Original Article

To Study the Efficacy of Mannheim's Peritonitis Index in Patients of Perforation Peritonitis

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Abstract

Introduction-Despite advances in critical care medicine, prognosis in peritonitis due to hollow viscous perforation remains poor especially when associated with multi-organ dysfunction. Various grading systems are available to analyze and stratify patients by different parameters and predict outcome. In a prospective non-randomized observational study, the efficacy of Mannheim peritonitis Index (MPI) was analyzed in predicting the outcome in patients who were treated for peritonitis due to hollow viscous perforation.

Method -A prospective study to assess the efficacy of Mannheim's peritonitis index in 100 patientswho presented with perforation peritonitis from August 2016 to July 2017 in LLRM medical college, Meerut.

Result -100 patients were included in the study , patients were divided into 3 categories according to MPI score<21,between 21-29 &>29. In category 1 mortality was around8.33%,category 2 had 28.8% mortality and category 3 had 53.7% mortality.Thus increase in MPI score due to cumulative effect of all 8 parameters resulted in increased risk of mortality in perforation peritonitis .

Conclusion – In this study all the parameters of Mannheim's peritonitis index behave in expected manner, but there were no patient of malignancy and all patient were having generalized peritonitis and female patients were only 20. Therefore this study should be done for longer period of time to access all parameter of MPI score.

Keyword *–MPI, PERFORATION, MORTALITY*

Introduction

Despite advances in critical care medicine, prognosis in peritonitis due to hollow viscous perforation remains poor especially when associated with multi-organ dysfunction. Various grading systems are available to analyze and stratify patients by different parameters and predict outcome. In a prospective non-randomized observational study, the efficacy of Mannheim peritonitis Index (MPI) was analyzed in predicting the outcome in patients treated for peritonitis due to hollow viscous perforation.

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A good scoring system is useful in comparing various groups of patients, different treatment modalities, evaluating new therapies, in monitoring resources for effective use and improving standard of care[1,2].Many scoring systems are available to grade the severity of acute peritonitis for example, Acute physiology and chronic health evaluation (APACHE) II score, Simplified acute physiology score (SAPS), sepsis severity score (SSS), Ranson score, Imrite score, Mannheim peritonitis index (MPI).[3,4] MPI was developed by Wacha and Linder in 1983.[5]Amongst the various scoring systems Mannheim peritonitis Index (MPI) is very specific and simple score and also has good accuracy.It provides an easy way to handle clinical parameters, also allowing the prediction of the individual prognosis ofpatients with peritonitis.[6]

Main objective of the study was to evaluate Mannheim Peritonitis Index in predicting the outcome

of surgery in patients with peritonitis.

Material & Methodology

"A prospective observational study to assess the efficacy of Mannheim's peritonitis index in 100 cases of perforation peritonitis patients from August 2016 to July 2017 was Conducted in LLRM Medical College, Meerut, U.P.

Table 1: Showing Parameters of Mannheim's Peritonitis Index Score

Sr. No.	Study variable	Adverse factor	Points	Favorable factor	Points
1	Age	>50yrs.	5	<50 years	0
2	Sex	Female	5		0
3	Organ failure	Present	7		0
4	Malignancy	Present	4		
5	Evolution time	>24 hrs.	4		0
6	Origin of sepsis	Non – colonic	4		
7	Extension of peritonitis	Generalized	6		
8	Character of exudates	Fecal	12	Clear	0

Division of category-

Category 1- MPI score< 21

Category 2- MPI score 21-29

Category 3- MPI score >29

Observations and Results

Table 2 Showing observation and results of our study

		No. of Patients	No. (%) of Mortality
AGE	>50 YEARS	34	20(58.8%)
	<50 YEARS	66	14(21.2%)
SEX	Male	80	26(32.5%)
	Female	20	8(40%)
ORGAN FAILURE	Present	64	31(48.4%)
	Absent	36	3(8.3%)
MALIGNANCY	No patient with perforation along with malignancy was present		
EVOLUTION TIME	>24 hours	92	30(32.6%)
	<24 hours	8	4(50%)

