Clinical Study and Management of Peritonitis

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ABSTRACT

Introduction: Spontaneous bacterial peritonitis (SBP) is a common bacterial infection in patients with cirrhosis and ascites requiring prompt recognition and treatment. The aim of this study was to determine the prevalence, and characteristics of SBP among in-patients with cirrhosis and ascites seen at our facility. Peritonitis accounts for 25-30% of abdominal emergencies. The study conducted to evaluate prevalence, aetiology, treatment, complications and prevention of peritonitis in a tertiary care set up.

Materials and Methods: It is a descriptive study of 170 subjects admitted with peritonitis in KIMS Hospital, Hubli.Localised peritonitis cases were excluded from study. A pre-tested format was designed for collection of data. Variables like clinical findings, laboratory investigations, mode of treatment administered and complications developed during and post operatively were included for data collection and analyzed as per demographic factors wise.

Results: In the study 170 cases of peritonitis were included. Prevalence of generalized peritonitis in hospitalized cases was 0.39% and it was 1.98% in surgical admissions. The generalized peritonitis cases were among abdominal emergencies was 37.78%. 59% of cases were in the age group of 20-50 years. The commonest symptom observed in the study was pain abdomen. Patients admitted with generalized peritonitis had previous history of fever (27.06%) and pain abdomen (22.35%). The cases were examined radiologically and showed 105 positive out of 146 radiologically examined cases. On bacteriological examination, exudates was purulent in 40.12% of cases.

Conclusion: Peptic ulcer was the commonest cause for peritonitis (44.91%). It was observed more in males (4 times to females). Diagnosis was done mainly through clinical examination and confirmed through laboratory investigations. Simple closure of perforation was done in half of the cases. 35 cases died due to sever toxemia and hypotension.

Keywords: Peritonitis, Ascites, Exudate

INTRODUCTION

Diffuse peritonitis continues to be a clinical challenge with respect to diagnosis, therapy, morbidity and mortality. It starts as if nothing from nowhere and ends up in the victims death. It was especially true till the bigining of this century where the mortality rate exceeded 90%. The advent of antibiotics, surgical skills and diagnostic facilities have phenomenally reduced the morbidity and mortality due to delayed presentation, low socio-economic and co-morbid conditions (Vasantkumar, 1998).[1,2]

Peritonitis accounts for 25-30% of acute abdominal emergencies. It is commonly found in adults (20-40 yrs). It is a major catastrophe where a successful outcome is more dependent upon early diagnosis and prompt institution of treatment. It is the most easily diagnosed acute abdominal condition, provided the symptoms are known and appreciated. Peritonitis, while no longer the over whelming problem it once was, is still the most common cause of death following surgical treatment of abdominal emergencies. With modern facilities like early presentation, early diagnosis, advances in metabolic care, improved anaesthesia and introduction of antibiotics, morbidity and mortality rates have considerably come down.[3,4]

So this present study "Clinical Study and Management of Peritonitis" is conducted to evaluate various etiologies, prevalence of age and sex distribution, prevention, treatment and complications of peritonitis. Through it may not be possible to completely prevent the morbidity and mortality but we may be able to improve the results. That is the aim of conducting this study. The objective of the study was to know the prevalence of generalized peritonitis, etiology, distribution, types of operative procedures adopted, complications, morbidity and mortality among the patients admitted in KIMS Hospital, Hubli.

MATERIALS AND METHODS

Materials and methods comprised of detailed descriptive study of 170 cases of diffuse peritonitis, admitted to KIMS Hospital, Hubli during the period of July 1997 to June 1999. All cases of localised peritonitis were excluded from the study. In collaboration with department of pathology, histopathology evidences were studied in suspected cases of typhoid, tuberculosis and malignancy. Bacteriological and their sensitivities were studied in collaboration with department of microbiology.

After admitting, the cases were followed up according to the proforma. After taking a detailed history and recording the examination findings, the cases were selected on the basis of clinical diagnosis of peritonitis and the diagnosis was confirmed by the investigation or laparotomy.

Apart from routine urine and blood investigation x-ray abdomen in erect posture and lying down position (to detect free gas under diaphragm, pneumoperitonium and for studying the gas pattern of intestine) was undertaken in majority of cases. The paracentesis was done and aspirate was sent for analysis.

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How to cite this article: Sharanbasappa. Clinical study and management of peritonitis. International Journal of Contemporary Medical Research 2016;3(2):454-457.

