International Journal of Medical and Health Research
ISSN: 2454-9142
Received: 26-01-2019; Accepted: 28-02-2019
www.medicalsciencejournal.com
Volume 5; Issue 3; March 2019; Page No. 166-169

Evaluation of clinical summary of patients suffering from duodenal perforation from Bihar region

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Abstract
When acute or chronic duodenal ulcer perforates into the peritoneal cavity, three components require treatment *viz*., the ulcer, the perforation and the resultant peritonitis. The perforation and resultant peritonitis are immediate threats to the life; the ulcer in itself is not. A successful outcome is obtained by prompt recognition of the diagnosis, aggressive resuscitation and early institution of surgical management. The aim of this study was to describe experience on the surgical management of perforated duodenal ulcer disease in our local environment outlining the incidence, clinical presentation, management and outcome of patients with peptic ulcer perforation in our setting.
The present study was planned in the Department of General Surgery; Katihar Medical College. Total 25 patients diagnosed with the duodenal perforation were enrolled in the present study. The details of patients who presented from Dec 2011 to April 2012 were retrieved from patient registers kept in the Medical record departments, the surgical wards, and operating theatre & enrolled in the study after signing an informed written consent for the study. Surgery was defined as urgent less as 4 hours between admission and surgery, same day (4-24 hours) and delayed at a later time during the same admission.
Duodenal ulcer perforation is one of the most common acute abdominal emergencies in our environment predominantly affecting young males. The peak incidence lies between 20-40 years of age and amongst peptic ulcer perforations duodenal ulcer perforation is the most Commonest of the two. Peptic ulcer perforations are more common in males. The outcome of the patient depends on the following factors Age of the patient, associated co-morbidities, Time interval between onset of acute abdominal pain and surgery, Condition of the patient at the time of surgery.

Keywords: Peptic ulcers, duodenum perforation, abdominal pain, Bihar, etc.

Introduction
Gastrointestinal perforation, also known as ruptured bowel, is a hole in the wall of part of the gastrointestinal tract. The gastrointestinal tract includes the esophagus, stomach, small intestine, and large intestine. Symptoms include severe abdominal pain and tenderness. When the hole is in the stomach or early part of the small intestine the onset of pain is typically sudden while with a hole in the large intestine onset may be more gradual. The pain is usually constant in nature. Sepsis, with an increased heart rate, increased breathing rate, fever, and confusion may occur. The cause can include trauma such as from a knife wound, eating a sharp object, or a medical procedure such as colonoscopy, bowel obstruction such as from a volvulus, colon cancer, or diverticulitis, stomach ulcers, ischemic bowel, and a number of infections including C. difficile. A hole allows intestinal contents to enter the abdominal cavity. The entry of bacteria results in a condition known as peritonitis or in the formation of an abscess. A hole in the stomach can also lead to a chemical peritonitis due to gastric acid. A CT scan is typically the preferred method of diagnosis; however, free air from a perforation can often be seen on plain X-ray [1].
Perforation anywhere along the gastrointestinal tract typically requires emergency surgery in the form of an exploratory laparotomy. This is usually carried out along with intravenous fluids and antibiotics. A number of different antibiotics may be used such as piperacillin/tazobactam or the combination of ciprofloxacin and metronidazole. Occasionally the hole can be sewn closed while other times a bowel resection is required. Even with maximum treatment the risk of death can be as high as 50%. A hole from a stomach ulcer occurs in about 1 per 10,000 people per year, while one from diverticulitis occurs in about 0.4 per 10,000 people per year [2].
Signs and symptoms may include a sudden pain in the epigastrium to the right of the midline indicating the perforation of a duodenal ulcer, while a gastric ulcer perforation reveals itself by burning pain in epigastrium, with flatulence and dyspepsia. In intestinal perforation, pain starts from the site of perforation and spreads across the abdomen. Gastrointestinal perforation results in severe abdominal pain intensified by movement, nausea, vomiting and hematemesis. Later symptoms include fever and or chills [3]. In any case, the abdomen becomes rigid with tenderness and rebound tenderness. After some time the abdomen becomes silent and heart sounds can be heard all over. Patient stops passing flatus and motion, abdomen is distended. The symptoms of esophageal rupture may include sudden onset of chest pain.
Underlying causes include gastric ulcers, duodenal ulcers, appendicitis, gastrointestinal cancer, diverticulitis, inflammatory bowel disease, superior mesenteric artery syndrome, trauma and ascariasis. Typhoid fever, non-steroidal anti-inflammatory drugs, ingestion of corrosives may also be responsible. Eating multiple magnets can also lead to perforation if the magnets attract and stick to one another through different loops of the intestine [4].
On x-rays, gas may be visible in the abdominal cavity. Gas is easily visualized on x-ray while the patient is in an upright position. The perforation can often be visualised

