

Role of Intraperitoneal Antibiotic Lavage in Peritonitis

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Abstract

Although mortality and morbidity associated with generalized peritonitis has been brought down markedly, postoperative complications like wound sepsis, intra-abdominal collections, paralytic ileus and septicemia do occur in some cases. To minimize such complications different measures have been tried so far, including intraperitoneal lavage with saline solutions and antibiotics. We conducted a study involving fifty patients over a period of two years using the third generation cephalosporin, cefotaxime intraperitoneally with encouraging results.

Key Words

Peritonitis, Intraperitoneal lavage, Cefotaxime

Introduction

The mortality and morbidity associated with generalized peritonitis has diminished markedly with the introduction of proper antibiotics, improvement in surgical care, and correction of fluid and electrolyte imbalance in the postoperative period. Smith (1) using intraperitoneal cephalosporins in 1973 confirmed superiority of this approach in cases of generalized peritonitis. Keeping his experience in view, our team also used generously the third generation cephalosporin, cefotaxime, in intraperitoneal washes over a period of two successive years and the approach proved excellent in decreasing the incidence of complications like wound sepsis, residual abscesses and septicemia.

Material and Methods

The study was conducted in the emergency department of Surgery, SMHS Hospital, Srinagar, (J&K) India. It included 50 patients suffering from generalized

peritonitis who underwent laprotomy. In addition to the usual measures like use of antibiotics, nasogastric decompression, correction of fluid and electrolyte imbalance, the patients were subjected to intraperitoneal lavage using 1 litre of isotonic saline along with one gram of cefotaxime. The peritoneal cavity was drained by tube drains connected to closed drainage apparatus, which were removed on third or fourth postoperative days. In addition parenteral antibiotics including ampicillin, gentamycin and metronidazole were instituted. The patient's postoperative period was meticulously monitored in the intensive care unit. After discharge, patients were followed regularly over a period of one year.

Results

The study was conducted in 50 patients of generalized peritonitis admitted to the SMHS Hospital, Srinagar. The

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presenting complaints were abdominal pain in 43 (86%) patients, vomiting in 20 (40%), abdominal distention in 18 (36%) and fever in 15 (30%) patients. Most of the patients had more than one symptom.

Tachycardia was the most frequently observed finding. Other signs included pallor, dehydration, tenderness, guarding and free fluid in the abdomen etc (Table 1). Plain abdominal radiographs were diagnostic in 27 (54%) patients and showed multiple air fluid levels, ground glass appearance and gas under right dome of diaphragm. The abdominal paracentesis was positive in 23 (46%) patients. The abdomen was opened by judicious right paramedian incision and peritoneal fluid was taken out and sent for bacteriological examination. The cause for generalized peritonitis was ascertained. Appendix perforations were found in 17 (34%) cases. Other visceral perforations included stomach, small and large gut, uterus and gall bladder in varying numbers (Table 2). Spontaneous bacterial peritonitis was found in one case. However, we did not encounter any case due to complication of malignancy. Microbiological study revealed the presence of *E. coli* in majority (98%) of the cases. The incidence of complications was only 6% with death in one (2%) and wound infection in two (4%). In others the recovery was uneventful.

Table 1

Clinical Findings of the patients of peritonitis (n=50)

Findings	Number of patients	Percentage
Tachycardia (Heart rate >100/min)	50	100
Pallor	42	84
Fever	30	60
Dehydration	37	74
Jaundice	4	8
Tenderness and guarding	47	94
Rigidity	40	80
Obliterated liver dullness	22	44
Free fluid in peritoneal cavity	20	40
Absent bowel sounds	32	64

Table 2

Causes of peritonitis confirmed on laprotomy (n=50)

Cause of peritonitis	Number of patients	Percentage
Appendicular perforation	16	32
Peptic ulcer perforation	9	18
Small gut perforation	14	28
Large gut perforation	2	4
Uterine perforations	7	14
Gall bladder perforation	1	2
Spontaneous bacterial peritonitis	1	2

Discussion

Bacterial peritonitis still presents a challenge in surgical casualty, carrying a high mortality and morbidity. In our setup a long delay occurs before the patients report to the hospital for treatment. Even though mortality and morbidity has been reduced drastically, due to proper use of antibiotics, pre and post operative resuscitation and early surgery, yet the complications like wound infections, residual abscesses and paralytic ileus do occur. To decrease the incidence of such complications the idea of intraperitoneal lavage with antibiotics was introduced. Burnett *et al.* (2) were the first to use sulfonamides in intraperitoneal lavage with striking results. With advanced research and developments various other drugs like amino glycosides, penicillin and tetracyclines have been used. Smith (1) was the first researcher to use cephalosporins in the peritoneal lavage with excellent results in the form of reduced wound infections and residual abscesses etc. Other workers like Fowler (3), Schwartz (4) and Ablan (5) have used intraperitoneal cephalosporines in the treatment of peritonitis and have advocated its use. With this aim, we decided to use the third generation cephalosporin, cefotaxime which has a wide range of antibacterial activity, is highly soluble and the solution remains stable for up to 24 hours at room temperature and acts by interfering with the synthesis of bacterial cell wall (6). In majority of our cases, the cause of generalized peritonitis was perforated appendix, as was also observed

by Divincenti and Cohn (7) and also by Nomikos and coworkers (8). We observed a complication rate of 6% including one death and two wound infections and the frequency was same as also observed by Smith (1). The duration of paralytic ileus was also reduced as happened in the series of Nomikos and coauthors (8). The mean duration of hospital stay was 9.7 days with a reduction of 4 to 6 days compared to previous experience. The results clearly demonstrated the superiority of intraperitoneal lavage in generalized peritonitis using cefotaxime with wide spectrum of activity resulting in favourable outcome and reduced mortality and morbidity.

Conclusion

The present study clearly demonstrates the role of intraperitoneal lavage using cefotaxime in cases of generalized peritonitis and should be instituted in all the cases to improve the patient's survival.

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