

Causes and Management Out Come of Peritonitis

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ABSTRACT

Objective: This retrospective study was conducted to study the different causes of peritonitis and to determine the surgical out come.

Study Design: Retrospective study

Place and Duration of Study: This study was carried out at the Department of Surgery Peoples Medical College Hospital Nawabshah from 1st January 2001 to 31st December 2001.

Materials and Methods: In this study of 51 patients of peritonitis admitted, out of them, 16 cases of typhoid ileal perforation, 8 cases of perforated duodenal Ulcer, 7 cases of tuberculosis of those 2 cases were of jejunal perforation and 5 cases of ileal perforation, 4 cases of perforated appendix, 4 cases of ruptured liver abscess, 2 cases of perforated neoplasms of those 1 case each with multiple ileal/ jejunal perforation due to lymphoma ,malignant caecal perforation, gastric perforation, jejunal perforation obstructive/strangulated, infective caecal perforation each, 2 cases of post operative peritonitis, 3 cases trauma, 2 cases of blunt abdominal trauma each developed peritonitis due to ileal and jejunal perforation, 1 case of gunshot injury causing peritonitis due to colon perforation, 2 cases of ruptured ovarian cyst associated with appendicitis.

Results: In our study, male to female ratio is 4:1. Maximum frequency was observed in 20-30 years age, whereas most of the patients ranged between 13 to 40 years.

Conclusion: Surgical outcome of the peritonitis resulted poor in those cases who came late with hugely contaminated peritoneal cavity when operated. They developed post operative complications i.e. wound infection, septicemia, fecal fistula & longer hospital stays. 22 patient's outcome was poor and out of them 8 patients expired. The mean hospital stay was 23.0 ± 17.7 days and the range was 67(3-110 days).

Key Words: Peritonitis, Causes & Management

INTRODUCTION

Generalized peritonitis is one of the most common emergencies in general surgery. It is an inflammation of peritoneum, can be aseptic or septic, bacterial or viral, primary or secondary, can be acute or chronic^{1,2}.

Intestinal perforations are a common cause of generalized peritonitis. It is often severe because of fecal contamination and over whelming sepsis resulting in high morbidity and mortality^{2,3,4,5,7,8,9,10} even after treatment with all conventional means^{2,3}. A better survival can be achieved by early diagnosis, fluid resuscitation, appropriate parental antibiotics, and prompt surgical intervention with thorough peritoneal lavage. All are often valuable adjuncts on reducing mortality and morbidity from these common conditions^{2,5,6}.

MATERIALS AND METHODS

This retrospective study was carried out in one year at Department of surgery Peoples Medical College Hospital Nawabshah from 1st January 2001 to 31st December 2001, a total of 51 cases with peritonitis were treated. All the cases had clinically established generalized peritonitis confirmed by clinical examination, radiological , ultrasonography, X ray abdomen erect/supine and operative findings, in order

to assess the underlying etiology, a detailed history was taken in each case inquiring especially about the mode of onset and original site of pain before becoming generalized, duration, prodromal symptoms, associated symptoms and past-history. A comprehensive general physical examination and systemic examination were performed in order to assess the association of co-existing abnormalities and complications. Emphasis was laid on symptoms and signs of abdominal pain, pyrexia, guarding, rigidity, distension, generalized and rebound abdominal tenderness, absent bowel sounds, free fluid and obliteration of hepatic dullness. Complete blood count (CBC), erythrocyte sedimentation rate, random blood glucose level, blood urea nitrogen (BUN), serum electrolytes and urine analysis and cross match blood with grouping were performed in all cases.

X-ray chest, (P.A), view was also performed in all the patients and in those suspected of suffering from tuberculosis or chest complications suggested by history and physical examination. An electrocardiogram (ECG) was also obtained in all the cases of above 40 years of age.

On arrival, all the patients were resuscitated, nasogastric suction was commenced, urinary catheter was inserted and broad spectrum parenteral antibiotic. The anemic patients were given blood transfusion.

Patients in septicemia state were given appropriate circulatory support as required in addition to intravenous fluids and antibiotics in high doses. The antibiotics used were Metronidazole, Gentamycin, Ampicillin and third generation cephalosporins and in patients with impaired renal function, replacing gentamycin and additionally ciprofloxacin in infusion form in typhoid enteric perforation. The antibiotics were continued routinely for 7-10 days. Patients suffering from intestinal tuberculosis confirmed by AFB staining, operative findings and histopathology were registered for antituberculous therapy for 9 months orally. Patients suspected of peptic ulcer perforation on history and physical and examination, were administered H₂-receptor blockers. All the operations were performed as emergency under general anaesthesia after resuscitation and clinical evaluation.