After correcting dehydration, electrolyte imbalance and under proper antibiotic cover, laparotomy was performed under general anaesthesia. Cases which were not fit for the same were treated conservatively. The incision depended on the site of pathology. The viscera were inspected carefully, the site of lesion located and the appropriate surgical procedure performed. Peritoneal toilet and wash with normal saline were carried out and the peritoneal cavity was drained.
The abdomen was closed in layers. Postoperatevely, the patients were put on nasogastric suction, antibiotics and i. v. fluids. Oral fluids were started after the appearance of bowel activity. The complication (general and local) were dealt with appropriately and late followup was difficult after discharge as majority of them did not return for a check – up.

RESULTS

During study period from 1997-99 at KIMS Hospital, Hubli 170 cases were admitted with generalized peritonitis. The age group is ranging from 15 days of birth to 80 years. Majority of peptic ulcers were done in the age group of 20-48 years and the mean age is 36.6 years.
Table 3 shows radiological diagnosis was positive in 105 patients of 146 radiologically examined cases (71.91%) in 24 patients x ray could not be taken, a few were moribund and others due to technical problems. Abdominal haze was found in cases of primary peritonitis. Multiple air and fluid levels were found in cases of large bowel malignancy and ileal TB with penumoperitoneum. Gas under diaphragm was present in 92.85% of peptic ulcer perforations and in 70% of ilealperoforations (non specific and typhoid). In the rest of the cases it was helpful in only 23% of cases.
Peritoneal exudates and bacterialogical examination, 40.12% with purulent exudates, 30% bilious exudates, sero-purulent in 12% of cases, hemorrhagic in 11% and 7% of the cases it was faeculent in nature.
Peritoneal fluid was sent for culture and sensitivity and found E.Coli as commonest organism 43 cases (25.29%), Mixed organisms in 32% of cases. No organism was found in 54 cases.
Bacterial sensitivity of 114 cases was observed. Most of the organisms were sensitive to gentamicin, ampicillin and tetracycline. Mixed organisms responded to gentamicin, chloromycitin, ciprofloxacin, cefataxine and ampicillin. Metronidazole was used in 170 cases, ciprofloxacin in 149 cases and only in 2 cases crystalline penicillin was used.
Laparotomy was done in 3 three cases because they were not fit for moribund cases. In 50 cases simple closure with peritoneal lavage was done and in 49 cases simple closure with Graham's omental patch with peritoneal lavage was done. Exploratory laparotomy with lavage was done in 15 cases. Resection and anastomosis with lavage was done in 24 cases.
Table 4 shows distribution of both general and local complications. The commonest complication found under general complication was toxemia and shock. Next common complication was pulmonary. In local complication, stitch abscess and wound infection. Mean duration of hospital stay is ranging from 11-20 days.

Signs and symptoms	No of cases	%
Pain abdomen	169	99.41
Vomiting	112	65.88
Distension	97	57.06
Fever	98	57.65
Constipation	73	42.94
Diarrhoea	14	8.24
Others	9	5.29
Poor GC	69	40.59
Distension	97	57.06
Tend/rigid/Guarding	170	100
Paralytic ileus	138	81.18
Oblit. Liver dullness	113	66.47
P/R tenderness/Bulge	25	14.71

Table-1: Prevalence of signs and symptoms in generalized peritonitis cases

Previous history	No of cases	%
Pain abdomin	38	22.35
Fever	46	27.06
Others	6	3.54
No History	80	47.06

Table-2: Previous history

Cases	Gas under diaphragm present	Gas under diaphragm absent	%	X ray not taken
PUP	65	5	92.85	5
NSSBP	17	7	70.83	3
Typhoid P	7	3	70	-
Traumatic P	4	4	50	4
Appendicular P	6	4	60	1
Tubercular P	2	0	100	-
Malignant P	0	2	-	2
Post op P	1	2	33.33	2
Primary P	1	8	11.11	-
Patient with poor general conditions	0	0	-	3
Others	2	6	25	4
total	105	41	71.91	24

Table-3: Radiological examination results

Table 5 shows 35 deaths among 170 cases of diffuse peritonitis with mortality rate of 20.58%. Death rate was observed to be maximum in typhoid perforations (40%) and post operative peritonitis cases (40%). It was less in peptic ulcer perforations (12%), appendicular perforations (9.09%) and tubercular perforative peritonitis.
Death rate is observed to be related directly to the duration of onset and presentation. Out of 35 cases who presented with 24 hours, the mortality rate was 2.86%. It was 10.64% among those who presented within 25-48 hours and increased to 25% for those who presented in between 49-72 hours. 32% mortality rate was sen in cases, who presented in between 73-96 hours and increased to 66.67% for those who

