

Emergency open explorative laparotomy was carried out in all the patients under general anaesthesia through a midline abdominal incision. The diagnosis was confirmed and intra-operative findings were noted. Biopsy taken per operative on the table at the time of operation and repeat biopsy was taken around 6th week post operatively endoscopically.
7.

Postoperative patients were kept nil orally along with Ryles tube aspiration till bowel sounds were heard and flatus appreciated by the patient. Drain were taken out according to the amount of drainage. Ryles tube was removed after 3-5 days. Patients were call up after 1 week, 2 week, 6 week and 6 months after discharge from the hospital for follow up. Upper GI endoscopy to take the antral mucosal biopsy for biopsy urease test at 6th week, in the post-operative period was performed and two specimens were obtained by biopsy forceps for gastric antral mucosa. Both the specimens were immediately put in to two separate test tubes containing rapid urease solution. Both the test tubes were kept at room temperature and the result in for of colour changes read within 48 hours. Result are read as positive when both the test tubes shown colour changes with 48 hours. Patients were followed for follow up upper G.I. endoscopuc and antral mucosal biopsy within six months.

RESULTS

The present study had been carried out on 57 patients of peptic perforations cases confirmed per operatively admitted in General Surgery Department of M.L.B. Medical College, Jhansi between February 2010 to August 2010.

All the patients were operated in emergency operation theater. Biopsy taken per operative on the table at the time of operation and repeat biopsy was taken around the 6th week postoperatively endoscopically.

Other Variables studied in this study are-

1. Age distribution of perforation
2. Sex distribution of perforation.
3. Associated factors- cigarette smoking, alcohol, life style, education status, food habit, economic status, residential living.
4. Size of the perforation.
5. Associated diseases- hypertension, diabetes mellitus, ischemic heart disease, tuberculosis.
6. Proportion of gastric and duodenal perforation.

Table 1: Age distribution

Age (in years)	DP	GP	Total	Percentage
Up to 10 years	1	0	1	1.75%
11-20 years	4	0	4	7.02%
21-30	5	3	8	14.04%
31-40	13	1	14	24.56%
41-50	11	2	13	22.81%
51-60	14	0	14	24.56%
61-70	1	0	1	1.75%
71-80	1	0	1	1.75%
More then 80	1	0	1	1.75%
Total	51	6	57	100%

Age range in present study was 4-65 years. The youngest patients was 1 4 years old boy and oldest was 65 years old man.

The maximum number of patients 48 (84.21%) out of 57 were in the age group of 31-60 years.

There were 6 cases of GP in present study.

Table 2: Sex distribution

Sex	Duodenal perforation	Gastric perforation	Total	Percentage
Male	43	6	49	85.96%
Female	8	0	8	14.04%
Total	57	6	57	100%

Out of 57 patients 49 patients (85.96%) were male and 8 (14.04%) were female.

Table 3: Patients with cigarette smoking

Smoking habit	Total	Percentage
Present	20	35.09%
Absent	37	64.91%

Out of 57 patients, 20 (35.09) patients were chronic smoker for 5 to 25 years, these were smoking 5 to 30 bidi/day. 37 (64.91) patients were nonsmoker.

Table 4: Patients with IHD

IHD	Total	Percentage
Present	1	1.75%
Absent	56	98.25%

In this study only 1 (1.75%) patient have IHD all remaining 56 (98.25%) patients have no heart disease, decided by pre-operative and postoperative ECG.

Table 5: Patients with alcohol drinking

Alcohol drinking	Total	Percentage
Present	15	26.32%
Absent	42	73.68%

Out of 57 patients 15 (26.32%) patients were drinker and 42 (73.68%) patients were nondrinker.

Table 6: Patients with different economic status

Economic status	Total	Percentage
Poor	5	8.77%
Middle class	48	84.21%
High class	4	7.02%

Out of 57 patients 5 (8.77%) patients were belonging to poor economic status and 48 (84.21) were belonging to middle class and only 4 (7.02%) patients were belong to high class. Peptic perforation was less common in high class.

Table 7: Patients with different habits

Food habit	Total	Percentage
Vegetarian	33	57.89%
Non- Vegetarian	24	42.11%

In this study 33 (57.89%) patients out of 57 patients were vegetarian and 24 (42.11%) out of 57 patients were non vegetarian.

Table 8: Patients with diabetes mellitus

Diabetes mellitus	Total	Percentage
Present	1	1.75%
Absent	56	98.25%

In this study 1 (1.75%) patients was suffering from diabetes mellitus, all remaning 56 (98.25%) patients were non diabetic out of 57 patients.

Table 9: Patients with different life style

Life style	Total	Percentage
Active worker	49	85.96%
Sedentary worker	8	14.04%

In this study 49 (85.95%) patients were active workers and 8 (14.04%0 out of 57 were sedentary workers.

