



MPI score assessment of perforation peritonitis patients

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ABSTRACT

The most widespread clinical emergency in India is perforation peritonitis. Following improvements in operational procedures, antimicrobial treatments, and care in ICUs, peritonitis control is often very complicated, complicated, and challenging. MPI provides the highest precision of risk-assessment such that specific predictions for patients with peritonitis could be estimated. The objective of this research is to determine the prognosis for perforated peritonitis patients using the peritonitis index from Mannheim. It is also targeted at a) assessing the results in Mannheim peritonitis test perforation cases b) evaluating elevated incidents of perforated peritonitis on the Peritonitis Scale with Mannheim. C) Determining the function of the Mannheim Peritonitis Index in decision-making on peritonitis surgery. This research measured the diagnosis of perforated peritonitis patients utilizing peritonitis score of Mannheim's Index. In the present study, we observed that the majority of the study subjects were males (65.38%), and many of the cases ranged from the age group of 46-55 years (25%), as well as 36-45 years (23.07%). The majority of the cases had duodenal perforation (42.30%), followed by gastric perforation (28.84%), appendicular perforation (13.46%), filial perforation (9.61%), jejunal (3.8%), colonic perforation (1.9%). We observed that the majority of the study subjects reported the MPI score between 21-29 (46.15%), followed by (38.46%) cases who reported MPI score of more than 29, and 15.38% who reported MPI score less than 21.



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related but can be used to describe specific health conditions. Peritonitis is an inflammatory peritoneum infection triggered by irritants such as microbes, fungus, influenza, talc, medication, benign growths, or foreign bodies (Ordoñez and Puyana, 2006; Bali *et al.*, 2014). It is an inflammatory phase. The local pathologies that arise from septicemia are intra-abdominal inflammation. Intra-abdominal sepsis requires a serious pathological presentation of peritoneal inflammatory infection (Farthmann and Schöffel, 1998).

INTRODUCTION

The perforation in void organs or viscus is characterized as an irregular opening. It derives from the Latin perforatum, which refers to "boring through" (Jain *et al.*, 2017). Peritonitis, intra-abdominal infections, and abdominal sepsis aren't

Nevertheless, this concentrated infection also becomes a life-threatening illness soon. Despite significant progress in antibiotic treatment and preventive care, there is still a high death rate in perforation peritonitis. No substantial distinctions among intra-abdominal infections and peritonitis are observed in therapeutic practice (Jhobta *et al.*, 2006). The inflammation, including peritonitis

of the intra-abdomen, are not associated, though. While "peritonitis" implies swelling of the abdominal cavity, irrespective of etiology, "intraabdominal infections" include all types of intraabdominal, bacterial, and intra-abdominal sepsis (e.g., primary, secondary, or tertiary). Main microbial peritonitis leads to bacterial sporadic cavity invasion (Ghosh *et al.*, 2016). It develops in early infants, ulcerated patients, including immunosuppressed targets mostly. Secondary pathogenic peritonitis defines secondary peritoneal ulcers with intra-abdominal metastases like bowel necrosis or non-bacterial peritonitis and hollow viscus inflammations Figure 1.

The most frequent surgical emergency in India is output peritonitis. The treatment of peritonitis appears to be difficult, frustrating, and complicated (Chichom-Mefire *et al.*, 2016) following advancements in surgical procedures, antimicrobial therapy, and intensive medical assistance. Secondary peritonitis is a significant source of the acute abdomen that involves immediate laparoscopic procedure. This is also referred to as peritonitis. This is still a highly dangerous disease, following considerable improvements in medical treatment. Peritonitis is reported in different forms across a broad set of etiologies (Gupta, 2013; Chichom-Mefire *et al.*, 2016).

Pathogenesis may be categorized as primary, secondary, or tertiary peritonitis in the clinical continuum of peritonitis. Alternatively, the origin of abscesses distinguished by separation from the infectious cycle from the remainder of the abdominal cavity is a more concentrated syndrome in peritonitis (Garg, 2013).

