



NON APPENDICULAR PERFORATION PERITONITIS; SPECTRUM AND MANAGEMENT OUTCOME “Experience at peripheral teaching hospitals”

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Article received on:

05/03/2014

Accepted for Publication:

20/05/2014

Received after proof reading:

16/08/2014

ABSTRACT.. Objectives: To evaluate the spectrum of non-appendicular perforation peritonitis and their management outcome in a peripheral teaching hospitals. **Study design:** Retrospective descriptive, Interventional. **Setting:** Surgical Department Aziz Bhatti Shaheed (Teaching) Hospital Nawaz Sharif Medical College University of Gujrat& Surgical Department Islam Medical College Sialkot. **Study period:** February 2011 to June 2013. **Results:** All the patients with clinical diagnosis of Acute Peritonitis were included, however patients with peritonitis secondary to perforated appendix and traumatic GIT perforations were excluded from study when found preoperatively. Total 100 patients with acute peritonitis were operated. 79 patients were male and 21 were female. Mean age was 39.9 years, youngest patient was a 12 year old boy whereas oldest was 73 year old. Perforated duodenal ulcer was the commonest cause of peritonitis seen in 42 cases followed by intestinal tuberculosis 18%. Enteric gut perforation was seen in 17% cases. Mortality was 9% and sepsis and multi organ failure was the main cause of death. **Conclusions:** Management of perforation peritonitis is a complex and demanding. We can avoid this complication by primary prevention, adequate& timely treatment of diseases like Peptic ulcer, tuberculosis and Typhoid fever which are the commonest cause of GUT perforations in Eastern region/ Tropical countries. Early diagnosis of acute peritonitis, adequate efficient resuscitation and early exploration preferable within six hours is the key to reduce both morbidity and mortality these patients

Key words: PDU, GIT perforation, Acute Peritonitis, Perforation Peritonitis

Article Citation: Aziz S, Jehan S, Ateeq M. Non appendicular perforation peritonitis; Spectrum and management outcome. Experience at peripheral teaching hospitals. Professional Med J 2014;21(4): 613-620.

INTRODUCTION

The first successful surgical management for any gastrointestinal perforation was done for perforated gastric ulcer by Ludwig Heusner in Germany in 1892 in the form of the partial gastrectomy¹. Gastrointestinal perforation is a serious surgical problem in developing countries, and is one of the most common cause of emergency surgery being performed. Despite advances in surgical techniques, antimicrobial therapy and intensive care support, management of peritonitis continues to be highly demanding, difficult and complex.

Primary peritonitis is an infection of the peritoneal cavity usually occurring in patients with pre-

existing ascites that is not related to diseases of the abdominal or retroperitoneal viscera. Secondary peritonitis the most common form of the peritonitis seen in clinical practice, can occur due to spontaneous perforation of the gastrointestinal tract, intestinal ischemia, or following an operation. Tertiary peritonitis is a recurrent infection of the peritoneal cavity that follows an episode of either primary or secondary peritonitis^{2,3}.

Gastrointestinal perforations have been surgical problems since the time of immortal. Evidence of gastrointestinal perforations have been found Egyptian mummies. Perforation is said to occur once a pathology which extends through the full

thickness of the hollow viscus lead to peritoneal contamination with intraluminal contents. Perforation can occur anywhere in the GIT starting from oesophagus to rectum⁴.

Despite a better understanding of pathophysiology, advances in diagnosis, surgery, antimicrobial therapy and intensive care support, peritonitis remains a potentially fatal condition. Severe bacterial peritonitis following GIT perforation carries high morbidity and mortality⁵. The diagnosis is often delayed or even missed, so that the many patients have deteriorated and developed multisystem organ failure. The contamination of peritoneal cavity can lead to cascade of infection, sepsis and multisystem organ failure and death if not treated timely and efficiently⁶.

Successful management of peritonitis aims at timely surgical intervention to control or to eliminate the source of the intra-abdominal infection and to reduce the contamination in the peritoneal cavity. Various surgical intervention are done on laparotomy depends on the source of the infection, the severity of peritoneal contamination and inflammation, the degree of septic deterioration, and the patient's previous state of health^{7,8}.

The spectrum of aetiology of perforation peritonitis continuous to be different from that of western countries⁹. There is paucity of data from Indo-Pakistan regarding its etiology, prognosis, morbidity and mortality¹⁰.

Our study was designed to highlight the spectrum of non-appendicular perforation peritonitis with reference to etiology, surgical interventions and outcome as encountered by us at Aziz Bhatti Shaheed (Teaching) Hospital Gujrat Pakistan and Islam Teaching Hospital Sialkot.