Table 10: patients with different education status

Education status	Total	Percentage
Poorly educated	50	87.72%

Matriculate and above	7	12.28%

In this study out of 57 patients only 7 (12.28%) patients were educated above 10th class, rest 50 (87.72%) patients were poorly educated.

Table 11: patients with different occupation

Residential living	Total	Percentage
Rural	51	89.47%
Urban	6	10.53%

Out of 57 patients 51 (89.47%) were rural and rest of 06 (10.53%) were urban residents.

Table 12: patients with tuberculosis

Tuberculosis	Total	Percentage
Present	4	7.02%
Absent	53	92.98%

Out of 57 patients, only 4 (7.02%) patients suffering from tuberculosis, rest were non tubercular.

Table 13: patients with hypertension

Hypertension	Total	Percentage
Present	10	17.54%
Absent	47	82.46%

In this study 10 (17.54%) patients were hypertensive and 47 (82.46%) patients were normotensive.

Table 14: patients with duodenal perforation and gastric perforation

Number of cases	Total	Percentage
Duodenal perforation	51	89.47%
Gastric perforation	6	10.53%

In this study out of 57 patients 51 (89.47%) patients have duodenal perforation and only 6 (10.53%) have gastric perforation.

Table 15: patients with different size of perforation

Size of perforation	Total	Percentage
Less than 1 cm	25	43.86%
1 to 2 cm	27	47.37%
More than 2cm	5	8.77%

Out of 57 patients, size of perforation is patients is less than 1cm 25 (43.86%) patients, 1 to 2 cm is 27 (47.37%) and only 5 (8.77%) patients have size of perforation is more than 2 cm.

Table 16: results of biopsy urease test in study (From per operative biopsy)

Results	Total	Percentage
Positive	46	80.70%
Negative	11	19.30%

Out of 57 patients 46 (80.70%) patients were shown positive result and 11 (19.30%) shown negative.

Table 17: Effectiveness of eradication therapy (based on results of biopsy urease test from endoscopic biopsy taken around 6th week)

Results	Total	Percentage
Positive	1	2.1%
Negative	45	97.8%

Out of 46 positive patients on biopsy urease test 45 (97.8%) gave negative results for biopsy urease test after eradication therapy so eradication therapy was effective in 97.8% of patients.

DISCUSSION

AGE DISTRIBUTION

In the present study of 57 cases the highest incidence of perforated peptic ulcer was between 30 to 60 years, 84.21% of patients fell in this group. The mean age of presentation was 40 years.

GENDER DISTRIBUTION

In the present study 49 (85.96%) were male and 8 (14.04%) were female. Male to female ratio in peptic perforation was 16:1. 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 (RAJASTH.AN), 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 35.09% patients were smokers were smoking 20 biree/day and 63.91% 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 57 patients 15 (26.32%) patients were drinker and 42 (73.68%) patients were nondrinker. 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 no increased incidence of peptic ulcer perforation in alcoholic group than non-alcoholic group, so we could not ascribe a cause for this in our study.

ECONOMIC STATUS

Out of 57 patients 5 (8.77%) patients were belonging to poor economic status and 48 (84.21) were belonging to Middle Class and only 4 (7.02%) patients were belong to high class. So, in our study it seems that peptic ulcer perforation are more common among poor socioeconomic group patients.

This fact is validated from other studies, which have shown similar association between poor economic status and peptic ulcer perforation.

It is written in Harrison that poor socio economic status and low education promote higher colonization rate of H.pylori.

FOOD HABITS

In our study 33 (57.89%) patients out of 57 patients were vegetarian and 24 (42.11%) out of 57 patients were non vegetarian, so no conclusive evidence can be drawn from these data As mentioned in Harrison 16th ed.1751, no diet relation has been established with peptic ulceration.

LIFE STYLE

In our study 49(85.96%) patients were active workers and 8 (14.04%) out of 57 were sedentary workers. In this study out of 57 patients only 7 (12.28%) So we can conclude that peptic perforation is more common in active workers.

EDUCATION STATUS

In our study only 7 patients were educated above le class rest 45 patients (86%) were poorly educated. So from these data it seems that perforated peptic ulcer is more common in poorly educated.

RESIDENTIAL LIVING

In our study 51 (89.47%) were rural and rest of 06 (10.53%) were urban residents.

So, from above data's can be safely said that in Bundelkhand region the perforation is more common in rural areas with poor economic status and poor education status.

ASSOCIATION WITH OTHER MEDICAL PROBLEMS

In our study only 4 (7.02) patients suffering from tuberculosis, rest were non tubercular. In this study 10 (17.54%) patients were hypertensive and 47 (82.46%) patients were normotensive. No patient was suffering from Ischemic heart disease and Diabetes mellitus.

So from above mentioned data's it seems that these disease have nothing to do with perforated peptic ulcer then from general population.