Abdominal cavity explored through a grid iron / midline incisions, the quality and quantity of intra-abdominal exudates were measured. Pus and intestinal contents were removed. Then abdominal cavity washed. A definitive diagnosis was made during the operation. Samples of pus for culture were obtained in cases of obscure etiology/surgical finding and were not routinely taken in the presence of fecal peritonitis. Biopsy specimens comprising of excised tissues/resected segments and mesenteric lymph nodes were taken for histopathology wherever applicable. Outcome of surgical management was determined by intra operative complications, post-operative complications i.e. wound infection, septicemia and fecal fistulas.

On the basis of operative findings, patients were classified into 5 etiological categories as follows (graph 2& 3):

1. **Intrinsic diseases of gastrointestinal tract:** This category was used to classify all inflammatory, ischemic and neoplastic diseases of gastrointestinal tract from stomach to rectum, leading to perforation and intrinsic contamination of peritoneal cavity.
2. **Hepatobiliary category:** Cases of peritonitis from gangrenous perforating cholecystitis and ruptured liver abscess were classified under this category.
3. **Genitourinary category:** This category was exclusively used to classify cases of peritonitis resulting from urologic or female genital origin.
4. **Post-operative category:** Cases operated for abdominal problems other than peritonitis and developing peritonitis post-operatively due to dehiscence of surgical repair/anastomosis were classified under this category.
5. **Traumatic category:** This category was used to classify all those cases developing peritonitis as a result of contamination caused by blunt and penetrating abdominal trauma.

Data collection is done by Questionnaire filled at the time of admission and postoperatively. Data analysis was done on SPSS Version 11.0.

Inclusion Criteria: Patients above 12 years age of either sex. All cases proved as peritonitis based on history, examination, clinical features, X-ray abdomen, ultrasound and C.T scan (if required) appearances included in the study.

Exclusion Criteria: All other causes of acute abdominal conditions without peritonitis like Gastritis, Renal Colic, Pancreatitis, and Gastroenteritis.

RESULTS

A total of 51 cases treated, out of them, there were 40 males and 11 females ranging from 13 years to 80 years in age (mean age = 31.2 + 13.6 years). They were classified into 5 etiological categories on the basis of operative findings (Table 10) as follows:

- a. **Intrinsic Diseases of Gastrointestinal Tract:** 40 cases (32 males and 8 females) were included in this category. There were 16 cases of typhoid ileal perforation alone accounting for 31.4% of the total. Besides these, there were 4 appendicular perforations (7.8%) with generalized peritonitis. 7 cases of tuberculosis out of 7. 2 cases were of jejunal perforation and 5 (9.8%) of ileal perforation. 2 cases of perforated neoplasms 1 (2%) of those with multiple perforations in ileum and jejunum due to lymphoma other was 2% of caecal perforation due to carcinoma rectum 8 cases (15.7%) duodenal ulcer perforations, 1 case 2% of gastric ulcer perforation, 1 case 2% of jejunal perforation due to intestinal obstruction caused by strangulated incisional hernia, 1 case 2% of caecal perforation due to amoebic colitis.
- b. **Hepatobiliary:** Total 4 (7.8%) cases of ruptured liver abscess leading to generalized peritonitis included in the study.
- c. **Post operative:** 2 Cases 3.9% were included both were of jejunal perforation who developed peritonitis few days post operatively.
- d. **Traumatic:** 3 cases (5.8%) of trauma out of those 2 cases were of blunt abdominal trauma each developed peritonitis due to ileal and jejunal perforation 1 case (2%) of gunshot injury causing peritonitis due to perforation in colon.
- e. **Genitourinary:** Only 2 (3.9%) case of Ruptured ovarian cyst associated with appendicitis who developed generalized peritonitis.

Sign & Symptoms: Acute generalized pain was present in all cases. 90.19% with fever, 66.66% with vomiting. Constipation 68.62%. 15.68% complained of coffee ground vomiting (duodenal perforation), and 1 case of typhoid ileal perforation attributed to stress ulceration. 9.80% patients reported Melina and 1.96% fresh bleeding per rectum. On examination, all had generalized abdominal tenderness, while rebound

tenderness was (90.19%) of cases. Abdominal rigidity (82.35%), dehydration (86.27%), abdominal distention (84.31%), absent gut sound (66.66%). Shifting dullness was elicited in (64.70%) of cases and jaundice in (1.96%) of cases.