MATERIAL AND METHODS

This is a retrospective, descriptive, interventional study conducted during the period from February 2011 to June 2013 at surgical unit, Aziz Bhatti Shaheed (Teaching) Hospital (ABSTH) Gujrat.

ABSH is a teaching hospital affiliated with Nawaz Sharif Medical College, University of the Gujrat. Surgical Department catering 60 beds, 30 beds each in both male and female wards. Surgical department is accredited with College of Physicians & Surgeons of Pakistan for postgraduate training in surgery. Islam Teaching Hospital is affiliated with Islam Medical College Sialkot a private sector medical college.

The patients of all age groups and gender with signs and symptoms of acute peritonitis were included in the study. Patients profile, presenting symptoms and clinical signs were recorded. Diagnosis of acute peritonitis made on clinical finding supplemented with laboratory and radiological investigations including plain X-Ray abdomen and Ultrasound scan abdomen. Patients were resuscitated with intravenous fluids, nasogastric decompression, broad spectrum antibiotic including ceftriaxone and metronidazole started empirically. Resuscitation monitored clinically with improvements in vital signs and urine output. Exploratory laparotomy was performed in all patients through midline incision. Sample of free peritoneal fluid / contents if any, were taken and subjected to bacterial culture and sensitivity. Cause of peritonitis noted and dealt accordingly on its merit. Patients with acute peritonitis secondary to acute appendicitis / perforated appendix and traumatic GIT perforations were excluded from study. Postoperative course was observed in surgical ward, complications if any recorded. Data was recorded on a preformed preforms and results were formulated, analysed and compared with both national and international literature.

RESULTS

A total of 100 patients with acute secondary peritonitis of all age groups and sex were included in the study during the study period. Out of total 100 patients 79 were male and 21 were female patients. Oldest patient was of 73 year male whereas youngest was a 12 year old boy who presented with acute peritonitis secondary to perforated duodenal ulcer. Most of the patients (33%) were from 31 to 40 years of age. Mean age

was 39.4 years. Out of total 100 patients 79 patients were male and remaining 21 were female. Table-I

Age group	No. of patients	%age
1 to 10 Years	-	-
11 to 20 Years	06	06%
21 to 30 Years	21	21%
31 to 40 Years	33	33%
41 to 50 Years	11	11%
51 to 60 Years	10	10%
61 to 70 Years	18	18%
>70 Years	01	01%

Table-I. Age groups of patients with acute secondary peritonitis

Out of total 100 patients of acute secondary peritonitis most frequent cause of peritonitis was perforated duodenal ulcer found in 42 patients (42%) followed by intestinal tuberculosis found in 18 patients (18%). Typhoid gut perforation was the third commonest cause of acute secondary peritonitis observed in 17 patients (17%). Breakup is given in Table II.

All the 100 patients were explored after resuscitation. Primary repair of perforated duodenal ulcer with omental patch was the most frequent surgical procedure performed in 39 out of 42 patients of perforated duodenal ulcer whereas in 3 patients with PDU controlled external duodenal fistula was made after inserting 18Fr Foley's catheter. Gut stoma in the form of ileostomy/ colostomy was performed in 18 patients. Primary repair of small gut was done in 15 patients. Break up of surgical procedure performed is given in Table-III

Chest infection was the most frequent complication observed in our patients i.e. 30 out of total 100 patients had chest infection postoperatively, followed by superficial wound infection in 14 patients and burst abdomen in 9 patients. Mortality in our cases of acute secondary

Pathology	No. of patients	%age
Perforated duodenal ulcer (PDU)	42	42%
Intestinal tuberculosis	18	18%
Typhoid perforation	17	17%
Intestinal perforation proximal to a nonspecific band / adhesion	09	09%
Post D&C uterine perforation	06	06%
Acute Pancreatitis	03	03%
Carcinoma of colon	02	02%
Mesenteric ischemia	01	01%
Perforated gastric ulcer	01	01%
Perforated gall bladder	01	01%

Table-II. Causes of Acute secondary peritonitis (Operative findings)

Surgical procedure	Number
Primary repair of PDU + Omental patch	39
Stoma (Ileostomy /Colostomy)	18
Primary repair of small gut	15
Adhenolysis / Division of fibrotic bands + Repair / exteriorization of perforation	09
Strictureplasty	06
Peritoneal lavage & drainage	05
Controlled external duodenal fistula	03
Right hemi colectomy	02
Hartman's procedure	02
Cholecystectomy	01

Table-III. Surgical interventions

peritonitis was 9, these patients were died of sepsis and multi organ failure. One out of 9 deaths was of patients with colon carcinoma and one of acute necrotizing pancreatitis that was a per-operative table death. Break up of complications is given in Table IV.

