



EFFECTIVENESS OF MANNHEIM PERITONITIS INDEX IN PREDICTING MORBIDITY AND MORTALITY OF PATIENTS WITH GENERALISED PERITONITIS DUE TO HOLLOW VISCUS PERFORATION

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ABSTRACT **Background:** Rapid diagnosis and risk stratification in a case of generalised peritonitis is very essential for aggressive management and better prognosis. Making decisions and improving therapy for the management of critically ill patients have both benefited greatly from grading the severity of acute peritonitis. **Aims & Objectives:** This study aims to employ the MPI scoring system in clinical practice to estimate the risk of morbidity and mortality in patients with peritonitis due by hollow viscous perforation and to stratify patients into MPI groups and plan management accordingly. To correlate MPI groups based on duration of hospital stay and morbidity. **Materials and Methods: Study Design:** Prospective Analytical Study. Source of Study: General Surgery Inpatients of Government General Hospital, Anantapur. Duration of Study: 2 Years from November 2020 to November 2022. Number of Patients: 103, Inclusion criteria - Cases of peritonitis secondary to gastrointestinal tract perforation admitted in our hospital within the study period. Age more than 15 years. Exclusion Criteria- Patients of less than 15 years of age, Pregnant women; Spontaneous bacterial peritonitis is not included for the study. Result: Data were presented in the form of tables and bar charts of descriptive categorical variables and were analysed using Chi Square Test. **Conclusion:** Managing a case of Generalised Peritonitis is a race against time. Proper risk stratification and aggressive therapy is quintessential for better prognosis for the patient. Early utilisation of scoring indices as a tool for risk stratification helps in aiding the course of management.

KEYWORDS : MPI Index, Morbidity, Duration of Hospital Stay

INTRODUCTION

Peritonitis due to gastrointestinal hollow visceral perforation is a common surgical emergency all over the world. The spectrum of perforation peritonitis in India is still different from that of western nations and there is very little data from India regarding the various prognostic factors, causal factors, morbidity, and mortality patterns.

The causes of perforation are widely varied and include things like stomach ulcers, duodenal ulcers, appendicitis, gastrointestinal cancer, acute abdominal trauma, typhoid fever, etc. A potentially fatal illness, acute widespread peritonitis from gastrointestinal hollow viscous perforation necessitates urgent surgical intervention. Despite advancements in diagnosis and management facilities at India's peripheries, the prognosis for peritonitis remains bleak. (9)

Patients who have severe peritonitis should be identified and diagnosed as soon as possible because they may benefit from an intensive surgical approach. Making decisions and improving therapy for the management of critically ill patients have both benefited greatly from grading the severity of acute peritonitis. (1;2)

Many scoring systems have been designed and used successfully to grade the severity of acute peritonitis like, Acute physiology and chronic health evaluation II score (APACHE), Simplified Acute Physiology Score (SAPS), Sepsis Severity Score (SSS), Physiological and Operative Severity Score for an Emergence of Mortality (POSSUM) Score, Mannheim peritonitis index (MPI). (3;4)

AIMS AND OBJECTIVES

This study aims to employ the MPI scoring system in clinical practise

- To estimate the risk of morbidity and mortality in patients with peritonitis due by hollow viscous perforation and to stratify patients into MPI groups and plan management.
- To correlate MPI groups based on duration of hospital stay as and of morbidity.

MATERIALS AND METHODS

STUDY DESIGN: PROSPECTIVE ANALYTICAL STUDY.

SOURCE OF DATA

After obtaining clearance and approval through the institutional ethics committee, Patients suffering from peritonitis and fulfilling the inclusion/exclusion criteria were studied. This is a two-year study, done from November 2020 to November 2022 of patients admitted with perforation peritonitis in Government General Hospital, Anantapur.

SAMPLE SIZE:

A total 103 cases of perforation peritonitis admitted within the study period are included in this study.

Inclusion criteria for the study group:

- Cases of peritonitis secondary to gastrointestinal tract perforation admitted in our hospital within the study period from November 2020 to November 2022.
- Patient of age more than 15 years.

Exclusion criteria for the study group:

- Patients of less than 15 years of age.
- Spontaneous bacterial peritonitis is not included for the study.

The Hypothesis was tested using Chi square test analysis and results interpreted in form of tables and bar diagrams.

RESULTS

Table 1: Showing correlation of MPI score with incidence of POST OP Morbidity

MPI	POST OP MORBIDITY		Total
	Present	Absent	
Group A <21	5 7.8%	59 92.2%	64 100.0%
Group B 21-29	15 51.73%	14 48.27%	29 100.0%
Group C >29	9 90%	1 10%	10 100.0%
Total	29 28.1%	74 71.9%	103 100.0%

Chi-square value = 39.97; df=2; P Value <0.05

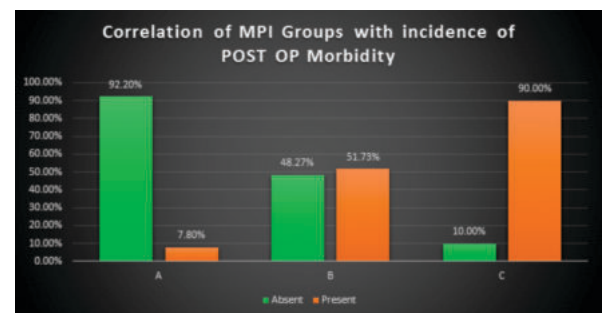
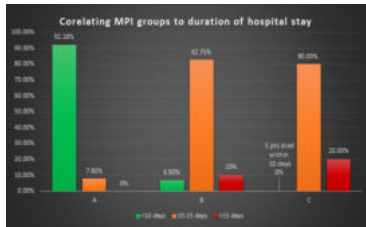


