

Effectiveness of Mannheim Peritonitis Index Scoring System in Predicting the Morbidity And Mortality in Peritonitis Due To Hollow Viscous Perforation

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Abstract: Peritonitis is an inflammatory response of peritoneum to different stimuli caused by bacteria. It can also be fungal or chemical. Secondary peritonitis is due to spillage of gastrointestinal or genitourinary organisms in to peritoneal cavity due to breach in the mucosal barrier. Contamination lead to cascade of infection sepsis and multi organ dysfunction and death if not appropriately intervened. In India gastro-duodenal perforation is the leading cause. Despite the understanding of pathophysiology, invention of broad spectrum antibiotics, surgical treatment, highly equipped surgical intensive care units mortality rate is quite high. Even though there are several scoring systems are in place, mannheim peritonitis index is more practical and less time consuming than others. Hence effort was made to analyse various factors in predicting the prognosis of perforative peritonitis using Mannheim peritonitis index.

Key words: Peritonitis, Perforation, Sepsis, Mannheim peritonitis index

Date of Submission: 05 -08-2017

Date of acceptance: 25-11-2017

I. Introduction

Peritonitis due to hollow viscous perforation is one of the most common surgical emergencies encountered by the surgeon. According to Bari et al 30% of mortality is due to high risk patients and 70% of them presented with multiorgan failure. Hence importance of scoring system for early diagnosis and adequate management to optimise the mortality rates was emphasized. Easily reproducible scoring system that predicts the high risk patients to inform the patient and their relatives about the aggressive treatment approach is mandatory in this era to avoid medico legal aspects. Hence the simple scoring system of Mannheim's was selected.

II. Aims And Objectives

1. Study about the prognostic factors and spectrum in perforative peritonitis.
2. Predict the outcome in patients with perforative peritonitis.
3. Identification of high risk patients and provide intensive post-operative care.

III. Materials And Methods

This study is based on the analysis of 100 patients presenting with perforative peritonitis in Coimbatore medical college hospital during the time period of September 2015 to August 2016. Patients selected based upon the inclusion and exclusion criteria. It is a prospective observational study. After initial resuscitation, detailed history, thorough clinical examination relevant investigation preoperative assessment done. All patients with features of non-traumatic perforation and later confirmed by laparotomy were included. Patients with traumatic perforation were excluded from the study. Mannheim's peritonitis index was calculated and entered in master chart. Statistical analysis done.

IV. Results

In our study female sex had good prognosis compared to male sex Non colonic sepsis has better prognosis than colonic because of fecal exudate which contaminates peritoneal cavity with excess organisms. A contingency table was constructed considering each risk factor statistical analysis done and p value calculated. The risk factors in descending order of significance are age>50 years> malignancy > feculent exudate >organ failure >evolution time >diffuse peritonitis.

Figures And Tables

Table No: 1 Age Spectrum Of Perforation Peritonitis

Age	Frequency	Percent
<50	64	64.0
50 And Above	36	36.0
Total	100	100.0

Table No: 2 Sex Distribution

Sex	Frequency	Percent
Female	8	8.0
Male	92	92.0
Total	100	100.0

Table No: 3 Site Of Perforation

Site	Present Study	Rajendra Singh Et. Al.	Roduez Et. Al.	Rodolfo Et. Al.
Duodenal	62%	57%	38%	37%
Ileal	12%	20%	19%	23%
Others	26%	33%	43%	40%

Table No: 4 Distribution Of Organ Failure

Organ Failure	Frequency	Percent
Absent	73	73.0
Present	27	27.0
Total	100	100.0

Table No: 5 Presence Of Malignancy

Malignancy	Frequency	Percent
Absent	91	91.0
Present	9	9.0
Total	100	100.0

Table No: 6 Origin Of Sepsis

Origin Of Sepsis	Frequency	Percent
Colonic	13	13.0
Non – Colonic	87	87.0
Total	100	100.0

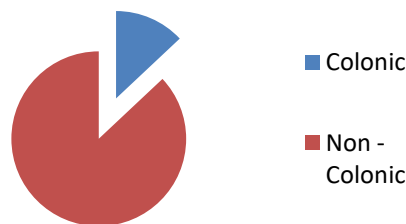


Figure 1
Nature Of Exudate

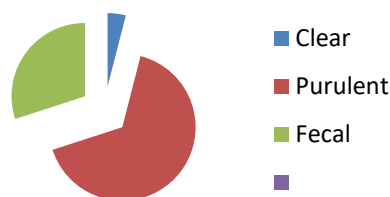


Figure 2

Preoperative Duration Of Peritonitis

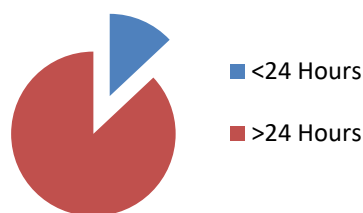
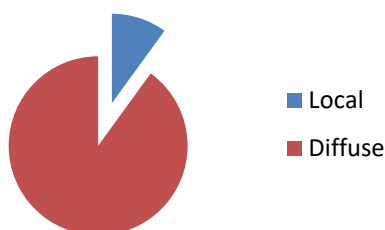


Figure 2

Extension Of Peritonitis



V. Discussion

Out of the hundred patients studied mean age of this study was 42.47 years. Maximum number of patients were in the age group of 16 to 30 years followed by 31- 45 years. Lowest age reported was 17 years and highest at 82 years. 64 percent of the patients were below 50 years and only 36 persons were above 50years. The prevalence of perforation in this young age group is due to gastro duodenal perforation caused by peptic ulcer disease. The main etiological factors attributed are smoking, alcoholism, and NSAID abuse.