using computed tomography. White blood cells are often elevated. Surgical intervention is nearly always required in form of exploratory laparotomy and closure of perforation with peritoneal wash. Occasionally they may be managed laparoscopically [5]. A Graham patch may be used for duodenal perforations.

Conservative treatment including intravenous fluids, antibiotics, nasogastric aspiration and bowel rest is indicated only if the person is nontoxic and clinically stable.

Any intra-peritoneal gastrointestinal rupture presents with abdominal pain, typically crescendo in nature, beginning as a generalised pain focused to the affected region, before spreading as the organ perforates. There is usually an accompanying generalised abdominal tenderness, worse on movement (known as the rigid abdomen). On examination, the abdomen will be distended and peritonitic. A palpable mass may be present, depending on the underlying cause (e.g. appendiceal mass or malignancy).

A retroperitoneal perforation can be insidious in onset. The presentation can vary and patients may complain of right shoulder tip pain referred from diaphragm irritation, back pain or right iliac fossa pain (right paracolic phenomenon*) representing retroperitoneal duodenal ulcer, or pelvic or left lower quadrant pain suggesting diverticulitis. Importantly, there may only be minimal or focal tenderness on palpation, with an otherwise normal examination.

Any thoracic region perforation will present with pain, ranging from chest pain or neck pain to pain radiating to the back or pain on inspiration. There may be associated vomiting (however this may also be preceding if an oesophageal rupture) and respiratory symptoms. On examination, auscultation and percussion may reveal signs of a pleural effusion, with the potential for palpable crepitus [6].

When acute or chronic duodenal ulcer perforates into the peritoneal cavity, three components require treatment *viz*., the ulcer, the perforation and the resultant peritonitis. The perforation and resultant peritonitis are immediate threats to the life; the ulcer in itself is not. The therapeutic priorities thus are treatment of peritonitis and securing the closure of perforation, which may be achieved with surgical procedure. In spite of better understanding of disease, effective resuscitation and prompt surgery under modern anaesthesia techniques, there is high morbidity and mortality.

A successful outcome is obtained by prompt recognition of the diagnosis, aggressive resuscitation and early institution of surgical management. The aim of this study was to describe experience on the surgical management of perforated duodenal ulcer disease in our local environment outlining the incidence, clinical presentation, management and outcome of patients with peptic ulcer perforation in our setting.

Methodology

The present study was planned in the Department of General Surgery; Katihar Medical College. Total 25 patients diagnosed with the duodenal perforation were enrolled in the present study. The details of patients who presented from Dec 2011 to April 2012 were retrieved from patient registers kept in the Medical record departments, the surgical wards, and operating theatre & enrolled in the study after signing an informed written consent for the study. Surgery was defined as urgent less as 4 hours between admission and surgery, same day (4-24 hours) and delayed at a later time during the same admission.

Clinical history regarding fever, pain vomiting, abdominal distension, drug history, any treatment prior the admission were taken. Vital signs, hydration, abdominal distension, tenderness, guarding, rigidity, free fluid in peritoneum cavity noted through clinical examination. Systemic examination of cardiovascular system, respiratory system, central nervous system was done.

All the patients were informed consents. The aim and the objective of the present study were conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.

Following was the inclusion and exclusion criteria for the present study.

Inclusion criteria include the patients of

- Acute perforation due to peptic ulcer disease.
- Perforation of small bowel due to diseases.
- Appendicular perforation.
- Perforation of caecum and colon.

Exclusion criteria include the patients of

- Oesophageal perforation / rupture
- Blunt trauma abdomen involving hepatobiliary and splenic injuries
- Latrogenic perforation during laparotomy, and gynaecological procedures.
- Shock and septicemia whose general condition did not warrant any operative management even after all resuscitative measures

Results and Discussion

Duodenal ulcer is a type of peptic ulcer disease that distresses the lining of the duodenum. Duodenal perforation, complication of duodenal ulcer, is one of the commonest surgical emergencies requiring hospitalization and early management. Perforated duodenal ulcer remains a surgical emergency but nowadays it rarely results in death. The discussion is based on the analysis of data pertaining to 60 cases of perforated duodenal ulcers.

