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Original Article

To Assess Mannheim Peritonitis Index (MPI) In Predicting Complications in Patients Who Presented with Features of Peritonitis

Dr.Roshan R. Patil[1*]; Dr. Anil Darokar[2]; Dr. Rajiva M, Mulmule[3]; Dr. Ameet D. Bhasme[4]; Dr. Narendra O. Wankhede[5]

[1] Senior resident, Department of General Surgery, GMC Jalgaon
[2]Professor, Department of General Surgery, PDMMC Amravati
[3]Associate Professor, Department of General Surgery, Dr. PDMMC Amravati
[4]Assistant Professor, Department of General Surgery, Dr. PDMMC Amravati

ABSTRACT

Introduction: The purpose of the study was to find the complications in post-operative patients of peritonitis using Mannheim's Peritonitis index. An observational study conducted in a 60 patiens at tertiary care centre as emergency cases of perforation. Patients with clinical suspicion and investigatory support for the diagnosis of peritonitis (diffuse or localised) due to hollow viscous perforation who are later confirmed by intra- operative findings were included in study. Quantitative data was tested by Mean and Standard Deviation, difference between two means tested by 'Z' test. Qualitative data was compared by Chi square test, Fisher's exact test. P value <0.05 was considered significant. **Conclusion**: it seems that most peritonitis cases were of non-colonic sepsis origin and presented late I.e. after 24 hours of perforation, had to be managed with exploratory laparotomy and primary Closure. In the present study, recovery rate was 86.67% and death rate was 13.33%. MPI score of <21 was significantly more associated with recovery (p=0.0008) hence we observed more recovery rate, as most of the patients in our study had MPI score of <21. MPI score of >29 was significantly more associated with deaths (p=0.0001), hence we have observed deaths among those patients who had high MPI scores. So MPI (Mannheim Peritonitis Index) can be used for assessing severity and predicting prognosis of the peritonitis patients.

Key Words: *Mannheim Peritonitis Index (MPI), Peritonitis.*

***Corresponding Author**
Dr. Roshan R. Patil
Senior resident, Department of General Surgery, GMC Jalgaon

INTRODUCTION

Peritonitis is inflammation of peritoneum, may be due to localized or generalized infection caused from various probable factors. Acute generalized peritonitis due to underlying hollow viscous perforation is a critical and life-threatening medical condition.[1] Gastrointestinal perforations as a sequelae to various disease processes, trauma, and diagnostic/therapeutic procedures constitute a major percentage of acute abdominal emergencies.[2,3]Gastrointestinal perforations lead to diffuse peritonitis, toxaemia, septicaemia, metabolic and circulatory instability, renal failure, and pulmonary insufficiency, it leads to high mortality and morbidity.[4]

The etiology of perforation includes gastric ulcer, duodenal ulcer, appendicitis, gastrointestinal malignancy, blunt trauma abdomen, typhoid fever, NSAID drug abuse, smoking, ingestion of corrosive substances etc. Peptic ulcer disease like duodenal and gastric ulcer remains one of the most prevalent gastrointestinal diseases which has become a major burden both financially and socially. The annual incidence of peptic ulcer disease ranges from 0.1% to 0.3%.[5] Emergency surgery for perforated peptic ulcer is associated with a high rate of postoperative complications (between 21% and 43%).[6]

The outcome of perforation peritonitis depends on various factor which include delay from the initial evaluation to treatment, either due to delayed presentation to hospital which is commonly seen in India or because of more extensive diagnostic workup. Thus, early prognosis of the severity of the disease is necessary for reducing the mortality. Hence there is need of a scoring system for exact recognition of severity of disease. It is helpful in assessing the severity of a disease and can be used as a prognostic tool to counsel the patient's relatives.[7,8]

The MPI had the objective to classify the severity of peritonitis or intra-abdominal infections and to identify those patients requiring a prompt and aggressive treatment, using parameters readily collectable at clinical examination and

surgical exploration. The Mannheim's Peritonitis index score is defined as an 'empirically deduced first risk score'.[8] It takes into account 8 risk factors which are prognostically significant namely age, gender, organ failure, duration of peritonitis, involvement of colon, extent of spread and character of peritoneal fluid. Patients exceeding 26 score were defined as having high mortality.[9] The Mannheim's peritonitis index is one of the simplest scoring systems in use that allows the surgeon to easily determine the outcome risk.

We would like to evaluate the outcome of patients with peritonitis as there was no current data or study done in our tertiary care centre. Peritonitis is a life-threatening condition so predicting its severity to assess the outcome and also see morbidity and mortality; hence we have undertaken this study.

AIM: To study the complications in post-operative patients of peritonitis

OBJECTIVES: To study the complications in post-operative patients of peritonitis using Mannheim Peritonitis Index (MPI).

