Original Article

Duodenal Perforation among Patients of Acid Peptic Disease

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Abstract

Introduction: Duodenal ulcer (DU) perforation is one of the severe complications of duodenal ulcer. Although, antiulcer drugs reduce the risk of duodenal ulcer perforations but perforation may occur in 2-10% patients taking antiulcer drugs. In elderly patients of duodenal ulcer perforation, the mortality remains 30-50% in-spite of optimal management. **Objective:** To find out the frequency and characteristics of patients with duodenal ulcer perforation on regular anti ulcer drugs, on irregular therapy and in those not taking medications for acid peptic disease. **Study Design:** Cross sectional study(Hospital based). **Study Setting:** Department of Surgery, Bahawal Victoria Hospital, Bahawalpur. **Duration of Study:** From 11-02-2009 to 10-01-2010. **Subjects and Methods:** Fifty five patients of Duodenal Ulcer perforation diagnosed on clinical ground and Laparoscopy/Laparotomy with known history of peptic ulcer, whether taking antiulcer drugs (complete or incomplete course) or not, were included in this study. All the data was recorded on pre-designed Proforma and results were analyzed using SPSS 13.0 version. **Results:** 55 patients were operated for perforated duodenal ulcer during the study period in the surgical department of Bahawal Victoria Hospital, Bahawalpur. This consisted of 50 males (91%) and 05 females (09%). The male/female ratio was 10:1; the patients were aged 20-60 years. The peak incidence was in the 5th decade. Duration of acute symptoms before presentation was a few hours to 5 days. None of the perforations was associated with recent ingestion of non steroidal anti-inflammatory drugs (NSAIDS). There was a history of chronic peptic ulcer disease in 39(71%) patients. Abdominal tenderness and classical signs of peritonitis were demonstrable in 49(89.1%) and 46(83.6%) patients respectively. Plain abdominal and chest x-rays were carried out for all these patients, with free gas under the diaphragm demonstrated in 70% percent of cases. A total of 49 patients (89%) had anterior pyloroduodenal perforations with serous peritoneal fluid in 29 (53%), cloudy/opalescent peritoneal fluid in 13 (24%) and frank peritoneal pus with fibrinoid adhesions in 13 (24%) patients. Six of the perforations were found to be sealed. Five of the perforations were of size </=5mm and 44 were >10mm in size. Only six patients out of fifty five (11%) during or after a course of the antiulcer drugs developed Duodenal Ulcer Perforation. **Conclusion:** Duodenal ulcer perforation may occur in patients who were taking antiulcer drugs. Duodenal ulcer perforation is more common in patients with acid peptic disease who were not taking antiulcer drugs. **Key Words**: Duodenum, Ulcer, Perforation, Antiulcer drugs.

INTRODUCTION

Duodenal ulcer is a common condition associated with acid peptic disease. More than 95% of duodenal ulcers are found in the first part of the duodenum; most are more than 1 cm in diameter.[1] Perforation is a well known complication of Duodenal Ulcer, as also are bleeding and obstruction due to scarring. It may involve anterior or posterior wall but sometimes both walls are involved as kissing ulcer. For anterior wall ulcers, common complication is perforation and for posterior wall ulcers, the major complication is bleeding.[2] From literature search, it is evident that these occur commonly in males, the age ranges from

16 to 70 years but it has also been reported among young children.[3]

Patients with duodenal ulcers have a variety of clinical presentations, ranging from asymptomatic to those who develop severe complications, such as Perforation. The prevalence of duodenal ulcers is estimated to be 6-15% in the general population. Approximately 10% of young persons have Helicobacter Pylori infection and the proportion of people with the infection increases steadily with age.

Risk factors are, prolonged use of NSAIDs, (0.3% per patient year)[4], steroids, smoking, alcohol abuse, decreased immunity (diabetes, old age), increased gastric secretion (Gastrinoma, Zollinger Ellison Syndrome), Viral infection (Herpes Simplex, Cytomegalovirus, HIV) and genetic factors predispose to Duodenal ulcer perforation.[5] Anti Ulcer drugs like H_2 receptor antagonists, proton pump inhibitors and Helicobacter Pylori eradication therapy is the mainstay of treatment in duodenal ulcer. The definite treatment is surgical but in some selected cases, conservative management is safe. Although, antiulcer drugs reduces the risk of duodenal ulcer perforation but it may still occur in 2-10% patients taking Antiulcer drugs (Whether complete course or incomplete course)[6] and in older patients in spite of good management there is about 30-50% mortality by duodenal ulcer perforation. Co morbid diseases (Diabetes Mellitus, Rheumatoid Arthritis, Osteoarthritis, Malignancy) increase mortality and postoperative complications .[7,8] Overall, the incidence of duodenal ulcers has been decreasing over the past 3-4 Decades.[9,10] Duodenal ulcers cause significant morbidity, which is mainly related to pain and hospitalization for complications, such as perforation, ulcer hemorrhage, penetration and obstruction. [11]

The epidemiology of duodenal ulcer and its perforation in Pakistan is difficult to describe due to lack of disease registry system.[12] There is trend of self medication with poor compliance and do not seek medical advice at all. Keeping in view the high morbidity and mortality associated with duodenal perforation due to the failure of antiulcer drugs or non-compliance of patients or any concomitant factor or disease, that predisposes to perforation, exact incidence should be calculated in patients of our study setting, who are known cases of peptic ulcer disease and are on antiulcer drugs and H. Pylori eradication therapy as well.

