

A Study on Efficacy of Mannheim Peritonitis Index (MPI) Score in Patients with Secondary Peritonitis at Shimoga Institute of Medical Sciences, Shivamogga

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I. INTRODUCTION

- Peritonitis is defined as inflammation of serosal membrane that lines the abdominal cavity and the organs contained therein and is commonly encountered in surgical practice.
- Perforated hollow viscus is characterized by loss of gastrointestinal wall integrity with subsequent leakage of enteric contents.
- Direct trauma or tissue ischemia and necrosis leads to full thickness disruption of gastrointestinal wall and perforation.
- Early identification of patients with severe peritonitis may help in selecting patients for aggressive surgical approach [1 3].
- Grading the severity of acute peritonitis has assisted in no small way in decision making and has improved therapy in the management of severely ill patients [4].
- Empirically based risk assessment for important clinical events has been extremely useful in evaluating new therapies, in monitoring resources for effective use and improving quality of care [5].
- The Mannheim Peritonitis Index is specific allows in individual prediction of prognosis with a good accuracy and consists of 8 parameters

Risk Factor	Points
Age >50 years	5
Female sex	5
Organ failure	7
Malignancy	4
Preoperative duration of Peritonitis >24 h	4
Origin of sepsis not colonic	4
Diffuse generalized peritonitis	6
Exudate	
Clear	0
Cloudy, Purulent	6
Fecal	12
Definitions of Organ Failure	
Kidney Creatinine level >177 µmol/L	
Urea level >167 mmol/L	
Oliguria <20 ml/h	
Lung PO ₂ <50 mmHg	
PCO ₂ >50 mmHg	
Shock Hypodynamic or Hyperdynamic	
Intestinal obstruction Paralysis >24h or complete mechanical obstruction	

OBJECTIVE

•Evaluation of Mannheim Peritonitis Index (MPI) score for predicting the outcome in patients with hollow viscus perforation peritonitis

II. MATERIALS AND METHODS

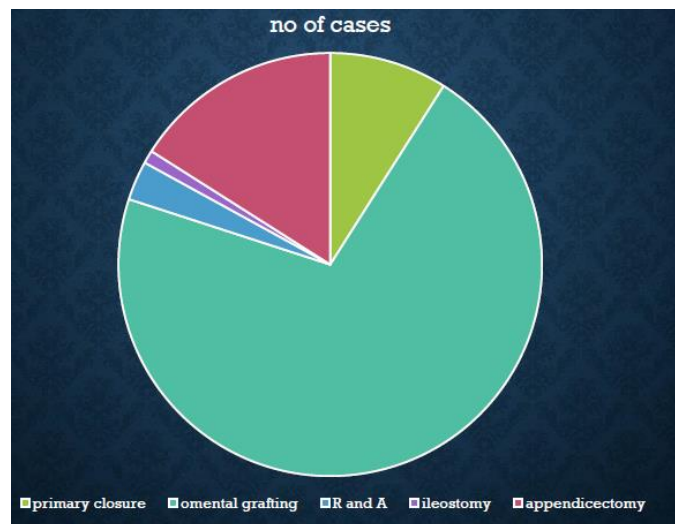
- Source of data : patients presenting with secondary peritonitis at District MCGann teaching hospital
- Duration of study : 17 months from March 2021 september 2022
- Study design : A retrospective observational
- A retrospective observational study was conducted over a period 17 MONTHS from March 2021 september 2022. The data was collected from patients a presenting with secondary peritonitis a total of 100 cases were selected.
- Primary peritonitis, peritonitis due to trauma, age less than 15 years and patients who were managed conservatively were excluded from the study. Initial resuscitation done in all the cases.
- MPI was applied along with other parameters recorded and prediction was categorized into 3 groups. 1. Score \leq 20 2. Score 21 29 3. Score \geq 30. Analysis was done by using epiInfo software. Data obtained was analyzed for predicting outcome

