An Audit of Perforated Peptic Ulcer Disease in a Tropical Teaching Hospital.

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Background: ***Perforated peptic ulcer (PPU) is associated with high morbidity and a mortality rate. Thus it requires urgent surgical intervention. Recently a reduction in the rate of peptic ulcer perforation in young men with a relative increase in the elderly and in women has been documented. This study is an audit of perforated peptic ulcer surgical emergencies treated by the gastrointestinal surgery division of a teaching hospital in Nigeria. It also reviews the early complications and the average duration of admission of these set of patients.***
Method: ***This was a retrospective five-year audit of patients admitted by the gastrointestinal surgery division of a tertiary teaching hospital in Ibadan Nigeria. The data extracted from the patients' records included the bio-demographical data, the duration of symptoms prior to admission, the patients' vital signs at presentation and the results of the haematological investigations. Other information includes the duration from admission to surgery, the intra-operative findings and the outcome of the treatment.***
Results: ***Forty patients consisting of thirty three male and seven female were treated. The ages ranged from 20 years to 70 years. The peak incidence was in the fifth decade. None of the patients was seen within 6 hours of the onset of symptoms however fifteen patients were seen within twenty four hours of the onset of symptoms. Twelve patients (30%) had history of significant ingestion of non-steroidal anti-inflammatory drugs, nine (22.5%) had a significant history of alcohol ingestion, while one (2.5%) had a recent history of fasting prior to the onset of symptoms. The distribution of the sites of perforation, revealed a pattern of 9(22.5%), 21(52.5%) and 10(25%) in the body of the stomach, pre-pyloric region and the first part of the duodenum respectively. There were six mortalities.***
Conclusion: ***The outcome is excellent when prompt and adequate resuscitation and surgical repair of perforation are done. Health education may increase patient awareness which may translate to early presentation. Risk scores may be helpful in predicting the outcome but an experienced clinical opinion is still essential***

Introduction

The development of new drugs for the treatment of peptic ulcer disease, better knowledge about its aetiology and eradication of Helicobacter pylori have reduced the incidence of peptic ulcer and its complications[1]. Consequently the role of surgery in the treatment of the disease has also reduced[1,2]. Similarly the frequency of duodenal or gastric perforations in this disease condition has reduced[3]. Although there is a reduction in the rate of peptic ulcer perforation in young men there is a relative increase in the elderly and in women[4]. Perforated peptic ulcer (PPU) is associated with high morbidity and mortality rates. Thus it requires urgent surgical intervention[5].

The first documentation of surgical repair of PPU by a simple closure technique was in 1817[6]. Shortly after this, Johan Mikulicz-Radecki, another surgeon was quoted to have said 'Every doctor, faced with a perforated duodenal ulcer of the stomach or intestine, must consider opening the abdomen, sewing up the hole, and averting a possible inflammation by careful cleansing of the abdominal cavity[7]. This principle of treatment still applies in modern surgery today. The current surgical principles of management still consist of primary closure of the perforation by suturing and a convenient tag of adjacent omentum on top of this or an omental plug. Although this therapy sounds very simple PPU still remains a surgical condition, associated with high morbidity and mortality[8].

This study is an audit of perforated peptic ulcer surgical emergencies treated by the gastrointestinal surgery division of tertiary teaching hospital in Ibadan Nigeria. It also reviews the early complications and the average duration of admission of these set of patients.

Patients and Methods

This was a retrospective audit of patients admitted by the gastrointestinal surgery division of a tertiary teaching hospital in Ibadan Nigeria. It is a five year review of patients admitted, with an operative diagnosis of perforated peptic ulcer disease. Patients with peritonitis secondary to other conditions apart from perforated peptic ulcer disease were excluded from the study.

All the patients were admitted through the emergency department of the hospital. They were resuscitated with normal saline infusion until adequate urinary output was established. All the patients had nasogastric tubes introduced, urethral catheterization, parenteral analgesics and pre-operative administration of broad spectrum antibiotics. The base line investigations included Complete blood count, Urea and electrolytes, urinalysis as well as radiology of the chest and abdomen.

The data extracted from the patients' records included the bio-demographical data, the duration of symptoms prior to admission, the patients' vital signs at presentation and the results of the haematological investigations. Other retrieved information included the duration from admission to surgery, the intra-operative findings and the outcome of the treatment.

