

## A Prospective Study to Find Predisposing Factors and Different Predictors among the Non Traumatic Peritonitis

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### Abstract

**Introduction:** Peritonitis is one of the most common surgical emergencies. The prognosis and outcome of peritonitis depend upon the interaction of several factors. With these a study was taken to find the clinical status of the individuals with peritonitis.

**Materials and Methods:** It was a prospective study, conducted in the department of General Surgery, Rangaraya Medical College. Individuals aged  $\geq 18$  years, with intestinal perforations were included, traumatic intestinal perforation, malignancy were excluded. Recruitment of the participant was carried based on clinical diagnosis. Complete haemogram, renal function test, arterial blood gas analysis was carried. Levels of amylase and lipase were also measured. Perforation was confirmed by finding gas under the diaphragm in the radiograph of chest and abdomen. Ultrasound of abdomen was carried to find other pathologies. Laparotomy was carried under general anaesthesia. Perforations were closed using modified Graham's technique.

**Results:** Total 74 members were included, 74.3% were male participants, maximum were in < 40 years group. Alcoholism and smoking were the major (22) risk factors. Only 33% (25) were presented within 24hrs of onset of symptoms. Totally, 26 participants presented to the hospital after 24hrs of onset of gross abdominal distension. Diabetes was the leading (10) cause of morbidity followed by hypertension (6). Majority of perforation were found in the stomach (20). Fourteen were presented with shock at the time of presentation, out of which 12 died.

**Conclusion:** This study helps us in assessing the mortality and morbidity among the patients presenting with peritonitis using the predictors described. This is very useful in stratification of severity of the disease.

**Keywords:** Peritonitis, Research, Study

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### Background

Peritonitis is one of the most common surgical emergencies in most of the surgical units across the world [1]. The many-faceted nature of infections of abdominal surgeries makes it tough to

define the pathology exactly and also helps to evaluate the severity and therapeutic progress [2]. Both the anatomical source of infection and the physiological aspect

compromise its function and affect the outcome.

High-risk patients require swift, timely and aggressive treatment especially in cases of severe peritonitis. Early prognostic evaluation is ideal so as to be able to select high-risk patients in order to provide much aggressive treatment, especially in severe peritonitis [3].

The prognosis and outcome of peritonitis depend upon the interaction of several factors, including patient related factors, disease specific factors, diagnostic and therapeutic interventions [4]. Dividing the patients into different risk groups will help assess the outcome, selecting the high risk patients for intensive care and determine operative risk, thus helping to choose the nature of the operation procedure, damage control or definitive procedure.

With these a study was taken to find the clinical status of the individuals with peritonitis.

### Materials and Methods

It was a prospective study, conducted in the department of General Surgery, Rangaraya Medical College, Kakinada. Study was conducted from June 2019 to May 2021. Study protocol was approved by the Institutional Ethics committee. An informed consent was taken from all the participants.

Individuals aged  $\geq 18$  years, with intestinal perforations were included in this research. Those with traumatic intestinal perforation, malignancy, non-cooperative individuals were not considered in this research. Recruitment of the study participant was carried as per the clinical diagnosis, confirmed by further investigations. Vitals were monitored in all. The study participants were catheterised to monitor urinary output.

Complete haemogram, renal function test, arterial blood gas analysis was carried. Levels of amylase and lipase were also measured. As part of the institutional

protocol, viral markers were carried. Perforation which was diagnosed clinically was confirmed by looking at free gas under the diaphragm in the radiograph of chest and abdomen, respectively in PA view and erects position. Ultrasound of abdomen was carried to find other pathologies, if any. All were subjected to laparotomy under general anaesthesia to find the actual cause of disease except those who could not make it to table and succumbed to sepsis within hours of presentation to causality. Perforations were closed using modified Graham's technique [5] in two layers by simple closure after trimming the edges and securing patency of lumen.

### Statistical analysis

Data were analysed using SPSS version 21.0. Data were presented in percentage.