MATERIAL & METHODS

The study objective was to find out the frequency of patients with duodenal ulcer perforation on anti-ulcer medication (complete or incomplete course) or not, at Bahawal Victoria Hospital, a tertiary care teaching hospital affiliated with Quaid-e-Azam Medical College, Bahawalpur. This study was conducted at Department of Surgery, BVH, Bahawalpur from 11-02-2009 to 10-01-2010. Patients of age 20-60 years, regardless of gender, were included in the study. This study has been conducted using a hospital based cross sectional study design, as BVH/QMC is the only catchment area in which all complicated patients drain in our study area. Patients diagnosed clinically as cases of duodenal perforation and confirmed on laparotomy, with previous history of peptic ulcer disease were included in the study. Patients of duodenal traumatic perforation and gastric perforation were excluded from the study. Data was collected on a pre-designed Proforma and was analyzed on SPSS v13.0.

STATISTICAL ANALYSIS

As it was hospital based cross sectional study hence no comparison of the variables was carried out in the statistical analysis of the study we used SPSS version 13 for our statistical analysis.

RESULTS

Emergency surgery was carried out among 55 patients for acute perforated duodenal ulcer during the study period at the surgical department of Bahawal Victoria Hospital, Bahawalpur. This consisted of 50 males (91%) and 05 females (09%). The male/female ratio was 10:1; the patients' age range was 20-60 years, with a mean age of 44.42 years with standard deviation of 7.1 years. The peak incidence was in the 5th decade (41-50years). None of the perforations was associated with recent ingestion of non-steroidal anti-inflammatory drugs (NSAIDS). There was a history of chronic peptic ulcer disease in 39 (71.0%) patients. The common presenting symptoms were sudden onset of severe epigastric pain in 51 (92.7%), vomiting in 19 (34.5%), abdominal distention in 32 (58.2%) and fever

in 16 (29.1%). Abdominal tenderness and classical signs of peritonitis were demonstrable in 49 (89.1%) and 46 (83.6%) patients, respectively, with 3 (5.4%) of the patients presenting in shock (systolic blood pressure </= 80mmHg). All patients had plain abdominal and chest radiographs carried out , with free gas under the diaphragm demonstrated in 36 (69.2%)

of them. A total of 49 (89%) patients had serious pyloroduodenal perforations with massive serous peritoneal fluid in 29 (53%), massive cloudy/opalescent peritoneal fluid in 13(24%) and frank peritoneal pus with fibrinoid adhesions in 13 patients. Six of the perforations were found to be sealed. Five of the perforations were of size </=5mm and 44 were >10mm in size. Forty eight (87.3%) of the patients had Graham's omental patch repair. Out of fifty five patients, 06 (11%) were taking Antiulcer drugs and 49(89%) were not. Out of six patients, who later on developed perforation in spite of anti ulcer drugs, 02(33.4%) had taken a complete course of anti-ulcer drugs and 04(66.6%) did not complete the course of anti ulcer drugs. Duration of symptoms before presentation was a few hours to 5 days (mean 2.8 days). Twenty six patients (47.3%) presented within twenty four hours of onset of symptoms, 14 between 24 and 48 hours and 9 over three days afterwards . Those with sealed perforations had peritoneal lavage with warm saline and mass closure of the abdomen. Out of fifty five patients, 31(56.3%) had smooth unremarkable postoperative course, while 24(43.7%) developed one or more of the complications like, fever 20 (36.4%), wound infection in 12 (21.8%), and chest infection in 11 patients (20.0%). Three of these patients developed intra-abdominal abscesses that required open drainage. One of these patients developed peritonitis with septic shock that led to his demise. The mortality rate was 2%. The mean duration of hospital stay was 10 days (range 7-21 days). There was no record of ulcer recurrence and the mean duration of follow-up was 5.2 month (range 2-13 weeks).

Frequency and percentage of the various variables of interest were calculated and presented in tabulated form.

