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A COMPARATIVE STUDY OF PERITONEAL LAVAGE WITH SALINE VERSUS METRONIDAZOLE IN OPERATED PERITONITIS CASES

General Surgery

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ABSTRACT

Peritoneal lavage plays an important role intraoperatively in treatment of peritonitis. Various fluids have been used for peritoneal lavage previously but now with the use of antibiotics in lavage the post operative recovery time can be minimized and there is better clinical output of patient. Among various antibiotics metronidazole has proved to be most beneficial in treating the peritonitis.

In this study, patients who were operated for peritonitis were randomly allotted into saline and metronidazole lavage group. Postoperative complications like wound infection, sepsis, faecal fistula ,intra-abdominal abscess and death were noted.

The saline lavage group had 41% incidence of wound infection, 10% intra-abdominal abscess, 30% sepsis, 5% faecal fistula and 7% mortality. Metronidazole lavage group had 25% wound infection, 8% intra-abdominal abscess, 20% sepsis, 1% faecal fistula and 5% mortality.

There is no statistically significant difference in the outcome between the saline group and the metronidazole group.

KEYWORDS

INTRODUCTION:

Acute peritonitis a fairly common surgical emergency. It may be caused secondary to hollow viscus perforation, transmigration of intestinal flora in case of bowel ischemia and rarely primary peritonitis.[1] So General supportive measures such as maintenance of hydration, correction of electrolytes imbalance, and surgical closure of the perforation and intraoperative peritoneal lavage has been the cornerstone in the management of patients with peritonitis. Different types of fluids have been used for peritoneal lavage in peritonitis patients like sterile water, warm saline, povidone-iodine, saline with antibiotics, etc.[2–4]

Peritoneal lavage reduces the bacterial load in the peritoneal cavity, reducing the sepsis and helps rapid recovery of the patient.[5,6] In this study, the effect of plain warm salin lavage is compared to that of lavage with Metronidazole.

Materials and methods:

This study was conducted in the Department of General Surgery, NIMS Medical college and Hospital during the period of Feburary 2016 to January 2018. A total of 200 patients were included in this study, out of which 172 were males and 28 were females. All patients who underwent laparotomy for peritonitis in the age group of 15- 60 years were included.

Patients presenting with clinical features of peritonitis were diagnosed with a combination of clinical examination, blood investigations, erect x-ray abdomen and ultrasound abdomen. Cases were randomly divided into two groups, each receiving plain saline peritoneal lavage and metronidazole lavage. Plain saline lavage group received intraoperative peritoneal lavage with 3 L of saline. Metronidazole lavage group received intraoperative peritoneal lavage using 3 L of saline mixed with 200 ml of metronidazole.

Cases were followed up till the discharge or death of the patient. Postoperative complications like wound infection, intra-abdominal abscess, sepsis, faecal fistula and death were noted. Postoperative hospital stay was noted. Results of both groups were compared statistically.

Results:

200 cases were included in this study out of which 172 were males and 28 were females. Highest number of patients were in the age group of 20- 29 years (32%). The most common cause of peritonitis in this study was duodenal ulcer perforation (60%), followed by ileal (20%) and appendicular perforation (10%). Other causes were gastric perforation, ischaemic bowel, traumatic jejunal perforation, perforated Meckel's diverticulum.

Fig. 1: Causes of peritonitis

In most of the patients, perforation was closed primarily (78%). Out of which 120 were duodenal perforations, 24 were ileal perforations, 10 were gastric perforations and 2 were jejunal perforation. Resection and anastomosis of bowel was performed in 24 cases. (16 ileal perforations, 6 ischaemic bowels, 2 perforated Meckel's diverticulum). Appendicectomy was done in 18 cases. 2 patient with ileal perforation underwent ileostomy.

