

The Perforation-Operation time Interval; an Important Mortality Indicator in Peptic Ulcer Perforation

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ABSTRACT

Objective: To find out the significance of the Perforation-Operation Interval (POI) with respect to an early prognosis, in patients with peritonitis which is caused by peptic ulcer perforation.

Study Design: Case series.

Place and Duration of the Study: Department of General Surgery, Konaseema Institute of Medical Sciences and RF Amalapuram, Andhra Pradesh, India from 2008-2011.

Materials and Method: This study included 150 patients with generalized peritonitis, who were diagnosed to have Perforated Peptic Ulcers (PPUs). The diagnosis of the PPUs was established on the basis of the history, the clinical examination and the radiological findings. The perforation-operation interval was calculated from the time of onset of the symptoms like severe abdominal pain or vomiting till the time the patient was operated.

Result: Out of the 150 patients 134 were males and 16 were females, with a male : female ratio of 9:1. Their ages ranged between 25-70 years. Out of the 150 patients, 65 patients (43.3%) presented within 24 hours of the onset of severe abdominal pain (Group A), 27 patients (18%) presented between 24-48 hours of the onset of severe abdominal pain (Group B) and 58 patients (38.6%) presented after 48 hours. There was no mortality in Group A and the morbidity was more in Group B and Group C. There were 15 deaths in Group C.

Conclusion: The problem of peptic ulcer perforation with its complication, can be decreased by decreasing the perforation-operation time interval, which as per our study, appeared to be the single most important mortality and morbidity indicator in peptic ulcer perforation.

Key Words: Perforated Peptic Ulcer (PPU), Perforation-Operation time Interval (POI)

INTRODUCTION

The acute perforation of peptic ulcers continues to be one of the real emergencies of surgery, which requires immediate attention and prompt operations. The history of PPUs dates back to 1000 years ago, when people died of abdominal pain and vomiting and it was thought to be due to poisoning [1]. It dates back to 1670, when king Charles I's daughter, Henriette-Anne died suddenly after a day of abdominal pain and tenderness. Poisoning was suspected and an autopsy was performed, during which a small hole was found in the anterior abdominal wall, with signs of peritonitis [1,2]. Autopsies came into effect from 1500 AD [2,3], since when many patients with pain in the abdomen and vomiting, who died, were found to have holes in the anterior wall of the stomach during their autopsies. PPUs occur in 2-10% of the patients with peptic ulcer disease and they account for more than 70% of the deaths which are associated with Peptic Ulcer Disease (PUD). Often, perforation is the first clinical presentation of PUD [4]. A *Helicobacter pylori* infection is clearly implicated in the development of gastric and duodenal ulcers and it responds well to antimicrobial therapy. The use of non steroidal anti inflammatory drugs also plays a major role in the development of gastric and duodenal ulcers. The causes of gastroduodenal perforations can be broadly classified into traumatic and non traumatic factors. The risk factors which influence the mortality after surgery for perforated peptic ulcers, are the presence of preoperative shock,

the presence of concurrent illnesses and the perforation-operation time interval. The morbidity and mortality can be reduced by avoiding the delays in the diagnosis and treatment [5].

MATERIALS AND METHODS

This study included 150 patients with generalized peritonitis, who were diagnosed as having Perforated Peptic Ulcers (PPUs) at the Department of General Surgery, Konaseema Institute of Medical Sciences and RF Amalapuram (Andhra Pradesh) India, from 2008-2011, after a proper ethical committee approval was taken. The diagnosis of PPUs was established on the basis of the history, the clinical examination and the radiological findings. The patients who were proved to have perforations which were caused by malignancies, were excluded. A history of abdominal pain, a history of peptic ulcer disease and the long term use of non steroidal anti inflammatory drugs are frequently seen. Tachycardia and hyperthermia are usually noted. The blood investigations reveal leucocytoses and elevated serum amylase levels may be associated with the perforations. The chest X-rays which are taken in the erect posture show free air under the diaphragm. As soon as the diagnosis is made, resuscitative measures like nasogastric tube aspiration, fluid resuscitation, PPI administration and antimicrobial therapy should be started. In our study, under general anaesthesia, laparotomies were done with simple closures of the perforations by using vicryl 2-0, omental patches were fixed around the perforations, thorough

abdominal lavages were done by using normal saline and the abdomens were closed with drains into the paracolic gutters.

