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The present study was conducted at M.L.B. Medical College, Jhansi during the period of January 1995 to January 1996. In this study 121 patients of Peritoneal Sepsis, majority of whom had gastrointestinal perforation, were included.

Intra abdominal infections have always formed a sizeable fraction in patients admitted to any surgical emergency. Intra abdominal sepsis in addition to being the major cause of mortality in surgical ward is also a factor for the morbidity in another sizeable fraction. The attention demanded by peritoneal sepsis in a surgical setup can not be overemphasized.

For proper resource allocation and to know the prognostic and risk factors, a grading of severity of intra abdominal infection according to certain physiological and biochemical criteria has been needed for a long time. The various indices and scoring systems specially "The Mannheim Peritonitis Index" and"Severity of Sepsis" score have apparently moved in to fill the void.

In this present study an attempt was made to assess the efficacy of "Mannheim Peritonitis Index" and
"Severity of Sepsis" in predicting the eventual outcome of peritoneal sepsis patients in general, in set up like ours.

We found the maximum incidence (62.88%) of peritoneal sepsis in the age group between 25-50 years followed by 51-75 years (24.79%) age group and was minimum in 0-25 year age group (Table 1). The youngest patient was 4 years old (12.39%) and the oldest was 70 years. The incidence compared well with that of Delinger et al (1985), De Bakey (1940) 30-50 years, Mishra (1981) 31-60 years, Elebute EA and Stoner HB 45 ± 15 years (1983), and 60.3% Surendra (1994).

Male (63.63%) cut numbered female (36.36%) (Table - II). This was probably because of the habit of chronic smoking in males making them more susceptible for duodenal perforation and also being the main bread earner of the family, males have to do more outdoor activity and thus makes them more prone for traumatic injury leading to peritoneal sepsis. In the present study traumatic perforation was the main cause of peritoneal sepsis and in this group 80-90% sufferers were males.
The small intestine, excluding duodenum, was the most frequent site involved seen in 57 patients (47.10%), followed by gastric and duodenum in 27 patients (22.30%). Appendix as the originator of peritoneal sepsis was third in the list in 20 patients (16.52%). This is in contrast to studies of Wittman DH (1987) in which perforation in stomach and duodenum formed 30% of cases followed by appendix 22%, large bowel in 21% and small bowel only in 13%. This difference is perhaps due to a higher incidence of traumatic perforation and widespread prevalence of bidi smoking in our society and the almost non-existent immunization for typhoid in the general population. But our results were comparable to Surendra (1994) small bowel 50%, followed by duodenum (24.5%), appendix (12.3%), large bowel (4.7%). Similarly Bhansali (1970) found small bowel perforation in 44.7% patients and 40% by Roa (1988).

Traumatic perforation leading to peritoneal sepsis was the main cause in our study, seen in 30 patients (24.79%) followed by duodenal and gastric ulcer perforation in 27 patients (22.31%), appendix in 20 patients (16.52%), enteric perforation in 15 patients (12.39%). Minimum patients were of tubercular perforation 2 (1.65%) (Table IV).
This incidence of etiological factor is comparable to the studies of Surendra (1994) in which traumatic perforation was seen in 76.5%, followed by duodenal ulcer perforation in 23.6%, ischaemic perforation in 8.4% and tubercular perforation in 1.2% of patients. But lately blunt and penetrating abdominal trauma was becoming increasingly common both as a result of population explosion as well as increase in the number of vehicles on road and weapons in society. Among the etiological considerations of peptic ulcer perforations, we must keep in mind that increasingly longevity with associated disease in an aging population has meant consumption of drugs with known ulcerogenic potential like aspirin, indomethacin, corticosteroids and phenylbutazone etc. (Jørgensen 1977 & Bhattacharyya 1980), all of which can ultimately cause perforation.

The maximum number of patients, 76 (73.78%) stayed in hospital for 10-20 days followed by 16 (15.33%) patients who stayed for 21-30 days and only 11 (10.67%) patients stayed for more than 31 days and 4 patients out of 103 patients left Against Medical Advise (LAMA). Among these, one was from group who stayed for 21-30 days and 3 were from who stayed for more than 31 days. Thus the patients who stayed for 10-20 days, had a mean M.P.I score of 20.5 (range 13-34) and mean 'SS' score of 11.8 (range 3-17).
And patients who stayed for 21-30 days had a mean MPI of 30.9 (range 21-43) and mean 'SS' score of 18.5 (range 12-22) and those staying for more than 31 days had a mean MPI score of 28.3 (range 24-38) and 'SS' score of 22.5 (range 19-29).

MPI score as it is being taken at the time of laparotomy, does not change during postoperative period but the 'SS' score may increase or decrease in the postoperative period according to the condition of the patient. Thus the patients who stayed for 7-31 days had a mean 'SS' score of 22.5 (range 19-29) in comparison to those who stayed for 21-30 days had a score of 18.5 (12-22) and 11.8 (3-17) for those who stayed for 10-20 days.

