Research Article

A study of acute peritonitis: evaluation of its mortality and morbidity

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ABSTRACT

Background: Acute peritonitis remains an important cause of morbidity and mortality in emergency surgery. The contributory causes are delay in seeking the surgical advice, infection, toxemia, old age, associated illnesses and post-operative complications. The objective of this study was to evaluate the mortality and morbidity in cases of acute peritonitis and to evaluate the factors affecting the outcome of peritonitis.

Methods: This is a prospective, non-randomized study of 120 cases which were treated as surgical emergencies for acute peritonitis during July 2009 to July 2011 at S. V. S. Hospital, Mahabubnagar. Thorough clinical examination was done. Clinical symptoms and signs namely pain abdomen, distension, vomiting, tenderness, guarding, rigidity, absent bowel sounds; obliteration of liver dullness formed the criteria for suspicion of peritonitis. Plain x-ray abdomen and ultra sound abdomen were done to confirm the diagnosis.

Results: A total of 120 patients were studied out of which 28 died giving a mortality rate of 23.33%. Patient's age ranged from 10-82 years with a mean age of 39.57 years. Maximum deaths were seen in the age group of 50-64 years. Among the studied cases majority were males i.e. 100 males compared to only 20 females. But the death rates were found to be almost similar among both the sexes. i.e. 24% in males compared to almost similar i.e. 20% in females. From the above table, it is seen that survival was 100% if the exudates was clear. As the exudates consistency deteriorated, the survival rate decreased and the mortality rate increased. Most common cause of peritonitis in the study was DU perforation 40%. Mortality rate was found to be very high in case of peritonitis caused by gangrenous bowel (46.15%) followed by trauma in 37.5% of cases.

Conclusions: A total of 120 cases were studied. Mortality was 23.33% and morbidity was 51%. Out of the variables studied Age >50 years was significant. Pre-op duration of >24 hours was significant. Nature of peritoneal fluid was also significant. Female sex was not found to be significant. Early diagnosis and intervention is the best way to prevent mortality and morbidity in peritonitis.

Keywords: Acute peritonitis, Evaluation, Mortality, Morbidity

INTRODUCTION

Acute peritonitis remains an important cause of morbidity and mortality in emergency surgery. The contributory causes are delay in seeking the surgical advice, infection, toxemia, old age, associated illnesses and post-operative complications.¹

Despite of the progress in antimicrobial agents, intensive care treatment, the present mortality due to diffuse suppurative peritonitis from 10-20 % continue to be unacceptably high.²

The outcome of an abdominal infection depends on complex interaction of many different factors and the success obtained with the early onset of specific therapeutics.³

Localized peritonitis is bound intimately with the causative conditions and the initial symptoms and signs are those of that condition when peritoneum becomes inflamed. Temperature and pulse rate: rises, abdominal pain increases. Vomiting and rigidity of the abdominal wall: The area involved has a positive release sign (rebound tenderness) shoulder tip pain (phrenic) may be felt if inflammation arises under diaphragm. With appropriate treatment localized peritonitis usually resolves, in about 20% abscess forms infrequently then it becomes generalized.⁴

Diffuse (Generalized) peritonitis may present in differing ways depending on the duration of infection.⁵

Early peritonitis is first experienced at the site the original lesion, and spreads outwards from the point. Vomiting, may occur, tenderness and rigidity on palpation rarely peritonitis diminished if the outer wall of abdomen unaffected, as in pelvic peritonitis diminished if the outer wall of abdomen unaffected, as in pelvic peritonitis rarely peritonitis in lesser sac. Patients with pelvic peritonitis complain urinary disturbances and they are tender on rectal/vaginal examination. Infrequent bowel sounds may still be hard for few hrs, but they cease with the onset of paralytic ileus. The temperature changes are variable and can be subnormal.⁶

If resolution and localization not occurred abdomen remains silent and increasingly by distended circulatory failure ensures dry tongue, thread (irregular) pulse, a draw and anxious face. The patient finally laps into unconscious with early and adequate treatment this is rarely seen.⁷

Present study was conducted with an objective to evaluate the mortality and morbidity in cases of acute peritonitis, and to evaluate the factors affecting the outcome of peritonitis.

METHODS

This is a prospective, non-randomized study of 120 cases which were treated as surgical emergencies for acute peritonitis during July 2009 to July 2011 at S. V. S. Hospital, Mahabubnagar, Hyderabad, Telangana, India.

Inclusion criteria

Only cases of secondary peritonitis were taken in the study.

Exclusion criteria

Peritonitis due to other causes like;

- Primary peritonitis.
- Postoperative peritonitis.
- Pancreatitis.