General complications	No. of cases	%	Local complications	No. of cases	%
Pulmonary	17	10.18	Wound infection	22	13.17
Cardiac	5	2.99	Stich abscess	27	16.17
Renal	1	0.6	Burst abdomen	16	9.58
Toxemia and shock	24	14.37	Faecul fistula	10	5.99
Thrombotic	5	2.99	Paralytic ileus	9	5.39
Hypoproteinaemia	5	2.99	Intestinal obstruction	7	4.19
			Pelvic absecess	5	2.99

Table-4: Post operative complications

Duration in hours	Total cases	No. of deaths	Mortality rate
0-24	35	1	2.86
25-48	47	5	10.64
49-72	36	9	25
73-96	25	8	32
>96	24	10	41.68
Cases treated conservatively	3	2	66.67
Total	170	35	20.58
Chi ^{2}=9.038; DF=2; p=0.05 significant			

Table-5: Pattern of mortality

presented after 96 hours. Mortality rate was observed to be more among old age patients than younger group.

Discussion:

Age and sex prevalence: Largest number of cases were in the 3rd and 4th decades with male to female ration of 4.14:1. This is similar to that reported by Bhansali et al in 1967[2] (M:F 4.7:1) and by Budharaja et al in 1973[4] (M:F 4:1). In their series of 161 cases DesaL.A et al 1983[7] reported age range of 15-83 years with an average of 31.5 years. Kachroo R. et al[9] reported age range of 3 days to 65 years with equal sex ratio. The peak incidence in the present study was 20-40 years with male to female ratio was 4.15:1. Desa L.A. et al1983[7] reported sex ratio 4.75:1. Tripathi M.D. et al 1993[18] reported M:F 2.63:1 with age range of 3 months to 81 years and peak incidence was in the 3rd decade (38.8%) followed by 2nd decade (28.8%). In traumatic performations in the present study were belong to 18-33 years with sex ratio of M: 5:1 as against 5.2:1 by Jolly S. et al 1993[8], 6:1 by Macbath 1996 and 4.4:1 by Dent et al 1998.

Signs and symptoms: Pain, vomiting, distension of abdomen and raised temperature were the predominant symptoms in the present study. Similar findings were observed with the studies of Desa L.A. et al[7], Kachroo R. et al[9], Kohli V. et al[10], Dandapat M.C et al[6] Tripathi M.D et al[18], Boxied D. et al[3], Garache F. et al and Aller R. et al.[1] Tenderness, rigidity and vomiting were found in 100% of cases. These findings were similar with above studies.

Investigations and peritoneal fluid culture: Low Hb% andleucocytosiswere found in the present study. Total count increased in septic abortions and appendicular perforations. Minimal increase was observed in peptic ulcer perforations. Similar results were seen in Crile et al[5]., Rao D.C.M. et al[16], Kachoor R et al[9] and Tripathi M.D. et al.[18]

Peritoneal exudates/blood culture was positive in 68.24% of patients in the present study with E. Coli as a common organism in 25.29%. Mixed organisms were noted in 30.59% of cases. Culture was steril in 37.76% of cases. Desa L.A. et al[7] reported microbes in 86.91% of his cases with E. Colipredominancy in 38.46%, Kachoor R. et al[9], found positive culture in 44% of cases. The commonest organism found in all other studies was E. Coli.

Dullness of liver: Liver dullness was obliterated in 66.33% of cases. X ray abdomen showed gas under the diaphragm in 105 cases (70.55%). X ray was not taken in 24 cases. X ray diagnosis was accurate in 92.85% cases of perforations due to peptic ulcer and 70% in ileal perforations. It was not helpful in septic abortion peritonitis. Desa et al[7] found gas under diaphragm in 80-100 hollow organ performations and he reports that abdominal parecentesis to be superior diagnostic tool than x ray abdominal in early ileal perforations. Kachoor et al found obliterated liver dullness in all their cases of upper gastro intestinal perforations and gas under diaphragm. Similar findings were observed in Almeir et al and Belding studies. In GI perforative peritonitis, peritoneal tapping is much useful compared to x ray abdomen.

Aetiology: Commonest cause of peritonitis in the study was peptic ulcer perforation (44.91%) and ileal perforation is the second common cause. Long et al 1970 observed in his study, peptic ulcer peritonitis was the common cause. Desa L.A. et al in their study observed duodenal ulcer peritonitis was the common cause (52.29%). Primary peritonitis was observed in the study 5.39%. NarasimhaRao K.L. et al[13] observed in children (22%).