Management Outcome: The patients of poor outcome developed post operative complications like wound infection, septicemia and faecal fistula & longer hospital stay, 8 (15.6%) patients were expired out of 22(43.4%). Patients of good outcome got smooth recovery with hospital stay was shorter, few of them developed mild wound infection which was cured. The mean hospital was 23.0 ± 17.7 and the range was 67(3-110 days) (Table No.3).

Investigations: In all causes of perforation like Typhoid ileal perforation, Appendicular Perforation, Perforated Neoplasm, Perforated intestinal obstruction Upright abdominal X-rays showed gas under the diaphragm. Abdominal ultrasonography revealed the presence of free fluid in the peritoneal cavity. Serum revealed electrolytes imbalance

Perforated Neoplasm: Abdominal X-rays showed pneumo-peritoneum and ground glass abdomen with dilated loops of bowel and fluid in peritoneal cavity in these cases. Histopathology reports revealed small T cell lymphoma and Carcinoma rectum. Para colic nodes were positive for malignant also.

Table No.1: Hospital Stay (four groups)

Days	Cases	Percentage
Up to 10 days	13	25.5%
Up to 11-20 days	17	33.3%
Up to 21-30 days	12	23.5%
More than 30 days	9	17.4%

Mean Stay was 23.0 ± 17.7 and Range was 107 (3-110)

Table No.2: Biopsy

	Frequency	Percent
CGI TB	7	13.7
Appendices	6	11.8
SC Lymphoma	1	2.0
Widal +	14	27.5
CA Rectum	1	2.0
Nil	21	41.2
Amoebic Perforation	1	2.0
Total	51	100.0

Table No.3: Post Operative Complications

	Frequency	Percent
WI+SEP+FF	10	19.6
WI	20	39.2
WI+SEP	5	9.8
SEP	2	3.9
Nil	14	27.5
Total	51	100

- WI- WOUND INFECTION
- FF- FAECAL FISTULA
- SEP-SEPTICEMIA

Table No.4: Outcome

Outcome	Frequency	Percentage
Good	29	56.6%
Poor	22	43.5%
Total	51	100%

Table No.5: Etiological Classification on the basis of Operative Finding

Category	Total	%age
I. Intrinsic		
Gastrointestinal tract		
A. Typhoid ileal perforation	16	31.4%
B. Perorated appendix	4	7.8%
C. (i) perforated ileocaecal tuberculosis	5	9.8%
(ii) jejunal perforation (tuberculosis)	2	3.9%
D. Perforated duodenal ulcer	8	15.7%
E. Perforated intestinal obstruction	1	2%
F. Perforated neoplasm's	1	2%
(i) Caecal perforation		
(ii) Multiple perforations (ileum, jejunum)	1	2%
G. Caecal perforation (amoebic)	1	2%
H. Gastric ulcer perforation	1	2%
II. Hepatobiliary		
Ruptured liver abscess	4	7.8%
III. Post-Operative		
Jejunal Perforation	2	3.9%
IV. Traumatic		
A. ASC. Trans. Colon Perf. (Gunshot)	1	2%
B. Iliac Perf. (Blunt ABD. Trauma)	1	2%
C. Jujenal Perforation (Blunt ABD. Trauma)	1	2%
V. Genitourinary		
1. Ruptured Ovarian Cyst + Appendicitis	2	3.9%
Total	51	100%

DISCUSSION

Acute generalized peritonitis is a challenging surgical condition that requires prompt attention and appropriate surgical treatment. Despite advances in surgical techniques, good antimicrobial therapy and intensive care support, it carries high morbidity and mortality while its management remains difficult and complex¹¹. Peritonitis, if not treated promptly, can lead to multisystem organ failure and death^{12,13}. Worldwide there is a predominance of males presenting with this life-threatening disease^{14,15} our series also shows a similar trend, with a male to female ratio of 4:1. Maximum frequency was observed in the 20-30 years

age group (52.94%) whereas most of the patients ranged between 13 to 40 years in age (84.31%).

Many etiological factors have been implicated in the pathogenesis of this generalized intra-abdominal sepsis. The objective of this research exercise is to study the different causes of generalized peritonitis (secondary peritonitis) and to determine the surgical outcome

Abdominal pain was the most common symptom and tenderness the commonest sign observed in 100 percent cases. Rebound tenderness was noted in 90% cases attributable to a possible masking effect of altered conscious level in toxemia. Findings of pneumoperitoneum in 56.9 percent patients and elicitation of shifting dullness in (64.70%) is comparable with similar studies. Coffee ground vomiting in (15.68%) patients reflects the diverse nature of clinical presentation that can be observed in generalized peritonitis. These included patients with typhoid ileal perforation and 8 cases with duodenal perforation and was attributed to stressful effects of toxemia on stomach in cases of typhoid leading to stress ulceration. Similarly, Melina was observed in 9.80% cases, 8 of those 9 cases had a perforated duodenal ulcer and 1 had typhoid ileal perforation.