- Acute appendicitis not complicated by diffuse peritonitis.

After the patient comes to casualty, thorough clinical examination was done. Clinical symptoms and signs namely pain abdomen, distension, vomiting, tenderness, guarding, rigidity, absent bowel sounds; obliteration of liver dullness formed the criteria for suspicion of peritonitis.

Plain x- ray abdomen and ultra sound abdomen were done to confirm the diagnosis.

X- ray

- X-ray was taken using 300 mA / 500 mA generator.
- Position: Upright position (erect abdomen) or left decubitus.
- Pneumoperitonium or air under diaphragm (Crescent Sign) and ground glass appearance were confirmatory.

Ultra sound

- USG of abdomen was done by a radiologist using Convex Probe (3-6 MHz) of Phillips make.
- Presence of free fluid with internal echo's was confirmatory.
- All the established cases of peritonitis were treated by surgery.

Preparation for surgery

- Intra venous catheter for resuscitation, nasogastric tube for decompression of the stomach and urinary catheterization to note the urine output.
- Urine output of at least 30-40ml/hr considered a good indication of adequate resuscitation. Blood pressure above 100 mm of Hg systole and 70 mm of Hg diastole was attained.
- Patient was prepared for surgery. Preoperative resuscitation included, IV fluids (Ringer lactate, normal saline and dextrose), antibiotics (Ciprofloxacin or ceftriaxone, amikacin, metronidazole).

Preoperative investigations

Blood sugar, Blood urea, Serum Creatinine, Hemoglobin%, Serum electrolytes, serum proteins, blood grouping and typing, bleeding time and clotting time, HIV, HBSAg, ECG, Chest X-ray.

Patient was shifted to the operating room after preparation of part (from mid chest to mid-thigh) and after the anesthesiologist assessment for general anesthesia.

Statistical analysis

P value calculated using Graph Pad in Stat software. Variables like age, sex, pre-op duration, and exudate were correlated. All the cases are recorded in a fixed proforma.

RESULTS

Figure 1: Age distribution of study subjects.

A total of 120 patients were studied out of which 28 died giving a mortality rate of 23.33%. Patient's age ranged from 10-82 years with a mean age of 39.57 years. Maximum deaths were seen in the age group of 50-64 years.

Figure 2: Sex distribution of study subjects.

Among the studied cases majority were males i.e. 100 males compared to only 20 females. But the death rates were found to be almost similar among both the sexes. i.e. 24% in males compared to almost similar i.e. 20% in females.

Table 1: Mortality among different types of exudate.

Exudates	No. of cases	Deaths	Percentage	Survival	Percentage
Clear	7	0	0%	7	100%
Purulent	106	24	22.64%	82	77.36%
Fecal	7	4	57.14%	3	42.86%

From the above table, it is seen that survival was 100% if the exudates was clear. As the exudates consistency

deteriorated, the survival rate decreased and the mortality rate increased.

Table 2: Distribution of study subjects as per the causes of peritonitis.

Diagnosis	Total cases	%	Death	%
Duodenal ulcer perforation	48	40	11	22%
Gastric (Traumatic-2, Non traumatic-6)	8	6.67	3	37.5%
Small bowel perforation (Traumatic-11, Non-traumatic-14)	25	20.83	3	12%
Gangrenous bowel	13	10.83	6	46.15%
Colon (Traumatic-3, Non-traumatic-6)	9	7.5	3	33.33%
Appendicular	14	11.67	1	7.14%
Ruptured amoebic liver abscess	2	1.67	1	50%
Ruptured ectopic pregnancy	1	0.83	0	0%

Most common cause of peritonitis in the study was DU perforation 40%. Mortality rate was found to be very high

in case of peritonitis caused by Gangrenous bowel (46.15%) followed by trauma in 37.5% of cases.

The most common morbidity was respiratory infection (15.2%) followed by wound infection (8.6%), partial dehiscence of wound (9.7%), septicemia (3.3%),

enterocutaneous fistula (2.2%), decubitus ulcer (4.3%), burst abdomen (3.3%) and prolonged paralytic ileus in 4.3% of cases.

Table 3: Distribution of variables between patients who died and survived (n=120).