### Results

Total 74 (100%) members were included in this research, 74.3% (55) were male participants. The age was ranged between 18 to 80 years, maximum were in < 40 years age group. Alcoholism and smoking were found to be the major (22) risk factors. Only 33% (25) were presented within 24hrs of onset of symptoms. Totally, 26 (35.14%) participants presented to the hospital after 24hrs of onset of gross abdominal distension.

Diabetes was the leading (10) cause of morbidity followed by hypertension (6), typhoid (6). Majority of perforation were found in the stomach (20) followed appendix (18). Gastro duodenal ulcer (20) was found to be the leading cause of perforations. Purulent peritoneal exudate was seen in 40 cases and cloudy exudate in 24 cases. Fourteen were presented with shock at the time of presentation, out of which 12 died.

### Discussion

Gender wise, males were more prone for peritonitis compared to females; it was 55 (74%) and 19 (26), respectively. Similar

findings were reported by Balamaddiah G *et al* [6]. Sashikumar HB *et al* [7]. Male female ratio was reported to be 3.4:1, 4.2:1, respectively. Whereas the male female ration in this research was 2.9. Reasons for this were not clear. This could be due to improper food habits among the males, because most of these were infected cases.

Age wise, there was highest (41; 55%) incidence of peritoneal infection was found in 21 – 40 years age group. It was 22% (16) in 41 – 60 years and 23% (17) in 61 – 80 years group. As per the Gupta SK *et al* [8] report, the incidence of peritonitis was 32%, 44% and 24%, respectively in 21 – 40, 41 – 60 and 61 – 80 years group. As per these reports, young age group is more prone for peritonitis. Even for this also the reasons were not reported in the literature. This could be due to good and healthy habits usually followed by the adults.

As per this study findings, 56% (41) were presented to the hospital within 48 hrs of onset of symptoms, 28 (37%) presented within 1 week of onset of symptoms and 5 (7%) presented after one week of onset of symptoms. Delay in presentation causes deterioration as well as increased morbidity and mortality. This is evidence by the number of deaths seen in late presentation cases. As per Chandan *et al* [9] research, 32% patients presented to the hospital within 24 hrs of onset of symptoms, 40% within a week and 28% after 1 week.

Alcoholism and smoking were found to be the major (22) risk factors in this research. As per the literature, alcohol consumption and smoking associated with increased risk for peptic ulcer perforation [10] Alcohol causes gastric mucosal damage stimulates acid secretion and increases serum gastrin levels whereas smoking inhibits pancreatic bicarbonate secretion, resulting in increased acidity in the duodenal bulb. This causes delay in the healing process of duodenal ulcers. Duration of perforations

at the time of presentation had major impact on mortality as reported by Chandan *et al* [9] Moreover, this study findings are in complete agreement with the literature [11]. The rate of perforations is more those without any peptic ulcer history; this may be because preventative measures adopted by those with known history of ulcer.

The most common co existing illness in this study group is diabetes followed by hypertension, cardiac pathology, typhoid and immunosuppression [12]. Due to diabetes there is impairment of normal functions of the organs which causes deterioration of organs as well as death. Similar findings were reported in this research also. Among the peptic ulcer perforation, in this study, gastric was the common (27%; 20) area followed by appendix (24.3%; 18), ileum (16.2%; 12), duodenal (10.8%; 8), colon (8.1%; 6) and jejunum (2.7%; 2). In a study by Chandan GB *et al*. [8] duodenum (54%) was reported to be the common site followed by ileum (26%), appendix (4%), and colon (4%). The reasons for the change were not reported in the literature. Fourteen cases presented with shock at the time of presentation in this study, out of which 12 were died and 2 developed sepsis in the postoperative period. This is, in contrast, to study by Balamaddiah *et al*.<sup>5</sup> In contrast to the available data, highest (16%) mortality was reported in this research whereas the reported mortality in the literature was 12% by Sharma L *et al* [13] 8% each respectively by Thirumalagiri VR *et al* [14]. Hota PK *et al* [15].

### Conclusion

This study helps us in assessing the mortality and morbidity among the patients presenting with peritonitis using the predictors described. This is very useful in stratification of severity of the disease and prediction of mortality in patients and should be included in management of all the patients.

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