Investigations irrespective of etiology revealed anaemia, varying degrees of electrolyte imbalance, raised blood urea nitrogen. Metabolic acidosis & predominance of polymorph nuclear leukocytes in the differential count which was not markedly elevated and even below normal in some cases. Cause of this functional neutropenia has been described to be a massive shift of leukocytes along with the inflammatory exudates into the peritoneal cavity so that their number falls in circulating blood usually observed in the reactive toxic stage of peritonitis with multiple organ failure. Delayed treatment associated with other factors such as malnourishment and impaired immunity are the major reasons for high mortality and morbidity. Kaur N et al., in their study also attribute delay seeking surgical treatment as an important cause for high morbidity¹⁶.

Almost (31.4%) of the cases were due to typhoid ileal perforation alone and the second most common cause of peritonitis was perforated duodenal ulcer and than ileocaecal tuberculosis perforation and perforated appendicitis. Quereshi AM¹⁷ & Dorairajan LN¹¹ who report majority of perforations involving distal gastrointestinal tract such as ileum. Chatterjee H too reported typhoid as the commonest cause of perforations in two separate studies^{18,19}.

Similarly, 4 cases of ruptured liver abscess and 2 cases of perforated neoplasms were observed. No case of colonic diverticular perforation was observed which was fairly common cause of generalized peritonitis in the West.

Incidence of post-operative peritonitis was also very low and only 2 cases developed peritonitis post-

operatively. In our study perforated appendix 7.8% and peptic ulcer 15.7%. Dandpat MC studied 340 cases of gastrointestinal perforations and found that 22(6.4%) patients developed secondary peritonitis secondary to perforated appendix²⁰. Primary intestinal tuberculosis is uncommon in the west²¹ but is still common in developing countries like Pakistan²². In our study perforated tuberculosis ileocaecal perforation was 9.8% and tuberculosis jejunal perforation 3.9%.

Blunt abdominal trauma ignored earlier by the patients was seen to be associated with serious intra-abdominal injuries leading to peritoneal contamination and generalized peritonitis. Those patients sought medical help upon development of abdominal pain and distention 24 hours to 5 days (average 2 days) after sustaining abdominal trauma. Intestinal obstruction leading to peritonitis was observed in 2 cases. Perforation was found in both cases. 2 cases of malignancy were found in our study one involved the large bowel 2%, while one showed involvement of small bowel 2%.

This etiological pattern observed reflected the effects of a poor socioeconomic background and lack of hygienic conditions. Ignorance and delay in seeking medical advice was observed leading to typhoid ileal perforation whereas incomplete and inadequate anti tuberculous treatment was seen in cases of open pulmonary tuberculosis leading to gastrointestinal complications. While long history of epigastric pain found in patients of perforated duodenal ulcer which developed due to inappropriate treatment of acid peptic disease.

The patients of poor outcome developed post operative complications & longer hospital stay, 8 (15.6%) patients were expired out of 22(43.4%). postoperative complication in secondary peritonitis reported by Jhobta RS²³ are respiratory tract infections (28%), wound infection (25%), septicaemia (18%) and electrolyte imbalance (17%). Kim et al.²⁴ in their study report mortality rate of 9.9%. Patients of good outcome got smooth recovery with hospital stay was shorter, few of them developed mild wound infection which was cured. The mean hospital was 23.0±17.7 and the range was 67(3-110 days)

CONCLUSION

The diagnosis of acute generalized peritonitis was largely clinical and the radiological evidence of perforation was conclusive in only 57.9 percent of the cases. Majority of cases belonged to the intrinsic diseases of gastrointestinal category with the following etiological distribution; typhoid ileal perforation 31.4%, appendicular perforation 7.8%, perforated intestinal tuberculosis 13.7%, perforated duodenal ulcer 15.7%, perforated intestinal obstruction 2%, perforated carcinoma 3.9%. Ruptured ovarian cyst 3.9%, Ruptured liver abscess 7%. Majority of cases had faecal peritonitis

and rest of the cases had suppurative peritonitis. Surgical outcome of the peritonitis resulted poor in those cases who came late & they developed post operative complications with longer hospital stay. Surgical outcome of patients whose arrival was early and there was less contamination of peritoneum, outcome was good with smooth recovery and there hospital stay was shorter.

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