Results

The total number of patients in this study was 40 consisting of thirty three male and seven female patients with a male female ratio of 4.7:1. The ages ranged from 20 years to 70 years. The mean age was 42.5years with a standard deviation of 13.239.The peak incidence was in the fifth decade (35%). None of the patients presented in the emergency room within six hours of the onset of symptoms. Fifteen patients (37.5%) were seen within twenty four hours after the onset of symptoms while the rest of the patients presented after twenty four hours. Thirty seven patients (92.5%) presented with generalized abdominal pain. Other features were abdominal distention (47.5%) and fever (35%).Nineteen patients (47.5%) had previous history of peptic ulcer disease. Twelve patients (30%) had history of significant ingestion of non-steroidal anti-inflammatory drugs, nine (22.5%) had a significant history of alcohol ingestion, while one (2.5%) had a recent history of fasting prior to the onset of symptoms. Serum chemistry analysis revealed elevated potassium, urea and acidosis in 7(17.5%), 25(62.5%) and 21(52.5%) patients respectively.

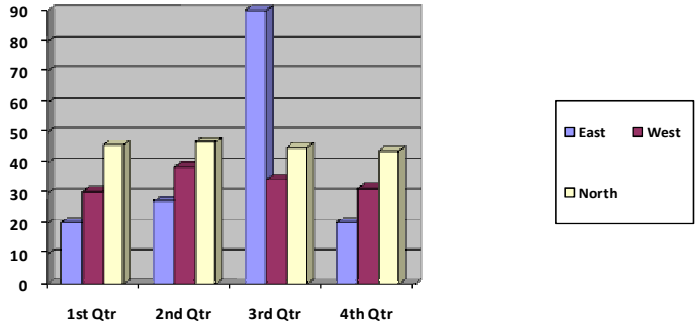

Figure 1.

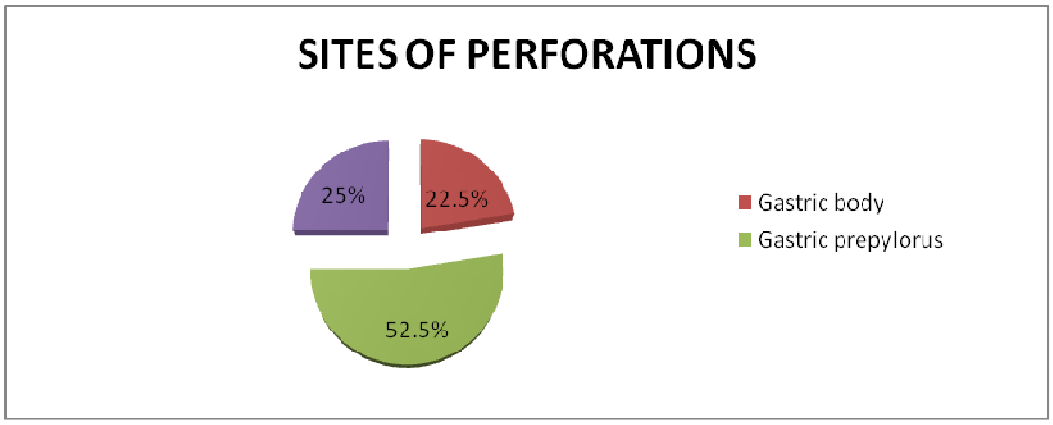

Figure 2.

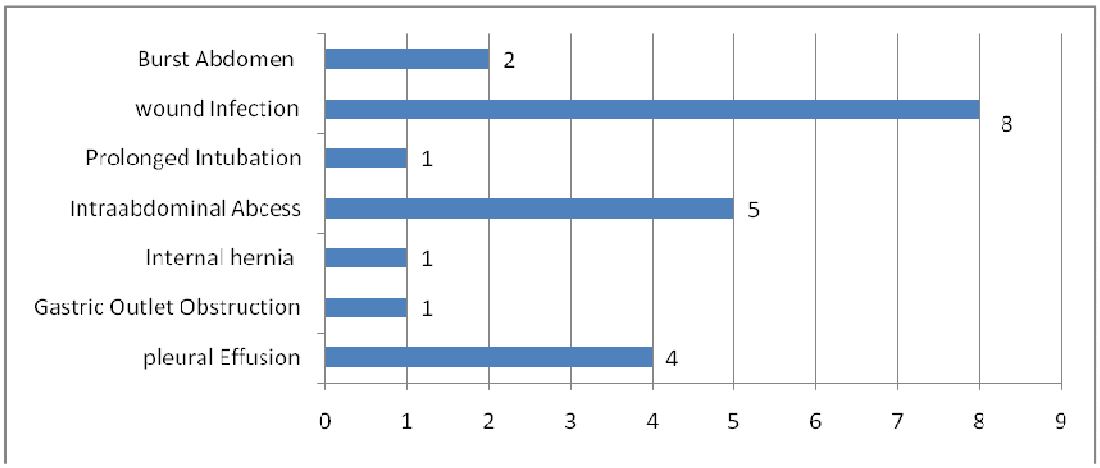

Figure 3.