Complication	Number	%age
Chest infection	30	30%
Superficial wound infection	14	14%
Burst abdomen	09	09%
Faecal fistula	02	02%
DVT	02	02%
Death	09	09%

Table-IV. Complications& Mortality

DISCUSSION

Perforation peritonitis is one of the most common surgical emergency encountered in surgical practice in tropical countries like Pakistan, India, and is a common cause of morbidity and mortality. This condition warrants early surgical intervention¹¹. In majority of cases the presentation to hospital is late with well-established generalized peritonitis and varying degree of septicaemia. The signs and symptoms are typical and is possible to make a clinical diagnosis of peritonitis in all patients. Despite advances in diagnosis, surgical techniques, antibiotic treatment, and intensive care, severe bacterial peritonitis remains a highly lethal disease⁵.

Peritonitis remains a hot spot for the surgeons despite advancement in surgical techniques and intensive care treatment. Various factors like age, sex, duration, site of perforation, extent of peritonitis and delay in surgical intervention are associated with morbidity and mortality. A successful outcome depends efficient resuscitation, early surgical intervention, control of contamination and exclusive intra-peritoneal lavage.

The clinical presentation of patient depends upon the site of perforation. Patients of duodenal perforation present with short history of pain epigastrium or upper abdomen along with generalized tenderness and guarding^{11,12}. Appendicular perforations have a characteristic pain starting in periumbilical area or right iliac fossa along with vomiting and fever¹³. Ileal perforations are usually preceded by history of some medical

disease followed by sudden onset of lower abdomen pain, vomiting, abdominal guarding and distension later on. Overall clinical diagnostic accuracy for patients is more than 97% in most studies¹⁴.

The dictum still holds that no age is exempted from peritonitis to occur. We come across from the age of 12 to age of 73 years in our study, which is comparable with a study conducted at Nepal by CS Agrawal et al¹⁴. They reported maximum number of cases of acute perforation peritonitis are from 30 to 40 years, same observation is found in our study. Various studies have reported that peritonitis was more common in second and third decade of life^{15,16}, but studies conducted in west, reported that the mean age is between 45-60 years¹⁷.

In a study male patients was four time more common than female while other series have claimed that male to female ratio of 2-3:1^{14,18,19}. Our results are also comparable with these results, our 79% patients were male almost three times of female cases.

In our study the most common cause of perforation was duodenal ulcer seen in 43% cases. Another study conducted by Shyam Kumar Gupta shows the same result²⁰. Same observation is also reported by Gupta & Kaushik study²¹. Perforation of proximal part of GIT are more common in tropical underdeveloped countries like Pakistan, Bangladesh, India and Nepal²².

Which is in contrast to studies from western countries where perforation of distal GIT are more common like diverticulitis²³. Malignancy is a rare cause of GIT perforation which was seen in our 3 patients, is also comparable with studies from tropical region as compared to western region²⁴. Ohmannet al²⁵, reported duodenal ulcer perforation as the commonest cause for peritonitis in his series while Kachroo et al²⁶, found appendicular perforation as commonest cause. We excluded the patients from our study whom appendicitis was the cause of peritonitis.

Etiological factors of acute peritonitis also show a wide geographical variation. Khanna et al²⁷, from Varanasi studied 204 consecutive cases of gastrointestinal perforation and found that over half (108 cases) were due to typhoid. They also had perforations due to duodenal ulcer (58), appendicitis (9), Amoebiasis (8) and tuberculosis (4). These figures show the importance of infection and infestation in third world which is also reflected in the high incidence of typhoid and tuberculosis perforation in our study. At the other end of the spectrum, Noon et al²⁸ from Texas studied 430 patients of gastrointestinal perforation and found 210 cases to be due to penetrating trauma, 92 due to appendicitis and 68 due to peptic ulcer. This shows the importance of trauma in developed countries. We did not include traumatic GIT perforations in our study.

Adequate resuscitation along with baseline investigations and broad spectrum antibiotic covering gram negative aerobic /anaerobic bacteria are imperative in each case. Subsequent management depends upon cause of peritonitis.