Table-1

Frequency and percentage of important study variables

Name of variable	Frequency	Percentage (%)
Severe Epigastric pain	51	92.7
Vomiting	19	34.5
Fever	16	29.1
Abdominal distension	32	58.2
Abdominal tenderness	49	89.1
Signs of peritonitis	46	83.6
Air under diaphragm in CXR erect	36	69.2

Table-2

Frequency and percentage of Antiulcer Drug Therapy

Name of variable	Frequency	Percentage (%)
No History taking antiulcer drugs	49	89
Taking antiulcer drugs (Irregularly)	4	66.6
Taking antiulcer drugs (Regularly)	2	33.4

Table-3

Frequency and percentage of postoperative Complications

Name of variable	Frequency	Percentage (%)
Fever	20	36.4
Wound infection	12	21.8
Chest infection	11	20
Intra-Abdominal Abscesses	3	5.45
Septic shock	1	1.81

DISCUSSION

Fifty five patients were treated for acute perforated duodenal ulcer in our hospital during the study period; giving an average of five cases per month which is a low incidence. Most of the patients (50; 91%) were males (male: female ratio: 10:1) which is low as compared to other studies where the male: female ratio ranged from 3.3:1 to 9:1, probably due to low consumption of alcohol and smoking in Pakistani women. The age at presentation was between 20 and 60 years with a mean of 44.4 and standard deviation of 7.1 years and commonest was fifth decade, which differs significantly from other reviews from Africa

that had an average of 64.8 +/-11.4 years .[13] Most of our patients 39 (71.0%) had past history of chronic peptic ulcer disease; this is in contrast to 47% reported by Chalya.[14] The reason for this difference is not quite apparent. The diagnosis of acute perforation was mainly clinical in our study, with typical symptoms of perforation peritonitis manifesting especially in those with a past history of chronic peptic ulcer disease. However, a high index of suspicion supported by an abdominal paracentesis and the demonstration of free air under the diaphragm on a plain chest radiograph was needed to make a diagnosis in those with atypical features. In few cases, the final diagnosis was only made intraoperatively. In the study by Ohene-Yeboah, [15] it was shown that 47.7% of perforations seen, were associated with the use of NSAIDs. This may be related to the age composition of the patients in the Ghanaian study where the mean age was above 60 years compared to our patients whose mean age was 44.4 years (and 61.8% were below 40 years of age). [15] Although 26 (47.3%) of our patients had surgical intervention within 24 hours of presentation, and 29 (52.7%) had intervention more than 24 hours from time of perforation which was in contrast to study conducted by Bin-Taleb et al[16] in which the mean interval was less than 24 hours(22.1hours) between perforation and surgical intervention in 156 patients studied.

The findings at laparotomy vary depending on the site, size and duration of the perforation. Forty nine patients in this study had anterior pyloroduodenal perforations, similar to other reported studies. The size of the perforation determined the amount of peritoneal contamination. Forty four (82.7%) of our patients had massive perforations, more than 1cm in approximate diameter. The degree of peritoneal soilage is crucial in patients with peritonitis due to acute duodenal ulcer perforation and early surgical intervention prevents further contamination of the peritoneal cavity and removes the source of infection. Sealed perforations were found in 6 out of 55 patients where it was managed conservatively. This finding is consistent with the results of Hermansson et al.[17] The effective medical therapy using a course of proton pump inhibitors complimented with Helicobacter Pylori eradication, has become necessary. As these are very effective drugs to prevent the complications related to the duodenal ulcer like perforation, bleeding and obstruction but in spite of these effective Antiulcer drugs, six out of fifty five patients had perforation and this ratio is similar to other studies where the ratio was about 2-10%.[3] Perforation also led to major postoperative complications, fever, and wound and chest infection. The causes of these complications were multifactorial, viz.: delay in presentation, delay in surgical intervention, gross peritoneal soilage, septicemia and shock. The delay in surgical intervention, after the patient presents to hospital, is usually due to the delay at presentations as patients come from very far sites and time taken to resuscitate these very ill patients. The mortality rate was 2% in our study, which is very low as compared to the reported rate of 30-50% by Bertleff [18] and similar to another study conducted by Barut and Ersumo .[19, 20] This may be explained by the differences in age composition of the patients and other risk factors of perforation. The mortality was due to septicemia.

CONCLUSIONS

Duodenal ulcer perforation can also occur among patients of Acid Peptic Disease who were taking anti-ulcer complete course of drugs (3.63%). In patients who were taking incomplete course, the perforation occurs in about 7% as compared to 89% who were not taking antiulcer medication.

RECOMMENATIONS

Based upon the results of our study, it is recommended that efforts should be made to detect the disease at an early stage and create awareness of timely diagnosis of symptomatic disease in the population with effective and complete course of the antiulcer drugs. An important aspect of awareness is dissemination of the knowledge that early and complete treatment of Peptic Ulcer can reduce the morbidity and mortality associated with peptic ulcer perforation.

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