The anatomical distribution of the sites of perforation, revealed a pattern of 9(22.5%), 21(52.5%) and 10(25%) in the body of the stomach, pre-pyloric region and the first part of the duodenum respectively. The diameters of these perforations ranged from about 5mm to 20mm with 5mm being the highest frequency (62.5%).The method of closure was determined by the operating surgeon. Simple closure was performed in 10 (25%), pedicled omental plug done in 24 (60%) and primary closure with an on-lay omentum in 6(15%) of the patients.

The duration of admission ranged from three days to forty two days. Patients with blood group 'O' constituted 45% (eighteen) of the population. Eighteen patients developed post-operative complications. Eight developed post-operative wound infection, five had intra-abdominal abscesses, and four had pleural effusion, while one had a burst abdomen. There were six mortalities. The average follow up period was six months. Many of the patients defaulted from follow up clinic attendance.

Discussion

Although the role of surgery in the treatment of peptic ulcer disease is on the decline[1]. visceral perforation remains as one of the most dreaded complications of peptic ulcer disease. Early presentation with aggressive treatment reduces the associated morbidity and mortality of this disease condition. In this study of forty (40) patients there were thirty-three (82.5%) male and seven (17.5%) female (M: F

ratio of 4.7:1) patients with an age range of twenty (20) to seventy (70) years. The mean age was 42.5+/_ 13.2years. Compared with studies from India[9]and the Arab Emirates[10] respectively there is a similarity of male preponderance in all three studies although the Indian male female ratio is much higher (10.3:1).There is a similarity in the average age in the Indian population(43.4 years) however the Arab population demonstrates a relatively younger population of about 35 years. Despite a time span of about thirty years delayed presentation as well as blood group distribution remains the same as previous studies[11].

Previous studies described fasting, ingestion of non-steroidal anti-inflammatory drugs(NSAID) and alcohol ingestion as risk factors for perforated peptic ulcer disease[1], the percentage of patients in this study with significant history of fasting, ingestion of NSAID or alcohol ingestion was 2.5%, 30%, and 22.5% respectively. Some determinants of survival are still controversial. Predictive scoring models such as the 'APACHE Score' and the 'Boey Score' may be poor predictors of mortality[12]. On the other hand, the duration of visceral perforation prior to admission and the physiological derangement in serum biochemistry such as shock, septicaemia, biochemical parameters suggestive of renal impairment and pre-operative metabolic acidosis[13,14] are also predictors of mortality. A high index of suspicion facilitates reduction delays in diagnosis when there are x-ray controversies in the absence of computerized tomogram. Consequently the clinical acumen of the managing physician plays a crucial role in environments without readily available computerized tomography.

At presentation serum chemistry revealed hyperkalemia and hypokalemia in seven (17.5%) and four (10%) respectively. There was acidosis and elevated urea levels in twenty-one (52.5%) and twenty-five (62.5%) patients respectively. These subtle derangements have been previously enumerated as prognostic factors which affect the outcome significantly. The approximate size of the perforations in terms of the widest diameter observed at surgery ranged between 0.5 cm and 2cm. However more than 60% of the perforations were 0.5cm in size. The distribution of sites of perforation is as shown in figure 1 with a preponderance of gastric pre-pyloric perforations. The surgical technique of repair was determined by findings at surgery and the site of the perforation. The range of procedures included simple closure with interrupted silk or vicryl suture following excision of the edges of the perforation for gastric body perforations, simple closure with omentum laid over the repair or an omental plug for duodenal and prepyloric perforations. Where the omentum was shrunken, a simple closure of the perforation or a serosa patch was considered. The mean hospital stay was 15.75 days with a range of six to forty two days.

Our mortality rate after surgery was 15%.Variable mortality rates have been reported in literature ranging between 11.8%(15) and 17%[14]. Our mortality rate is based on patients who had surgery. Patients who were unfit for surgery were not included. In many instances when patients are not fit for surgery, less radical conservative treatment modalities such as mini-laparotomy for peritoneal toileting may be considered[16]. Although laparoscopic surgery has its limitations[15] closure of perforations diagnosed early is comparable with open surgery in outcome[17]. The limitations are the lack of expertise for laparoscopic surgery and the frequent lack of CT for early diagnosis in many centres in Africa. In absence of the CT clinical examination with the demonstration of abdominal pain, distention and pneumo-peritoneum with a sensitivity of 90% [18] are pathognomonic of PPU in developing countries.

The pattern of post-operative complications is as shown in figure 2. The most frequent complications are wound infection and intra-abdominal abscess. These figures are high when compared with similar studies with wound infection rate of 5.8%[15].

Conclusion

PPU is a surgical emergency with a high risk of mortality. The outcome is excellent if prompt and adequate resuscitation and surgical repair of perforation are done. Risk scores may be helpful in predicting the outcome but an experienced clinical opinion is still essential.

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