Table 1: Age & Sex Distribution

Age	No. of Patients
11-20	1
21-30	5
31-40	6
41-50	2
51-60	5
>60	6
Total	25
Sex	No. of Patients
Male	23
Female	2
Total	25

Table 2: Symptoms in Duodenum Perforation Patients

Symptoms	No. of Cases
Total Patients	25
Abdominal Pain	25
Rigidity	23
Distension	17
Blood in Stool	2

Table 3: Radiological Investigations of patients

Gas under Diaphragm	No. of Patients
Positive	21
Negative	4
Total	25

Table 4: Time interval between Admission and Surgery

Time Interval (Hours)	Surgery	No. of Patients
0-4	Immediate	9
4-24	Same Day	15
>24	Delayed	1
Total		25

In the present study, perforated peptic ulcer disease were found to be most common in the fifth decade of life and tended to affect more males than females, with a male to female ratio of 4:1 which is comparable with other studies in developing countries [7]. Perforation peritonitis is a frequently encountered surgical emergency in tropical countries like India, most commonly affecting young men in the prime of life as compared to the studies in the West where the mean age is between 45 and 60 years.

Male predominance in this age group is attributed to both excessive alcohol consumption and smoking among young males which is common in our environment. Alcohol consumption and smoking have been reported to be associated with increased risk for perforated peptic ulcer. Alcohol, as a noxious agent causes gastric mucosal damage, stimulates acid secretion and increases serum gastrin levels and smoking inhibits pancreatic bicarbonate secretion, resulting in increased acidity in the duodenal bulb [8].

Our study found male predominance for perforated duodenal ulcers which correlates to the reported observation. The very low incidence of female patients with duodenal ulcer perforation in comparison to male incidence may be due to great difference in habits, social, economical and cultural activities.

In this study, Graham's omental patch of the perforations with either a pedicled omental patch or a free graft of omentum was the operation of choice in our centre. Similar surgical treatment pattern was reported in other studies. This is a rapid, easy and life serving surgical procedure that has been shown to be effective with acceptable mortality and morbidity. Although this procedure has been associated with ulcer recurrence rates of up to 40% in some series, Graham's omental patch of PUD perforations remains a surgical procedure of choice in most centres and to avoid recurrence the procedure should be followed by eradication of H. pylori [9-10].

There has been large advancement in radiological diagnosis of acute abdomen by ultra sonogram, CT Scan and M.R.I. We do have ultra sonogram by radiologists with that co-operation we were able to diagnose some cases. Inspite of all these a plain X-ray abdomen in erect posture sound clinical judgement have been the main stay.

Tsugawa K *et al*. [11]. reviewed that three risk factors: pre-operative shock, delay to surgery over 24 hours and medical illness, was shown by the progressive rise in the mortality rate with the increasing number of risk factors (Hepatogastroenterology [14]. Boey John *et al*. [12]. revealed concurrent medical illness, pre-operative shock and delayed operation (>48hours) as significant risk factors that increase mortality in patients with perforated duodenal ulcers (1982) [13]. In the present study we reported that age, site of perforation, size of perforation, duration of perforation, pre-operative shock are the risk factors for the outcome of perforated peptic ulcer. In the presence of contamination, late exploration (after 48hours) carried a high mortality i.e. 50% (Boey John *et al*., 1982) [13]. Bharti C Ramesh *et al*. [14]. Reported that 12% of patients reached the hospital within 12 hours, 40% reached hospital within 25-48 hours and 24% after 48 hours [14].

Before generalizing the results of our study several important issues need to be addressed. First, since all the subjects in the present study underwent open repair, results from this study may not fully represent those after laparoscopic repair. Second, we did not study the association of H. pylori with the postoperative outcomes.

Conclusion

Duodenal ulcer perforation is one of the most common acute abdominal emergencies in our environment predominantly affecting young males. The peak incidence lies between 20-40 years of age and amongst peptic ulcer perforations duodenal ulcer perforation is the most Commonest of the two. Peptic ulcer perforations are more common in males. The outcome of the patient depends on the following factors Age of the patient, associated co-morbidities, Time interval between onset of acute abdominal pain and surgery, Condition of the patient at the time of surgery.

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