Research Objectives

The purpose of this work is to determine the prognosis for perforated peritonitis patients using the peritonitis index from Mannheim. It is also targeted at:

1. Assess the results in Mannheim peritonitis test perforation cases.
2. Evaluation of elevated incidents with perforated peritonitis with the Peritonitis Scale with Mannheim.
3. Determine the function of the Mannheim Peritonitis Index in decision-making on peritonitis surgery.

Literature Review

A thorough review of the literature was done by using the appropriate MeSH (Medical Subject Headings) terms and operators. Some of the MeSH terms

that were used are Gastrointestinal system, Gastrointestinal, Perforation Peritonitis, Epidemiology, Pathophysiology, Clinical features, Complications, Mannheim's peritonitis index, etc.

In developing economies, tiny bowel exercises are more unusual causes of peritonitis than in less advanced areas. Unreported intestinal ischemia induces several minor gastrointestinal indentations. Surgical excision of the infected bowel portion is normally used in the procedure. Small bowel perforations are typically correlated with pathogenic or gastrointestinal infections in developing countries (Thorsen *et al.*, 2013). Retroactive studies have well recorded the laparoscopic control of bowel penetration; however, research that systemically compares this technique against laparoscopic Surgery, particularly in the case involving intestinal infections, is required (Chung and Shelat, 2017).

Rajendra Singh Jhobta *et al.* (Kumar *et al.*, 2017), in their study, observed 84% of males as the majority for Perforation Peritonitis. Similarly, Ranjan *et al.* (2015) found 52% males and 48% females. Moreover, Rodolfo L *et al.*, in their investigation seen that appendicular perforations were 48.28% while among 2.87% cases, gastric pathology and small bowel pathology were available and colonic pathology was found among 2.30%.

MATERIALS AND METHODS

Study design

Prospective Observational (Systematic) analysis

Study duration

18 months (November 2016 to June 2018)

Sampling technique

Universal sampling

Source of data and sample size

All the perforative peritonitis cases, i.e., hollow viscus perforation admitted in Krishna hospital during the study period, were enrolled in the present study. We found 52 cases fulfilling the inclusion criteria. The cases were evaluated, clinical history was recorded, necessary investigations were carried out, and the results were noted down, examination findings were recorded.

The data was recorded using a specially designed case recording proforma from the patients and the informant (in case the patient is unconscious or disoriented) and by doing detailed clinical examination and relevant investigations.

Demographic data such as gender, age, aetiology of peritonitis, and hospitalization days were

Table 1: Selection of MPI parameters

Parameter	Favorable factors	Adverse factors	Scores	Patients Scores
Sex	-	Females	5	0
Age	<50yrs	>50yrs	5	0
Origin of sepsis	-	Noncolonic	4	0
Malignancy	-	Present	4	0
Evolution time	-	>24 hrs	4	0
Failure of Organ	-	Present	7	0
Extension of peritonitis	-	Generalized	6	0
Character of exudate	Clear	Purulent Fecal	6 12	0 0

Table 2: Categories of patients

Score	Risk status
<20	Low
20 to 30	Moderate
>30	High

Table 3: Gender-based population distribution

Gender	Number	Percentage
Female	18	34.61%
Male	34	65.38%
Total	52	100%

Table 4: Distribution of study population according to their age

Distribution of age	Number	Percentage
<15	1	1.92%
16-25	4	7.69%
26-35	10	19.23%
36-45	12	23.07%
46-55	13	25%
56-65	10	19.23%
>66	2	3.84%
Total	52	100%

Table 5: Site of perforation

Site of perforation	Number	Percentage
Duodenal	22	42.30%
Gastric	15	28.84%
Appendicular	7	13.46%
Ileal	5	9.61%
Jejunal	2	3.8%
Colonic	1	1.9%
Total	52	100%

Table 6: Distribution of the cases according to their pre-operative duration

Pre-operative duration	Number	Percentage
<24 hours	8	15.38%
>24 hours	44	84.61%
Total	52	100%