Out of 100 persons only eight members were females. Males were 92% which can be attributed mainly due to high risk factors like smoking and alcohol. In India females are less affected compared to males. The high incidence of perforation in males is attributed mainly due to gastro duodenal perforation. Females had good prognosis compared to males.

In our study duodenal perforations account for 72%, ileal perforation accounts for 12 %, others account for 16% . Perforations of proximal gastrointestinal tract were approximately seven times common than distal gastrointestinal tract. Proximal gastrointestinal perforation is due to smoking, alcoholism, and NSAID abuse. Most common cause of ileal perforation is due to typhoid.

Small intestinal perforation were closed by primary closure alone or by live omental patch described by Grahams. In case of multiple perforations resection anastomosis done. In colonic malignancy resection with end colostomy construction and either exteriorisation as mucous fistula or closure of distal bowel done. Proximal diversion colostomy is not routinely recommended since it does not protect against continued faecal contamination from distal perforation. 2% underwent hemi colectomy. 1% patient underwent partial gastrectomy

In peritonitis bacteria induces systemic inflammatory response which results in multi organ failure .

In our study only nine out of 100 patients had malignancy. All were due to colonic malignancy.

Use of NSAID to chronic pain may be attributed to perforation. In most of the patients diagnosis of malignancy was made in intraoperative period.

In this study only 13 percent of the patients had colonic origin of sepsis and 87% were non colonic. Colonic perforation is associated with faecal exudates and severe form of peritonitis.

In this study, 44 % of the patients had MPI less than 21. 35 % of the patients had MPI between 21 to 29.

21 % of the patients had MPI greater than 29. Chi-square test was used to assess any significant association between scores and outcome. Of all the scoring systems available risk determination is easy by Mannheim's peritonitis index but valid data collection of the patients record is required.

Originally Wacha and Linder calculated lowest value as 26 but to increase the sensitivity and specificity the value was decreased to 21.

Out of hundred patient studied 14 patient died mortality rate was 14%. Mortality rates documented in various studies range from 10 to 30%. Organ failure delayed presentation and sepsis are

the important determinants of death. By improving the means of transportation and strengthening of referral services delayed presentation may be avoided.

In our study out of hundred patients 64 patients are less than 50 years. In less than 50 years mortality rate was 21.3% while in more than 50 years it was 68.7%, and more than 60 years it was 57.4%. Out of 100 persons only eight members were females and mortality rate was 12.5% compared to 87.5% in males. Statistically there is no correlation p value is 0.899

Hence female sex has good prognosis compared to males. In our study 27 patients showed evidence of organ failure and 13 patients were died which accounts approximately fifty percentage mortality and p value was < 0.001. In various studies mortality due to organ failure accounts for 50 to 70%. High rate of organ failure is mainly due to late presentation by the patient. This result indicate the importance of early detection of organ dysfunction to improve short and long term outcome in perforative peritonitis patients.

In our study out of 33 patients with presented in less than 24 hours no patient died is the outcome. Out of the remaining 67 patients 14 patient died mortality rate of 22% and p value < 0.001

In our study nine patients had malignancy. Out of the nine patients, seven patients died due to malignancy and mortality rate accounts for 77%. Peritonitis in oncologic patients presents high mortality rates, essentially related to the severity of the underlying disease. In our study non colonic origin of sepsis patient had less mortality (5.7%) compared to colonic origin of sepsis. According to our study colonic origin is associated with poor prognosis. In our study there were no death in patients with score less than 21. With score between 21 – 29 out 22 patient 1 patient died with mortality rate of 4.3%. With patients score more than 29 out of 30 patients 13 died with found mortality rate of 2-3%, 1.9% in score less than 21 respectively. 22.5%, 21.8% in score between 22-29. 65-4, 64.9% in score more than 29.

VI. Conclusion

Mannheim peritonitis index is an accurate and reliable index in predicting the mortality of patients with perforative peritonitis. And our study differ in one outcome variable that female sex are associated with better outcome compared to male sex. Non colonic had good prognosis than colonic.

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Dr. R. Radhika Effectiveness of Mannheim Peritonitis Index Scoring System in Predicting the Morbidity And Mortality in Peritonitis Due To Hollow Viscous Perforation." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.11 (2017): 61-64.