The saline lavage group had 41% incidence of wound infection, 10% intra-abdominal abscess, 30% sepsis, 5% faecal fistula and 7% mortality. Metronidazole lavage group had 25% wound infection, 8% intra-abdominal abscess, 20% sepsis, 1% faecal fistula and 5% mortality.

Parameter	No. of cases	Total cases	Percentage
Wound infection	41	100	41%
Intra-abdominal abscess	10	100	10%
Sepsis	30	100	30%
Faecal fistula	5	100	5%
Death	7	100	7%

Table 1: Saline lavage group

Parameter	No. Of cases	Total cases	Percentage
Wound infection	25	100	25%
Intra-abdominal abscess	08	100	08%
Sepsis	20	100	20%
Faecal fistula	1	100	1%
Death	5	100	5%

Table 2: Metronidazole lavage group

There was a 16% reduction in the incidence of wound infection in metronidazole lavage group when compared to saline lavage group. Incidence of intra-abdominal abscess reduced by 2% in metronidazole lavage group. 10% reduction was seen in the incidence of sepsis in patients receiving metronidazole peritoneal lavage. 4% in faecal fistula in either groups. Mortality was low in metronidazole lavage group by 2%. Chi-square test did not show any statistical significance of these apparent advantages of metronidazole lavage over saline lavage.

Fig. 2: Comparison between saline and metronidazole groups

Discussion: In this study, it was found that maximum number of cases were in the age group of 20 to 29 years. Least number of cases were in the age group of < 20 years. Mean age of patients in this study was 37.25 years. This is comparable to the age distribution found by Dalvi

et al[10] where maximum patients were in the age group of 31-40 years, Mean age was 37 years. There was a male preponderance of cases in the present study, which is consistent with the values obtained by other studies. Duodenal perforation was the leading cause of peritonitis in this study, followed by ileal perforation and appendicular perforation. Gastric perforation, bowel ischemia, jejunal perforation and perforation of Meckel's diverticulum were the other less common causes of peritonitis.

In this study, there was 16% reduction in incidence of wound infection in the metronidazole lavage group. However, this difference is not statistically significant (P value 0.2). Similarly, Dalvi et al reported 20% reduction in incidence of wound infection, when superoxide solution was used for intra-operative peritoneal lavage (IOPL). On contrary, Schein et al[11,12]did not find any difference in incidence of wound infection when chloramphenicol was used for IOPL.

There was a 2% reduction in the incidence of postoperative intra-abdominal abscess in the metronidazole IOPL group. However, this is not statistically significant. R. Fowler[13] in 1974, reported 16% reduction in the incidence of intra-abdominal abscess when Cephaloridine was used for IOPL. In this study, there was 10% reduction in the incidence of systemic sepsis in the metronidazole IOPL group. Statistically significant difference was not found in the incidence of sepsis between either groups.

Study find 4% reduction in the incidence of postoperative faecal fistula in mrtronidazole group over saline lavage group. In contrast to this study, Dalvi et al(2009) reported 2.5% reduction in the incidence of faecal fistula in the study group, when superoxide solution was used for IOPL.

Mortality was 2% low in the metronidazole IOPL group in this study. Bhushan et al[14] (1975) found significant reduction in mortality in patients treated with antibiotic lavage.

Conclusion: Peritonitis is most common in the age group of 20 to 29 years (32%). There is a male preponderance with male: female ratio of 6.14:1. Duodenal ulcer perforation (60%) is the most common cause of peritonitis, followed by ileal (20%), appendicular (10%) and gastric perforations (5%). Ischaemic bowel (3%), perforation of Meckel's diverticulum (1%) and jejunal (1%) perforations are the rarer causes. Primary closure of the perforation with omental patch is the most commonly performed operation (78%) followed by resection of the perforated segment of the bowel and end-to-end anastomosis (12%), appendicectomy (8%) and ileostomy(2%).. Thus, we conclude that intraoperative peritoneal lavage with metronidazole in the patients of peritonitis appears to be slightly more beneficial as compared to saline but not statistically significant.

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