MATERIALS AND METHODS

The longitudinal follow up observational study conducted in a patients admitted to tertiary care centre as emergency cases of perforation from Feburary 2021 to July 2022. The protocol of this study was approved by the Institutional Ethical committee. Written informed consent was taken from all study subjects before collection of data and they were informed about complete right to withdraw from the study at any time without disadvantage. All patients fulfilling inclusion criteria and exclusion criteria were included in the study. Patients with clinical suspicion and investigatory support for the diagnosis of peritonitis (diffuse or localised) due to hollow viscous perforation who are later confirmed by intra- operative findings were included in the study and patients with hollow viscous perforation due to trauma such as blunt trauma & stab injury, primary peritonitis, vascular, neurogenic injuries, post-operative bile leak, laparotomy done elsewhere or transferred out to continue treatment elsewhere were excluded.

After obtaining consent and satisfying inclusion and exclusion criteria, patients were enrolled in the study. All emergency cases of perforation were analysed as regard to the history and thorough clinical examination based on pre-validated questionnaire in a face-to-face interview with participants & family members.

Clinical and laboratory finding were obtained from each case. Patients was followed up to his stay in hospital for recovery or until death. The data collected was then analyzed by appropriate test of significance.

Statistical Analysis: Quantitative data was tested by Mean and Standard Deviation, difference between two means tested by 'Z' test. Qualitative data was compared by Chi square test, Fisher's exact test. P value <0.05 was considered significant.

RESULTS

Table 1: Distribution of patients according to MPI score

MPI	Frequency	Percent
<21	31	51.67
21-29	18	30
>29	11	18.33
Total	60	100

In the present study, among majority i.e. 31 (51.67%) of the cases MPI score was <21 followed by 21-29 among 18 (30%) and >29 among 11 (18.33%) patients.

Table 2: Distribution of cases according to complication of Peritonitis

Outcome	Frequency	Percent
Death	10	16.67
Recovered	50	83.33
Total	60	100

In the present study, most common outcome was recovery among 50 (83.33%) cases followed by death in 10 (16.67%) patients due to organ failure & septicemia

Table 3: Association of MPI score and complication of Peritonitis

MPI score	Outcome		P
	Recovered no. (%)	Death no. (%)	
<21	31 (59.62)	00 (00)	**0.0008**
21-29	15 (30.77)	03 (25)	0.85
>29	04 (9.62)	07 (75)	**0.0001**
Total	50 (100)	10 (100)	--

In the present study, on testing association of MPI score with outcome of peritonitis, we have seen that patients with MPI score of <21 was significantly more associated with recovery (p=0.0008) and patients with MPI score of >29 was significantly more associated with deaths (p=0.0001) while MPI score of 21-29 was not significantly associated with any particular outcome (p>0.05).

DISCUSSION

Majority of the cases i.e. 31 (51.67%) had MPI score of <21 followed by 21-29 among 18 (30%) and >29 among 11 (18.33%) patients. Most common outcome was recovery among 50 (83.33%) cases followed by death in 10 (16.66%) patients. Haralds Plaudis et al[10] in their study reported median MPI was 28 points (range, 21 to 40), indicating a prognostic mortality risk of 60%. Sepsis developed in all patients. Jotdeep Singh Bamrah et al[11] in their study reported that among the total study population, 70% of the patients were discharged with or without any complications, while 30% of the patients had expired. On evaluating association of age with outcome of peritonitis, we have found that only >60 years age group was significantly more associated with deaths (p=0.03) while other age groups were not associated with particular outcome. So prognosis is poorer after 60 years of age. There is insignificant association of gender with outcome of peritonitis (p>0.05). Association of MPI score with outcome of peritonitis has shown that patients with MPI score of <21 was significantly more associated with recovery (p=0.0008) and patients with MPI score of >29 was significantly more associated with deaths (p=0.0001) while MPI score of 21-29 was not significantly associated with any particular outcome (p>0.05). Jotdeep Singh Bamrah et al[11] who found that prognosis was poorer in patients above 50 years of age. Among those who expired, there was no patient with MPI<21 while 27.78% had MPI 21-29 and 72.22% had MPI >29. Among those who were discharged, 45.24% had MPI <21, 40.48% had MPI 21-29 and 14.28% had MPI>29 and morbidity, mortality was worst in patients with MPI score >29;

CONCLUSION

- In the present study, recovery rate was 86.67% and death rate was 13.33%.
- Older age (>60) was associated with deaths.
- MPI score of >29 was significantly more associated with deaths (p=0.0001), hence we have observed deaths among those patients who had high MPI scores.
- So MPI (Mannheim Peritonitis Index) can be used for assessing severity and predicting prognosis of the peritonitis patients.

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