Risk Factor	Total no.	Death		Survival		P value	Significance
		No	%	No	%		
Age							
< 50 years	84	8	9.52	76	90.48	0.0001	Significant
> 50 years	36	20	55.56	16	44.44		
Sex							
Male	100	24	24.00	76	76.00	0.9231	Not significant
Female	20	4	20.00	16	80.00		
Preop duration of peritonitis							
> 24 hrs	78	28	35.9	50	64.10	0.0001	Significant
< 24 hrs	42	0	0	42	100.0		
Exudate							
Clear	7	0	0.00	7	100		
Purulent	106	24	22.64	82	77.36	0.005	Significant
Fecal	7	4	57.14	3	42.86

Figure 3: Distribution of study subjects as per morbidity/complications of peritonitis.

DISCUSSION

Of the present sample 120 cases male are 100 (83.33%) and female are 20 (16.6%). Group mean age was 39.57 yrs mean age of survivor is 36.53 yrs and among the non survivors, mean age is 50.28%. Out of 120 patient 28 patients died mortality rate 23.33% and 92 survived 76.67%. Origin of peritonitis is from 8 different anatomic sites and is due to various causes most common being duodenal perforation, 48 out of 120 i.e., 40%.

Mortality is highest in ruptured amoebic liver abscess 50% (1 death in 2 cases) followed by gangrenous bowel

46.15% (6 deaths in 13 patients). When comparing the risk factors of each variable indicating the presence / absence of adverse factors, an image has occurred as expected. This means that adverse factor is low and favorable factor is high in survivors and the contrary in non survivors. This is clearly observed in the variables namely age, preoperative duration, and character of peritoneal fluid.

Female sex was not proved to be significant in this study. In the study, age is shown to be a risk factor. Among the patients >50 years, 20 deaths occurred in 36 patients (55.56%). In patient <50 years 8 deaths occurred in 84 cases (9.52%). It is found to be statistically significant. Preoperative duration is more than 24 hours in 78 patients out of which 28 deaths were noted i.e., 35.9% mortality compare to 0 deaths from 42 patients with preoperative duration less than 24 hours. It is also found to be statistically significant.

Nature of peritoneal fluid is also found to be important risk factor. It is clear in 7 patients and no patient died in this group. Purulent in 106 out of which 24 died i.e. 22.64% mortality. Fecal exudate was found in 7 patients out of which 4 died i.e., 57.14% mortality. This is also found to be statistically significant. Factors contributing to the high mortality and postoperative complications are advanced age, late presentation, delay in the treatment, site and cause of perforation.

Perforation peritonitis is the most common surgical emergency noticed in the younger age group as noticed in

our study and also Adesunkanmi AK et al. Mean age was 39.57 years.⁸

Majority of the patients in our study were male 100 (83.3%), and female 20 (16.7%) ratio being 5:1. Another study conducted by Adesunkanmi et al also showed more male patient of perforation peritonitis with male: female ratio of 3:1.⁸

Perforation of the proximal part of the gastrointestinal tract were more common Agarwal N.⁹

Perforation peritonitis has a high mortality, the overall mortality ranges between 6-27%. High mortality was depended upon the site and cause of perforation.¹⁰

Table 4: Comparison of incidence and Mortality with other studies.

Series	Total Cases	Gastro duodenal perforations n (%)	Small bowel perforations n (%)	Appendicular perforations n (%)	Colorectal perforations n (%)	Mortality %
Tripath ¹¹	160	24 (15)	57 (35.6)	16 (10)	NA	23.7
Khan ¹²	54	21 (38.8)	14 (25.9)	6 (11.1)	4 (7.4)	NA
Rao ¹³	46	26 (56.5)	18 (39.1)	2 (4.3)	0	26.1
Present series	120	56 (46.67)	38 (31.66)	14 (11.67)	9 (7.5)	23.33

Table 5: Comparison of morbidity with other studies.

Complications	Present Series %	Singh RJ ¹⁴	Afridi SP ¹⁵
Respiratory infection	15.20%	28	20
Wound infection	8.6	25	42
Partial dehiscence of wound	9.7	NA	26
Septicemia	3.3	18	20
Enterocutaneous fistula	2.2	7	2
Decubitus ulcer	4.3	NA	NA
Burst Abdomen	3.3	9	NA
Prolonged paralytic ileus	4.3	NA	NA

The most common postoperative complication observed, in our series, is respiratory infection, which needs emphasis on institution of chest physiotherapy in early postoperative period.

Wound infection, wound dehiscence, burst abdomen, enterocutaneous fistula, occurred in patients with late presentation and gross contamination.

CONCLUSION

A total of 120 cases were studied. Mortality was 23.33% and morbidity was 51%. Out of the variables studied age >50 years was significant. Pre-op duration of >24 hours was significant. Nature of peritoneal fluid was also significant. Female sex was not found to be significant. Early diagnosis and intervention is the best way to prevent mortality and morbidity in peritonitis.

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