Cont... **Table 2 Showing observation and results of our study**

ORIGIN OF SEPSIS	Non-colonic	72	16(22.2%)
	colonic	28	18(64.3%)
EXTENT OF PERITONITIS	Generalized in all	-	-
CHARACTER OF EXUDATE	Purulent	72	16(22.2%)
	Fecal	28	18(64.3%)

Discussion

Correlation between age and mortality

In our study we have found that 34 patients were of Age>50years out of which 20 patients expired (58.8%) & 66 patients were Age<50 years of which 14 patients (21.2%) got expired, which show that patients >50 years are at higher risk.

Correlation between female sex and mortality

In our study, number of Male patients were 80, of which 26 patients(32.5%) got expired & number of Female patients were 20, of which 8 patients(40%) expiredwhich shows that Female are comparatively at higher risk than Male patients.

Correlation between Organ failure and mortality

In our study, patients presenting with Organ failure were 64 of which 31 patients(48.4%) expired& patients with Non Organ failure were 36 of which 3 patients(8.3%) expiredwhich shows that those patients presenting with organ failure are at higher risk than those without organ failure..

Correlation between malignancy and mortality

In our study, out of 100 patients with perforation peritonitis, none of them had malignancy.

Correlation between evolution time and mortality

In our study, patients presenting with Evolution time >24 hours were 92 of which 30(32.6%) expired & patients presenting with Evolution time <24 hours were 8 of which 4 patients(50%) expired.

Correlation between origin of sepsis(non colonic)

In our study patients having non colonic origin of sepsis were 72 of which 16 patients (22.2%) expired & colonic origin of sepsis were 28 patients of which 18 patients (64.3%) expired. Thus it shows that patients having colonicorigin of sepsis are at higher risk than those having non colonic.

Correlation between extent of peritonitis and mortality

In our study we cannot comment on risk associated with extent of peritonitis as all patients presented with Generalized peritonitis.

Correlation between character of exudate and mortality

In our study patients having purulent exudate were 72 of which 16 patients (22.2%) expired & patients having fecal exudate were 28 of which 18 patients got expired (64.3%), thus it shows that patients having fecal exudate are at higher risk than those having purulent exudate.

Conclusion

Mannheim Peritonitis index is a useful method to determine study group outcome in patients with peritonitis. All the MPI variables of adverse outcome namely, age >50 years, female sex, organ failure, character of exudate has behaved in an expected but other factors such as malignancy and Extent of peritonitis found to be inconclusive and warrant for prolong study.Evolution time is a modifiable risk factor; mortality can be reduced on early presentation and early

intervention. In our study, 92% patients presented late to our institution possibly due to delayed referral from peripheral centers so a very clear conclusion cannot be withdrawn.

In MPI devised by Wacha and Linder[5] only Purulent and Fecal exudate were considered, biliary or other exudates were not considered. In our opinion other exudate should also be considered as they have different biochemical and microbiological profile.

Colonic origin of sepsis carries higher risk as compared to Non-colonic because of fecal contamination. In MPI score devised Wacha and Linder[3]non-colonic origin of sepsis was considered to have higher risk than colonic origin.

Mannheim peritonitis index is a reproducible scoring system that allowssurgeon to determine theseverity of the intra abdominal infections are essential to:

· Ratify the effectiveness of different treatment regimen.

· Indicate individual risk to select patient's who may require a more aggressive surgical approach.

· Inform patient relatives with greater objectivity.

In the past 30years, many prognostic scoring systems have been developed for critical patients. Presently one of the most accepted score is APACHE II score which integrates various physiological variables during the first 24 hours within the ICU. They are however both complex and time consuming. The MPI is one of the most simple scoring system in use that allows the surgeon to easily determine the outcome risk during initial surgery. Early evaluation of severity of illness using MPI allows us to estimate the probability of patient's survival.

The simplicity of MPI makes ideal for hospitals with serious shortages of resources.

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Conflict of Interest – Nil

Ethical committee Permission – Taken

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