DISCUSSION

Extensive peritonitis is usually associated with sepsisemia, toxaemia, oliguria and usually runs a fulminating course. A profound toxicity usually ensues with extensive inflammation of the peritoneum. Cellular destruction results in the release of numerous vasoactive amines, which have a profound local and systemic effect. The above factors account for the extensive morbidity and mortality associated with infective peritonitis.

This study has been conducted on the cases of infective peritonitis admitted in Maharani Laxmi Bai Medical College Hospital, Jhansi. We have compared the conventionally treated patients (Control group) with patients treated conventionally plus peritoneal lavage (Study group) so as to evaluate the utility of continuous peritoneal antibiotic lavage in reduction of mortality and morbidity in infective peritonitis.

AGE GROUP

No age is free from the ravages of infective peritonitis, which was seen even in the first and seventh decades of life. Infective peritonitis was seen commonly in young adults. In our study the disease was most commonly found in the age group 31-40 years, with a percentage of 33.3%. Next common was the age group 21-30 years 36.7%.
The youngest patient was an 8 year old child whilst, the eldest was 67 year old man with peritonitis following appendicular perforation (Table I).

**SEX INCIDENCE**

In our series of cases there was male predominance over females, 66.7% cases were males, while females constituted only 33.3%. In both males and females the maximum incidence of peritonitis was found in the age group 31-40 and 21-30 (Table II).

**CAUSES OF INFECTIVE PERITONITIS**

In the present study we found the commonest lesion leading to infective peritonitis was enteric perforation accounting for 36 of the 60 cases studied (60%). The incidence of enteric perforation was higher in males as compared to females.

The other common cause was duodenal perforation (15%) which far outnumbered gastric perforation (3.3%). Males were afflicted much more than females.

Post traumatic perforations causing peritonitis accounted for 6.7% of the cases but understandably, males outnumbered the females.

In the miscellaneous group three cases of burst liver abscesses (amoebic & pyogenic) were seen (Table III).

**FEVER**

Stephen and Loewenthal (1979) in their clinical trial of peritoneal antibiotic lavage found that majority
of their patients remained afebrile during the period when lavage was going on. The same was observed in our study. Majority of the patients receiving continuous peritoneal lavage remained afebrile during this 24 hours period and thus, experienced a sense of well-being.

We further studied the range of temperature in the control and study groups. This was done 24 hours after laparotomy was performed. It was seen that the temperature range was much lower in the study group. Maximum number of patients (2 (48%), who were treated with lavage had a normal temperature while only 2 (12.5%) in the control group had a normal temperature.

According to Wall (1965) most of the toxic substances produced in peritonitis were watersoluble and dialyzable and could be readily removed by lavage. This explains the lower temperature range in the study group (Table IV).

ANTIBIOTIC COMBINATIONS

The two antibiotic combinations which were used in peritoneal lavage in this study were:

1) C. penicillin and metronidazole.

2) Strepto-penicillin and metronidazole.

These combinations were chosen since they effectively cover a wide range of gram positive and gram negative organisms including the bacteroids.
Artz et al (1962) in a study of experimental peritonitis on dogs found that the use of an antibiotic combination of C. Pencillin and Kanamycin was more effective in reducing mortality than either antibiotic used alone. In their series Pencillin produced a survival of 63%, Kanamycin produced a survival of 60%. When both antibiotics were combined a survival rate of 100% was found. In the present study both of the above antibiotic combinations were found to be almost equally effective.

**RECOVERY OF POSTOPERATIVE INTESTINAL PERISTALSIS AFTER LAVAGE**

Severe peritonitis is associated with severe fluid and electrolyte imbalance and a disordered acid base state. Kelly and Vest (1952) have shown that lavage of the peritoneum with a balanced salt solution rapidly restores these metabolic derangements. This is highlighted in our study by the fact that in our lavage group, in 56% of patients bowel function returned by the 3rd day after laparotomy whilst, in the control group most of the patients (50%) regained bowel function only on the 5th day. In 24% of patients of the study group bowel sounds were heard on the 2nd day but in the control group only 6.5% regained bowel function by the 2nd day. 12.5% of patients regained bowel function after the 5th day in the control group. (Table V).