Surgical procedures: 3 out of 170 cases, were not done surgery due to unfit for surgery. Desa et al 1983 observed 3 cases in 161 cases not fit for surgery. All the remaining cases, treated with flank drainage. Suturing was done in 52 duodenal perforations and 7 cases in ileal perforations. Primary peritonitis cases treated with peritoneal drainage in the present study and it is similar to the study done by Desa L.A et al[7]., Kachoor R et al[9], Tripathi M.D. et al[18] and Kularkarni S.H. et al.[11] In generalized peritonitis, operative treatment was preferred in place of conservative treatment byKachoor R et al[9], Tripathi M.D. et al[18] and Treichman et al.[17] Drains were used in the study in all cases of the study. Drains were used in all the cases of peritonitis in the present study. Budharaja et al (1973)[4], Fee et al (1977), Heu et al (1978), Kachoor R et al (1984)[9] and Dandapath M.C. et al[6] used drains successfully and advised biopsy from the perforated edges wherever necessary. Similarly they recommended drainage only, if the primary focus could not be removed.

Complications: In the present study, in 27 cases stitch ab-

scess was observed followed by wound infection in 22 cases. Fecal fistula was observed in 10 cases. Similar complications and their incidence was observed in the studies conducted by Desa LA et al (1983)[7], Kachoor R et al (1984)[9], V.K. et al (1988)[19] and Tripathi M.D. et al (1993).[18]

Mortality rate: In western countries there has been a marked reduction in morbidity and mortality on account of peritonitis. The factors responsible for this have been a better understanding of pathology, fluid and electrolyte balance, advances in anesthesia and antibiotic therapy (Long et al 1970)[12] early and precise assessment of clinical and laboratory parameters as well as adequate treatment or of great importance for saving patient;s life (Pranchev N et al 1995)[15] however studies from our country have shown that the mortality from this condition which obtained presence as an emergency remains quite high.

In our studies the overall mortality was 20.58% of diffuse peritonitis cases. It is high compared to Kachoor R et al (1984)[9] who observed mortality of 9% among their 90 cases of peritonitis. Mortality in the present study is comparable with mortality of 24.84% by Desa et al (1983), 16.1% reported by Dandapath M.C. et al (1991)[6] and (20.50%) reported by Tripathi M.D. et al (1993)[18] in their 160 cases of peritonitis.

Mortality in the present study varied according to the duration of presentation to the hospital. Dandapath M.C. et al (1991)[6] reported 6% of death rate those reported within 24 hours. It increased to 80% those reported delay of more than 72 hours. Tripathi M.D et al (1993) reports 12.8% mortality rate in those presented in less than 3 days, increased to 57.14% with time delay of 4-6 days and 75% for those who presented after 7 days.

The mortality rate in the present study was high in typhoid perforative peritonitis cases (40%) which is similar to that of 46% reported by Tripathi M.D. et al (1993).[18] They also observed increasing mortality in old age group than in younger age group.

Average hospital stay in the present study was 16.8 days with 5 patients getting discharged with in 10 days and 97 patients stayed for 11-20 days. 20 patients stayed for 21-30 days and 11 patients stayed more than 31 days. Tripathi M.D. et al (1993)[18] observed 11-20 days hospital stay in 51% of their cases with mean stay of 14 days. In their series 22.5% of cases were discharged in less than 10 days.

CONCLUSION

Males were affected more and the ratio was M:F 4.15:1. The peak incidence of peritonitis was observed in 20-50 years age group (49%). Pain, vomiting, distension and fever were the common symptoms in the study. Diagnosis was done based on clinical findings. Lab investigations were done to support the diagnosis. Evidence of pneumoperitoneum in radiological examination was seen in 71.91% of cases. Inflammation of peritoneum, exudates and perforation of hollow organ were observed at the time of surgery.

Simple closure of perforation was done in 50% of cases. Severe toxemia and hypotension were the causes in 35 cases of died. Malignancy in edge biopsy was observed in 4 cases and TB in 2 cases. In exudate, E. Coli and Klebsiella were the common organisms found on culture. Average hospital was in the study (16.8 days) in 72.93% of cases. The overall mortality was 20.58%. The mortality was directly related to the time of presentation of case. Early presentation (2.86%) and in late presentation (46.67%) were the mortality pattern of cases.

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 29-12-2015; **Published online**: 12-01-2016