Table 7: Distribution of the cases according to origin of sepsis

Origin of sepsis	Number	Percentage
Colonic	1	1.92%
Non-colonic	51	98.07%
Total	52	100%

Table 8: Type of peritonitis

Type of peritonitis	Number	Percentage
Localised	8	15.38%
Diffused	44	84.61%
Total	52	100%

Table 9: Distribution of the cases according to their MPI score

MPI	Number	Percentage
<21	8	15.38%
21-29	24	46.15%
>29	20	38.46%
Total	52	100%

Table 10: Distribution of cases according to their outcomes

Outcome	Number	Percentage
Discharge	44	84.61%
Death	8	15.38%
Total	52	100%

Table 11: Comparison of results

Type of Peritonitis	Incidence
Present study	Diffuse: 84.61% Localised: 15.38%
(Jhobta <i>et al.</i> , 2006)	Diffuse: 83% Localised: 17%
(Ranjan <i>et al.</i> , 2015)	Diffuse: 34.49 % Localised: 65.5%

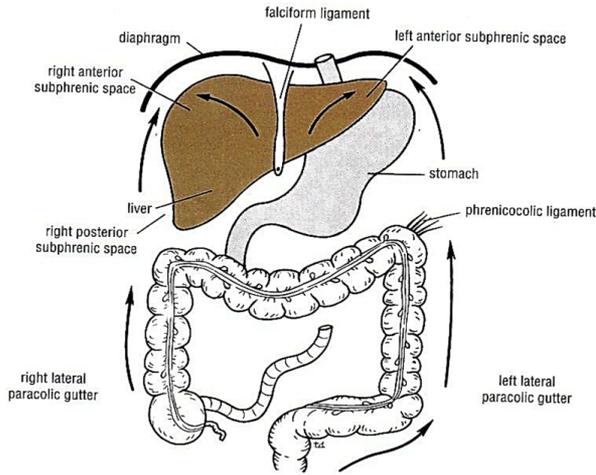


Figure 1: Movement of peritoneal fluid

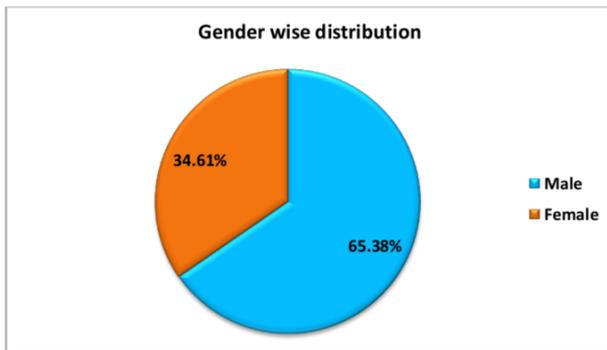


Figure 2: Gender-wise distribution of patients

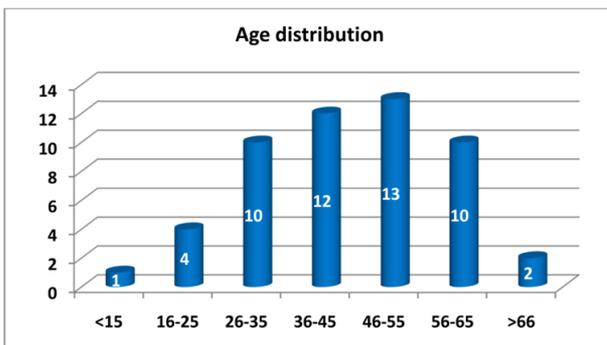


Figure 3: Age distribution

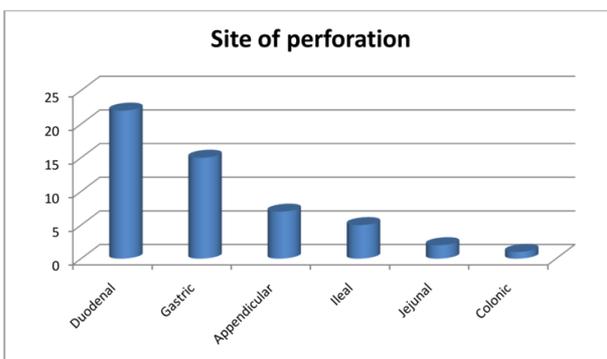


Figure 4: Site of perforation

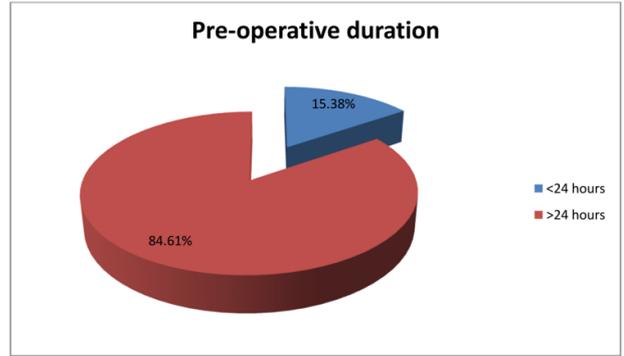


Figure 5: Distribution of the cases according to their pre-operative duration

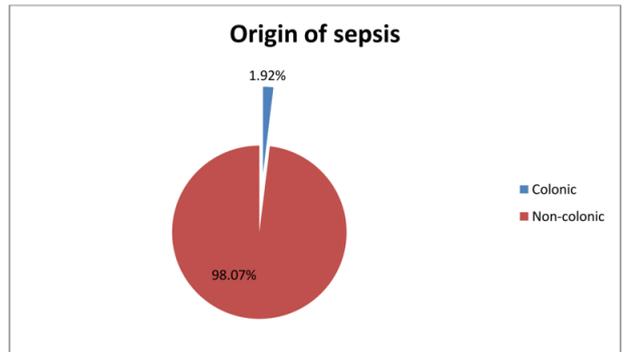


Figure 6: Distribution of the cases according to origin of sepsis

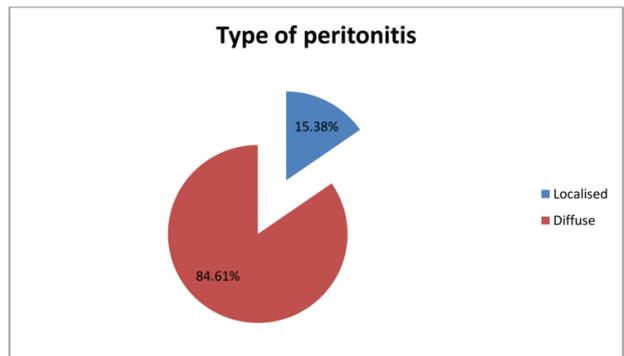


Figure 7: Type of peritonitis

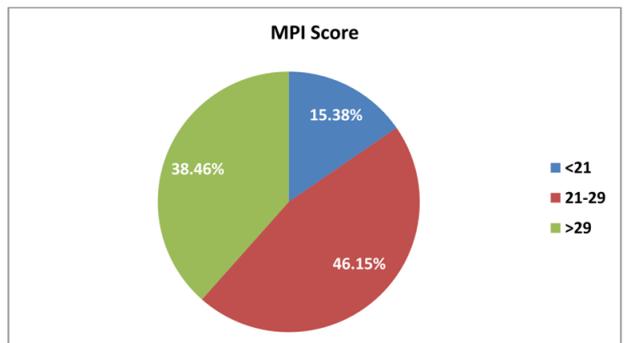


Figure 8: Distribution of the cases according to their MPI score

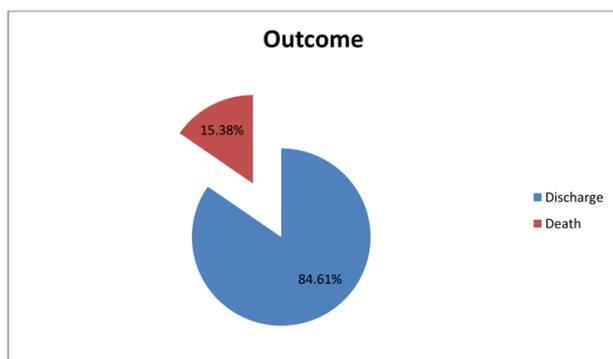


Figure 9: Distribution of cases according to their outcomes

also collected from cases. Investigations such as complete blood count, biochemical analysis of blood, microbiology for serology, X-ray of erect abdomen, CT scan (abdomen/pelvis) / ultrasonography (abdomen/pelvis) were carried out wherever necessary.

Mannheim Peritonitis Index