Waiting period for surgery is an important factor in determining the outcome in the form of morbidity and mortality. Surgical intervention should never be delayed by more than few hours. Ideally surgical intervention should be done within 6 hours. Morbidity and mortality is directly proportional to delay in surgical intervention. In our study majority of patients underwent surgical intervention after 6 hour; most of the time this delay was attributed to busy anaesthetist and non-availability of operating room. Various studies have also reported delay during managing a case of peritonitis and reasons recorded are diagnostic dilemma and time taken for resuscitations^{29,30}.

Perforations of the gastro duodenum is observed to be commonest cause of peritonitis in eastern region. There is definitely a regional bias in the frequency and incidence of intestinal perforations with enteric perforations being encountered more frequently in the developing countries of south East Asia and colonic perforations in the far east³¹. Peptic ulcer perforations form the major group

among the gastro duodenal perforations. In our study same observation is made 42 % case are of gastro duodenal perforations. The advances in the medical treatment of the peptic ulcer disease have led to dramatic decrease in number of elective surgeries performed. However, the number of patients undergoing surgical intervention for complications such as perforation remains relatively unchanged or has increased^{32,33}. In the western countries due to wide spread adoption of medical therapies for peptic ulcer disease as well as the use of appropriate stress ulcer prophylaxis among critically ill patients gastro duodenal perforations have decreased significantly³⁴.

There are number of surgical options to deal with peptic perforations, from simple closure to definitive acid reduction procedures-. Simple closure of the perforation using a pedicled omental patch gives good result, even in large perforations up to 3 cm in diameter. This should therefore, be the preferred surgical method of closure, as it is easy to perform, is technically straightforward, and gives comparable results to that of definitive surgery^{35,36}. We also performed simple closure of duodenal perforation with omental patch in 39 cases and found it very effective.

Jajunoileal perforations are relatively uncommon as a source of peritonitis in the Western world in contrast to Eastern countries³⁷. In West most small intestinal perforations are due to unrecognized traumatic injuries or intestinal ischemia, whereas in Eastern countries these perforations are due to typhoid and tuberculosis infection³⁷. As we observed in our study typhoid and tuberculosis were the next common cause of small intestine perforation after peptic ulcer. Treatment is simple primary repair / resection & repair if there is no gross peritoneal contamination, where exteriorization of perforation as stoma is a suitable option³⁸.

Colonic perforations are the second most common cause for secondary peritonitis in the Western world, and colonic diverticulitis is the most common disease process resulting in perforation, in Eastern region this is a rare cause of

colonic perforation, whereas colonic malignancy is more common cause of colonic perforations.

Morbidity in terms of postoperative complications is an important parameter of quality of care. In our series morbidity was observed in 57% of the cases out of which 30% cases of chest infection, followed by wound infection and wound dehiscence. Post-operative chest complication in patient with peritonitis is very high, reported incidence is 28% in the form of pneumonia, atelectasis, ARDS etc³⁹.

Hunt³⁴ reported 23% morbidity in their case series, whereas Bruggeret al³⁷. reported 39% morbidity. Burst abdomen was the leading complication (10.5%) and in our series is 9.0%. Harold Ellis³⁸ reported burst abdomen incidence of 3.0% in their case series. Hence, this point need to be considered and more effective closure techniques should be used to prevent burst abdomen. In our series superficial wound infection remained 14% which is higher than reported by Shurkalin et al⁴⁰. ie is 7.2%.

Reported incidence of mortality ranges from 6.45% to 10% in different studies^{14,41}. In Our study mortality rate was 9%. The main reported cause of death is septicaemia (59%) therefore contamination is a crucial consideration in patients with peritonitis and problem of mortality is a problem of infection.

The spectrum of perforation peritonitis in our study is comparable with other studies conducted in Eastern region but continues to be different from western counterpart with duodenal ulcer perforation, perforated appendicitis, typhoid perforation and tuberculosis perforation being the major cause of generalized peritonitis.

CONCLUSIONS

Surgical treatment of severe perforation peritonitis due to GIT perforation is a highly demanding and complex. In terms of morbidity and mortality our results are not superior to those described in literature. Perforation of the viscera is a common complication of acid peptic disease, typhoid and tuberculosis in our region. Acid peptic disease to some extent can be controlled by judicious use of

NSAID as well as with eradication of H-pylori. Early and effective treatment of typhoid should be undertaken. Awareness of prevention of communicable diseases like tuberculosis among the public is an effective way to control this problem. Morbidity & mortality following perforation peritonitis can be reduced by early diagnosis, efficient resuscitation, early surgical intervention within 6 hours, effective control of contamination and rationale use of appropriate antibiotic according to the sensitivity of the organism.

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Vanity is a tragic flaw
of extraordinary people.

Unknown