Table correlating MPI groups to duration of hospital stay (morbidity indicator)

Duration of Hospital stay	MPI GROUP			Percentage
	A	B	C	
< 10 days	59	2	5 (All died within 10 days)	66
	89.3%	3.1%	7.6%	100.0%
10-15 days	5	24	4	33
	15.3%	72.3%	12.4%	100.0%
>15 days	0	3	1	4
	0%	75%	25%	100.0%
Total	64	29	10	103
				100.0%

Chi-square value = 64.77; df= 4; P Value <0.05



DISCUSSION

DISTRIBUTION OF PATIENTS AS PER MPI CUT OFF POINTS

Patients were sorted in three groups A, B & C based on scores less than 21, 21-29 & more than 29. 64 (62.1%) patients had MPI score of less than 21(Group A). 29 (28.3%) patients had MPI score between 21 to 29(Group B). 10 (9.7%) patients had MPI score greater than 29(Group C).

MPI GROUPS AND MORTALITY

In our study there was no death in patients with MPI score less than 21, 1 in MPI score between 21 to 29 the mortality was 0.97% (group specific 3.4%), while 6 in patients with MPI score greater than 29 the mortality was 5.8%(group specific 60%).

A Billing et al.,5 in their study of 2003 patients of perforation peritonitis found out a mortality rate of 2.3% in MPI score <21, 22.5% in MPI score between 21 and 29 and 51.1% for MPI score greater than 29.

Abrar Maqbool Qureshi et al.,6 in their study found out that for MPI score of less than 21 the mortality was 1.9%, for scores in between 21 - 29 it was 21.9% & for scores 30 or more it was 21.8%. In our study the mortality is statistically significant based on MPI groups and correlates with other studies of same subject.

MPI AND DURATION OF HOSPITAL STAY

In this study we had compared the MPI groups and their respective duration of hospital stay and post discharge sick leaves. In Group A(MPI <21); 92.3% patients had less than 10 days of hospital stay and 7.7% had stay of more than 10 days. Whereas in Group B (21-29) and Group C (>29); 1.8% patients had less than 10 days hospital stay, a whopping 82.5% had more than 10 days stay and 15% patients of this group had mortality.

OUTCOME

Among the 103 patients studied by us 7 patients died thus placing the mortality at 6.8%. The mortality was found predominantly in the Groups C(scores >29) and to an extent in group B (21 - 29).

Abrar Maqbool Qureshi et al.,7 in this study death was the main outcome measure against which the MPI score was analyzed under 2 categories i) <26 or ≥26 ii) <21, 21-29, >29.

For MPI score ≥ 26 the mortality was 28.1% while it was 4.3% for scores less than 26, for a score less than 21 the mortality was 1.8% for scores between 21 to 29 it was 21.9% and for score of 30 or more it was 28%.

Atsushi Horiuchi et al.,7 in their study of perforation peritonitis had a mortality of 23.1%. Koperna T et al.,28 in their study of secondary

bacterial peritonitis had an average total mortality rate of 18.5%. In 64 (62.2 %) patients total MPI score was < 21 while 29 (27.6%) patients total score was 21-29 & it was > 29 in 10 (9.7%) patients.

In our study mortality rate was 14.2% in in MPI score >21, in contrast many of previous studies show the mortality rate of perforation peritonitis ranging between 20 to 30%. In our study less mortality may be attributed to early detection and aggressive resuscitation and prompt postoperative ICU care. Thus, with the improvement in the medical management, availability of new broad spectrum antibiotics and vast development in the field of intensive care the mortality from perforation peritonitis will still reduce in the future.

Development of organ failure and sepsis are important determinants of mortality. Therefore, future studies and research should be directed in the understanding of pathogenesis and evolution of these factors so that new and more effective treatment strategies could be evolved.

Delay in the presentation for appropriate treatment should be addressed by means of strengthening the referral services and improving the means of transportation.

Jaе-Myung Kim (2012) et al.,8 also concludes that there is no association between mortality, postoperative morbidity, and comorbid disease in patients with a perforated hollow viscous. In our study out of 103 patients 7 had mortality. All the MPI criteria except for SEX have shown significant results in concurrence with widely recognized studies.

CONCLUSION

Our study goes on to show that higher MPI scores correspond to higher risk of morbidity and mortality and concurrent increase in the days spent in hospital and later at home recovering from the disease. On statistical analysis the P value was significant and less than 0.05 suggesting that this study in in concurrence with other studies proving MPI to be a clinical factor in Prognosis and patient counselling.

The Mannheim’s peritonitis index is a very useful prognostic tool for evaluating the morbidity and mortality of patients with peritonitis. Though our study had very less mortality (only 7); it had led to understand that advances in medicine, surgery and ICU care has been very helpful in reducing mortality. Even then MPI is a useful in identifying high risk patients and helpful in treating them aggressively. MPI score allows the clinician to counsel the patient’s attendant with greater perspective.

The results of this study do prove and validate that MANNHEIM PERITONITIS INDEX scoring system is a simple and effective tool for predicting the morbidity and mortality in patients with peritonitis due to hollow viscous perforation and can be used as a guiding tool to decide on the management of the patient.

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