The following parameters were recorded meticulously for the calculation of the Mannheim Peritonitis Index Table 1 and Table 2

RESULTS AND DISCUSSION

The present study was conducted among 52 cases of peritonitis, admitted under the Department of General Surgery, KIMS, Karad, after the institutional ethical committee's approval. We collected information from the cases, their demographic profiles, clinical findings, investigation results, etc.

Demographic Features: Gender-Wise Distribution

Most of the study subjects were males (65.38%), followed by females (34.61%), as shown in Figure 2 and Table 3.

Age-based Distribution

It was observed that most of the cases belonged to the age group of 46-55 years (25%), followed by 36-45 years (23.07%) and 26-35 years (19.23%). It was observed that most of the study cases were less than 50 years of the age group (61.53%), as shown in Figure 3 and Table 4.

Distribution According to the Site of Perforation

Most of the cases presented with perforation peritonitis had duodenal perforation (42.30%), followed by gastric perforation (28.84%), appendicular perforation (13.46%), ileal perforation (9.61%), jejunal (3.8%), colonic perforation (1.9%), as shown in Figure 4 and Table 5.

Preoperative Duration

Most subjects in this study reported more than 24 hours of the preoperative duration (84.61%); only 15.38% of the cases reported less than 24 hours duration (preoperative), as shown in Figure 5 and Table 6.

Origin of Sepsis

Most of the study subjects reported the origin of sepsis as non-colonic (98.07%), followed by colonic (1.92%) in Figure 6 and Table 7.

Type of Peritonitis

Most of the individuals in this study suffered from a diffused type of peritonitis (84.61%), followed by a localized type of peritonitis (15.38%), as shown in Figure 7 and Table 8.

MPI Score