RESULTS

Out of the 150 patients, 134 were males (89%) and 16 (11%) were females, with a male: female ratio of 9:1. Their ages ranged between 25-70 years. The most common symptoms were abdominal pain and vomiting and there was distension of the abdomen in some cases. The most common signs were tenderness, guarding and absent bowel sounds. There was a male preponderance with a ratio of 9:1, which was mostly due to the differences in the lifestyles. The mean age of perforation was 53 years. Out of the 150 patients, 65 patients (43.3%) presented within 24 hours of the onset of severe abdominal pain (Group A), 27 patients (18%) presented between 24-48 hours (Group B) and 58 patients (38.6%) presented after 48 hours. There was no mortality in Group A. The morbidity was more in Group B and Group C. There were 15 deaths in Group C. More no. of patients in Group C had post operative complications like wound infections, 15 cases had to undergo secondary suturing, 7 cases had pelvic abscesses and 15 patients who had co-morbid conditions, died. In Group B, 2 cases had wound infections. There was no mortality but the recovery was delayed, with increased hospital stays. In group A, all the patients were discharged after 10 days [Table/Fig-1].

Group	PTime of Presentation	No of Patients	Mortality	Morbidity	
				Wound infection	Pelvic abscess
A	<24Hours	65	0	0	0
B	24-48 Hours	27	0	2	0
C	>48 Hours	58	15	15	7

[Table/Fig-1]: Comparison of mortality and morbidity in study groups

DISCUSSION

Peptic ulcer is the commonest acute abdominal condition which prompts a presentation to a surgeon. Johan Mikuliczradecki (1850-1905) is often referred to as the first surgeon who closed a PPU by doing a simple closure. He said, "every doctor who is faced with a perforated duodenal ulcer of the stomach or the intestine must consider opening the abdomen, sewing up the hole and averting a possible inflammation by a careful cleansing of the abdominal cavity" [6]. In 1843, Edward Crisp was the first to report 50 cases of PPU's and he concluded that, "the symptoms are so typical, I hardly believe that it is possible that anyone can fail in making the diagnosis" [7]. Several scoring systems like the Boye scoring system and the Mannheim Peritonitis Index (MPI) are used to risk stratify the patients and to predict the outcomes. The Boye score is most widely used and it consists of 3 factors which carry 1 point if they are positive. The factors in the Boye score are, a concomitant medical illness, preoperative shock and a duration of the perforation of >24 hours [8]. An important prognostic factor which was identified in the present study was the perforation-operation interval. The time of perforation was determined, based on the onset of acute abdominal pain. A careful history and assessment of the extent of the clinical signs and the severity of the operative findings provide useful guidelines in determining the perforation operation interval. As the time limit from the time of the perforation increases, there will be heavy bacterial contamination. Higher the bacterial contamination and proliferation, worse will be the prognosis [9,10]. Some authors

claim that the prognosis is not related to the surgical procedure itself [11,12]. The present study showed that the risk of mortality and morbidity was statistically significant when the patient was submitted to surgery with a perforation time which was later than 24 hours, which was in agreement with the reports in the literature, which emphasized on the importance of early surgical interventions in improving the outcomes [13]. The increase in the therapeutic delay was mainly due to a delayed access to the hospital, since the patients were treated immediately after their admissions. It has been shown that the therapeutic delay increases the mortality rate [14]. A conservative line of treatment, which is the mainstay of the treatment in case of high risk patients, which is also called as Taylor's method, was not followed, as it has been clearly demonstrated that an observation period of longer than 12 hours without improvement could worsen the outcome of perforated peptic ulcers and that this method should hence be avoided [13,15,16]. Delays of greater than 12 hours result in a 3 fold increase in the mortality, while delays of 24 hours are associated with a nine fold increase in the mortality [13,15].

CONCLUSIONS

A prompt, correct diagnosis and immediate surgery is of prime importance in patients with a perforated peptic ulcers. The mortality rate increases with the length of the interval between the time of the ulcer perforation and the time of the surgery.

The problem of peptic ulcer perforation with its complication can be decreased by decreasing the perforation-operation time interval, which as per our study, appeared to be the single most important mortality and morbidity indicator in peptic ulcer perforation.

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