There was a significant change in 'SS' score in relation to the period of hospitalization, hence we believe that the 'SS' score was better for predicting the morbidity of patients in postoperative period. Patients with low score in both the indices showed better outcome of the postoperative period.

Coming to the mortality it was seen that 18 patients (14.67%) who expired had a mean 'MPI' score of 32.16 (range 23-38) and a mean 'SS' score of 25 (15-42), while those who survived had mean MPI score of 25.6 (13-41) and
a mean 'SS' score of 14.05 (3-39). Thus, there is a apparent significant difference in the mean MPI score of patients who survived when compared to those who succumbed to septicemia. But the MPI score should not be the sole indicator of prediction of the outcome because with a scoring of 43 of MPI, survived and patients with 23 MPI score, expired. The results are comparable to A. Billing and D. Frohlich (1993) with a mortality of 13.4%, in a study of 887 patients. We also concluded that the patients who had a score more than 26 of MPI should be kept in ICU for better and prompt management.

31 patients (30.1%) developed disease related abdominal complication after laparotomy. Amongst these 20 patients (19.14%) developed minor complications and 11 patients (10.67%) developed major complications, 72 patients (69.90%) had no disease related complication in their post operative period (Table VII). This is comparable to that of Belinger et al (1985) study, whose 104 patients (72.72%) out of 143 survivors recovered following the index operation without any complication requiring any additional operative procedures and in 27.28% patients he found similar complication.
Among all 121 patients, the primary cause of infection was treated during index operation by closure of perforation. Resection and anastomosis with or without stoma formation, diversion of the intestinal tract Appendectomy and by splenectomy in traumatic peritonitis Similar operation were carried out in study of Surendra (1994) and V. Khanna (1995) in cases of peritonitis.

Lack of adequate laboratory support (facilities for performing serum electrolyte, arterial PH and blood gases) in our hospital has resulted in the late detection of subtle and unexpected biochemical derrangements, so that their timely prevention and precise correction was not always possible causing still higher mortality and morbidity. Similar lack of laboratory support to detect change in important biochemical parameters were noticed by Surendra (1994) in Jhansi and V. Khanna (1995) in Lucknow.

E. Coli was the most frequent bacteriological agent followed by Klebsiella sps and streptococcus sps in the patients who developed complication in postoperative period. This was comparable to the studies done by Surendra in department of Surgery, M.L.B. Medical College, Jhansi (1994) and Vishal Khanna in K.G. Medical College, Lucknow (1995).
Respiratory complications were the commonest amongst the other systemic complications. All the patients of duodenal perforation, splenic injury and liver tear developed chest complications from the very 1st day of admission. This was comparable to the studies done by Dr. Surendra in department of Surgery, M.L.B. Medical College, Jhansi (1994) and Dr. Vishal Khanna in K.G. Medical College, Lucknow (1995).

We have observed that certain factors (secondary variables) in addition to a particular patient's 'MPI' and '55' scores also affects the outcome. Similar secondary variables were noticed in the studies done by Khanna V (1995). These factors are -

a) Duration of symptoms (primary and secondary delay) also quality of pre-admission treatment.

b) Tertiary delay

c) Nature, number and duration of surgical procedure

d) Antibiotics used

e) The quantity and quality of parenteral nutrition offered, if any

f) Blood transfusion requirement and its fulfilment

g) Early mobilisation
h) Availability of adequate : Respiratory support :
\( \text{O}_2 \) therapy and ventilator support.

i) Nutritional status i.e. obesity or underweight

j) Presence of diabetes mellitus

k) Presence of advanced malignancy.

l) Presence of other systemic injury in case of traumatic perforation.

All these factors seem to play an important role in deciding the outcome by eventually affecting the both indices scores attained by any patient.

In our setup, most of the patients presented late (primary and secondary delay) with increased mean duration of symptoms.

However, there was also a tertiary delay on our part in operating the patients due to:

a) Limited operation theatre facilities

b) Scarcity of anaesthetists

c) Multiplicity of patients and other unavoidable causes.

Total parenteral nutrition in our set up is a luxury that most of the patients can not afford. Adequate supply of donated blood, fresh frozen plasma, clotting factor concentrates are not available to the patients thus,
resulting in a very high mortality due to haematological arrangements. This is in marked contrast to the western set up.

We do not have adequate facilities for oxygen therapy and ventilator support resulting in a very high mortality in patients from ARDS before adequate arrangements can be made for their transfer into units provided with these facilities.


At the end of the study we can conclude that all the patients who had a mean MPI score of more than 26 should be kept in ICU preferably for better and prompt treatment.

And all the patients who had a 'SS' score of 20 or more had more chances of developing morbidity.

And all the patients with high score of both indices should receive prompt and best treatment, so that these patients can be saved from morbidity and mortality.