Maximum subjects had the MPI score between 21-29 (46.15%), followed by cases who reported MPI score, greater than 29 (38.46%), then were the cases where MPI score was less than 21 (15.38%) in Figure 8 and Table 9.

Outcomes

Most of the cases discharged (84.61%), while we reported eight deaths among our study cases. The distribution of cases is mentioned in Figure 9 and Table 10.

Comparison of results based on the type of peritonitis

In the present study, we saw that majority of them had a diffuse type of peritonitis (84.61%), followed by a localized type of peritonitis (15.38%), as shown in Table 11.

CONCLUSIONS

Mannheim Peritonitis index is a simple straight forward and reproducible scoring system that may enable the surgeon to effortlessly determine the severity of peritonitis. Thus, helping the surgeon to indicate individual risk to select patients who may require a more aggressive surgical approach. Additionally, inform the patient's relatives with greater objectivity of the condition of the patient. All the MPI parameters, including the extension of peritonitis, presence of organ failure, time of presentation, type of exudates, presence of malignancy, and age, were found to be associated with severity of peritonitis. In this study, Fecal exudate was associated with the colonic origin of sepsis, and it was associated with worse outcomes. The mean age of the cases presented with perforation peritonitis

was 43.88 ± 13.77 years. The commonest presentation of perforation peritonitis was duodenal perforation (28.84%), followed by appendicular perforation (15.38%), colonic perforation (13.46%), gastric (9.61%). The death rate in patients with MPI score < 21 was 0%, 21-29 was 12.5% and >29 was 25%.

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Conflict of Interest

I hereby declare that there is no conflict of interest related to this manuscript

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