STATISTICAL ANALYSIS

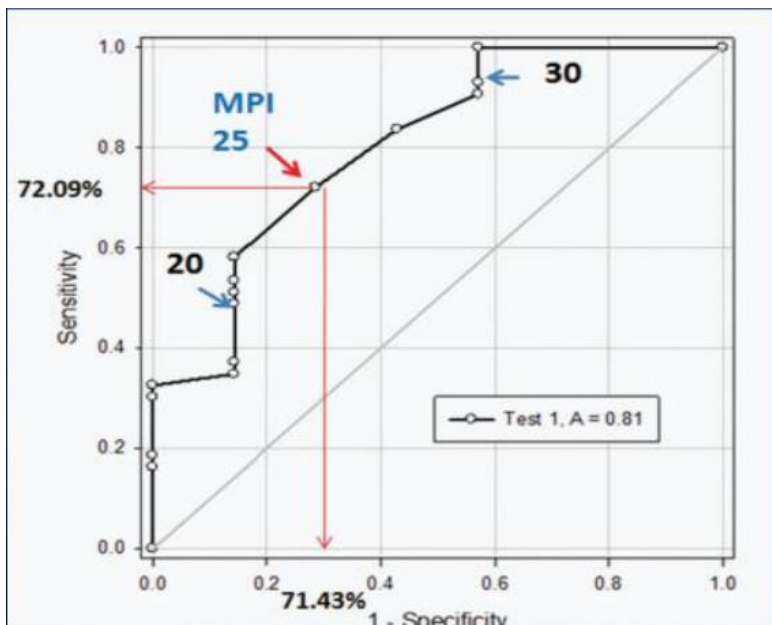
The study was conducted after obtaining clearance from the ethical committee
 Done using EPININFO and SPSS.
 Chi square test used for intergroup variations
 Risk ratio and 95% confidence interval calculated for each group
 ROC analysis was performed to identify the threshold with highest sensitivity and specificity

III. RESULTS

Mean age 46.6 years(range 18 75)
 Simple closure of perforation done in 9% cases
 Closure with omental graft in 71% cases
 Resection and anastomosis in 3% cases
 Ileostomy in 1% case
 Appendicectomy in 16% cases



site	survived	death	total
stomach	1	0	1
duodenum	59	12	71
ileal	6	1	7
appendix	14	2	16
colorectal	3	2	5



Summary of MPI	SURVIVED	DEATH	TOTAL
Age > 50 years	23	11	34
Female sex	6	2	8
Organ failure	42	17	59
Malignancy	0	1	1
Preoperative duration > 24 hours	16	13	29
Origin of sepsis not colonic	82	13	95
Diffused generalized peritonitis	72	16	88
Exudates			
Clear	34	0	34
Cloudy or purulent	35	13	47
Faecal	5	4	9

There are 13 deaths in our study out of which 11 deaths due multiple organ dysfunction and 2 patients died of cardiogenic shock

1 patient had perforation in the colon due to CA hepatic flexure of colon for which ileostomy was done

Patients presenting with symptoms for a > 24 hrs had mortality rate of 44.82%.

MPI score was analysed with mortality, with sensitivity of 72 and specificity of 71% was taken as a threshold value for dichotomous analysis of ROC curve

Oral morbidity in our study was 63%, surgical site infection present in 37% of patients, pulmonary complications in 11% of patients and sepsis in 15% of the patients

In our study patients with MPI score of <20, 21-29, >30 had a mortality of 0.23%, 67% respectively

IV. DISCUSSION

• Peritonitis is defined as inflammation of serosal membrane that lines the abdominal cavity and the organs contained therein and is commonly encountered in surgical practice.

• Perforated hollow viscus is characterized by loss of gastrointestinal wall integrity with subsequent leakage of enteric contents.

• Direct trauma or tissue ischemia and necrosis leads to full thickness disruption of gastrointestinal wall and perforation.

• Early identification of patients with severe peritonitis may help in selecting patients for aggressive surgical approach [1-3].

In order to quantify the risk of mortality based on MPI scores further analysis was done by grouping the patients around the threshold MPI scores i) 25 and ii) 30. We found, i) Patients with MPI score > 25 had 4.23 times higher risk of mortality compared to patients with score ≤ 25. ii) MPI score of > 30 had 13 times increased risk of mortality compared to MPI score ≤ 30. This clearly suggests increasing risk of mortality with increasing MPI score, however to determine if this relationship is linear or exponential a larger study is required

.Kusumoto Yoshiko et al., evaluated the reliability of the MPI in predicting the outcome of patients with peritonitis in 108 patients. A comparison of MPI and mortality showed patients with a MPI score of 26 or less to have mortality of 3.8%, where as those with a score exceeding 26 had mortality of 41.0% [19]

.In a study conducted by Qureshi AM et al., score of < 21 had mortality of 1.9%, score of 21-29 had 21.9% and score > 30 had mortality of 28.1%. Mortality rate for MPI score more than 26 was 28.1% while for scores less than 26 it was 4.3% [20]

.Malik AA et al., did prospective study using 101 consecutive patients having generalized peritonitis over a two year period. In the MPI system, mortality was 0 in the group of patients with a score of less than 15, while it was 4% in the patients scoring 16-25 and 82.3% in those with scores of more than 25 [21].

V. CONCLUSION

MPI is disease specific, easy scoring system for predicting the mortality in patients with secondary peritonitis. Increasing scores are associated with poorer prognosis, needs intensive management and hence it should be used routinely in clinical practice.

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