**INCIDENCE OF COMPLICATIONS**

The morbidity from infective peritonitis was appreciably reduced by continuous peritoneal lavage. In the study group out of 25 patients 6.6% developed stitch abscesses,
10% developed partial wound dehiscence and none had complete wound dehiscence. Faecal fistula developed in 10% cases. Residual abscesses occurred in 6.6% cases.

In comparison to the above, in the control group the morbidity was much more. 6.6% developed stitch abscess. A high incidence of partial wound dehiscence (13.3%) was seen. Complete wound dehiscence accounted for the morbidity of 10% of cases. Faecal fistula and residual abscesses were very common in this group affecting 33.3% and 10% of the cases respectively.

The incidence of stitch abscess is seen to be same in the control group and in the study group i.e. 6.6%.

Mackenna et al (1970) had conducted a similar clinical trial and found similar results. They succeeded in reducing the morbidity significantly as also seen in our study. This can be seen by the fact that the number of complications was much less in the study group as compared to the control group (Table VI).

MORTALITY

In the present study the mortality in the two groups was -

**Study group** - 16.6% (5 patients out of 30).

**Control group** - 46.6% (14 patients out of 30).

Thus it is seen that peritoneal lavage has succeeded in reducing the mortality to less than half.
The above result is similar to that obtained by Mackenna et al (1970). They succeeded in reducing the mortality to 20% by using antibiotic peritoneal lavage. Mortality in their control group was as high as 60%.

Stephan and Loewenthal (1979) also reported a decrease in mortality. By peritoneal lavage they managed to reduce the mortality to 22.2% from 50%.

The mortality rate in our control group was lower in comparison to Mackenna (1970) and Loewenthal (1979). This may be because the average age of the patients in our series was much lower (33.5 years), as compared to a higher age in the studies of the above two authors. In Mackenna's study the average age of patients in the control group was 71 years (Table VII).

Mortality according to antibiotic combinations:

In our series we found that the mortality was not significantly different with the use of the two different antibiotic combinations. With the C. penicillin & metronidazole, 3 patients out of 15 died showing a mortality rate of 10%. With the streptomycin and metronidazole combination 2 patients out of 15 (6.6%) died. This conforms with the conclusion of Artz et al (1962) who found that there was no significant difference between any of the antibiotic combinations which they used in experimental peritonitis (Table VIII).
MORTALITY IN RELATION TO DURATION OF INFECTIVE PERITONITIS

Mortality in infective peritonitis depends a lot on the time elapsed between onset of illness and institution of treatment, as the amount of peritoneal contamination increases with time. 53.2% of cases in the study and 63.3% in the control group came to hospital between 1-2 days after onset of symptoms.

There was a striking difference in the mortality of the two groups in patients coming after 24 hours. Peritoneal contamination was more in these patients. In the study group the mortality was considerably less (20%) as compared to the control group (52%). There was no significant difference in the patients presenting within 24 hours (16.6% in study and 20% in control).

This gives credence to the belief that lavage is more effective in cases with gross intra-peritoneal contamination as pointed out by Stephen and Lowenthal in 1979. There is no significant difference in survival in patients with lesser degrees of contamination (Table IX).

HOSPITAL STAY

The length of the hospital stay of the patients depends upon the morbidity due to the illness. In the present study there was a significant difference in the hospital stay of the patients in study and control groups. While more than half of the patients in study group were discharged within
14 days of their admissions (68%), in control group only 18.7% could be discharged in the same period. In control group majority were discharged after 14 days (75%). (Table x).

COMPILICATIONS OF LAVAGE

No systemic complications due to continuous peritoneal antibiotic lavage were found in the patients. There was no incidence of over hydration or toxicity due to antibiotics.