SIZE OF PERFORATION

Out of 57 patients, size of perforation is patients is less than I cm 25 (43.86%) patients, I to 2 cm is 27 (47.37%) and only 5 (8.77) patients have size of perforation is more than 2cm.

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 mm, 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 88%.

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	Total Number of patients	H.P. positive (%)
Reinbach	1993	80	47%
Sebastian	1995	29	83%
Debongnie	1995	36	56%
Chu	1999	163	47%
Ng	2000	129	81%
Sharma	2000	44	61%
Metzger	2001	47	73%
Kumar	2004	86	50%
Our study	2012	57	80.7%

Above mentioned table shows prevalence of H. Pylori infection in patients with perforated peptic ulcer in different studies performed during last 15 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.

In our study results are very different form the other mentioned studies, quoted above. So in our study perforated peptic ulcer are clearly associated with H. pylori infection as a strong etiological factor.

EFFECTIVENESS OF ERADICATION THERAPY

Out of 57 patients 46 (80.7%) were positive was biopsy urease test. Out of these positive 46 patients 45 (97.8%) were negative after eradication therapy. This means that eradication therapy was effective in 97.8% of patients.

CONCLUSION

1. Most common pepticperforation was duodenal perforation.
2. Most commonly men were more affected than females with the ratio of 7:1
3. 8.77% patients were belonging to poor economic status 84.21% were belonging to Middle Class and only 7.02% patients were belong to high class.
4. Most of the patients were active workers (85.96%), sedentary workers were few (14.04%).
5. 89.47% of the patients were from rural areas.
6. Only 1.75% patient was suffering from Ischemic heart disease.
7. Almost all the patients (93%) were non Tubercular.
8. Family history could not be elicited in any of thepatient.
9. Gas under diaphragm was a significant finding in erect X-ray of abdomen in perforated peptic ulcer.
10. Most of the patients (80.7%) were infected with H. pylori detected by biopsy urease test.
11. It can be concluded that H. pylori may be the causative factor for perforation of peptic ulcer.
12. In all factors studied H. pylori was most closely associated factor withperforated peptic ulcer.
13. Eradication therapy was effective in 97.8% of H. pylori positive patients. So eradication of H. pylori may reduce the recurrence of peptic perforation.

REFERENCES

1. Chu S, Tanaka S, Kaunitz JD, Montrose MH. Dynamic regulation of gastric surface pH by luminal pH. J Clin Invest. 1999;103:605–612.
2. Debongnie JC, Wibin E, Timmermans M, Mairesse J, Dekoninck X. Are perforated gastroduodenal ulcers related to Helicobacter pylori infection? ActaGastroenterol Belg. 1995 Mar-Apr;58(2):208-12. PMID: 7571981.
3. F Charles Brunicardi; Seymour I Schwartz.NewYork : McGraw-Hill, Health Pub. Division, ©2005.

4. M. Kobayashi, M. Fukuda, J. Nakayama, 4.23 - Glycoconjugates and Bacterial Infections: Helicobacter pylori, Editor(s): Hans Kamerling, Comprehensive Glycoscience, Elsevier, 2007, Pages 439-451.
5. Metzger, Jürg&Styger, S &Sieber, C &Flüe, M &Vogelbach, Peter & Harder, F. (2001). Prevalence of Helicobacter pylori infection in peptic ulcer perforations. Swiss medical weekly. 131. 99-103.
6. Ng EK, Lam YH, Sung JJ, Yung MY, To KF, Chan AC, Lee DW, Law BK, Lau JY, Ling TK, Lau WY, Chung SC. Eradication of Helicobacter pylori prevents recurrence of ulcer after simple closure of duodenal ulcer perforation: randomized controlled trial. Ann Surg. 2000 Feb;231(2):153-8. doi: 10.1097/00000658-200002000-00001. PMID: 10674604; PMCID: PMC1420980.
7. Papaziogas B, Pavlidis T, Papaziogas T. Helicobacter pylori infection and complicated peptic ulcer. Swiss Med Wkly. 2001 Jul 28;131(29- 30):442.
8. Reinbach DH, Cruickshank G, McColl KE. Acute perforated duodenal ulcer is not associated with Helicobacter pylori infection. Gut. 1993 Oct;34(10):1344-7. doi: 10.1136/gut.34.10.1344. PMID: 8244099; PMCID: PMC1374538.
9. Sharma AK, Mittal S, Malvi SK: Association of Helicobacter pylori with peptic perforation in Chattisgarh region of India. Trop Gastroenterol 2000;21:42–3.
10. Suerbaum S, Michetti P. Helicobacter pylori infection. N Engl J Med. 2002 Oct 10;347(15):1175-86. doi: 10.1056/NEJMra020542. PMID: 12374879.
11. Svanes C, Lie RT, Svanes K, Lie SA, Søreide O. Adverse effects of delayed treatment for perforated peptic ulcer. Ann Surg 1994;220:168-175.