

A Prospective Study of the Demographic Pattern and Site of Perforation of Non-traumatic Hollow Viscus Perforation Peritonitis in Vindhya Region

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Abstract

Background: Perforation peritonitis is a commonly encountered surgical emergency and it is defined as inflammation of the serosal membrane that lines the abdominal cavity and the visceral organs. The aim of this study is to analyze the demographic pattern and site of perforation of non-traumatic hollow viscus perforation peritonitis in Vindhya region.

Materials and Methods: A total of 209 cases were studied with hollow viscus perforation peritonitis admitted in the surgical wards in Sanjay Gandhi Memorial Hospital associated with Shyam Shah Medical College, Rewa (MP), India, in the period from June 1, 2018, to May 31, 2019. All necessary investigations were carried out. X-ray, Ultrasonography abdomen, and blood investigations were done. The patient underwent emergency exploratory laparotomy and a careful record of pre-operative and post-operative findings was made and was carefully filled in the pro forma. All the patients were advised to attend the surgical outpatient department for follow-up.

Results: Of 10,887 patients admitted to Sanjay Gandhi Memorial Hospital associated with Shyam Shah Medical College, Rewa (MP), India, from June 1, 2018, to May 31, 2019, in which non-traumatic hollow viscus perforation peritonitis was diagnosed in 209 patients (1.9%), among which most of the patients were male (177) and rest were female (32). Most of the patients belonged to the low-socio-economic status of 21–40 years of the age group. From this study, the duodenum was found to be the most common site of perforation, followed by stomach.

Conclusion: Patients were admitted in the Department of Surgery, Shyam Shah Medical College and Sanjay Gandhi Hospital Rewa, the Vindhya region in the Madhya Pradesh, patients diagnosed as a case of non-traumatic hollow viscus perforation peritonitis were included in the study. The majority of the patients of the perforation peritonitis belonged to 21–40 years of age group. 41–60 years of age group was the second most common age group of patients who presented with perforation peritonitis with a male-to-female ratio of 5.5:1. The most common site of perforation was duodenum followed by gastric and appendicular and the least common site of perforation was colon.

Key words: Demographic pattern, Non-traumatic hollow viscus perforation, Perforation site

INTRODUCTION

Gastrointestinal perforation is a common abdominal emergency faced by general surgeon. A high index of suspicion is essential to diagnose visceral perforation

early, as significant morbidity and mortality results from the diagnostic delay.^[1] Several studies have shown that morbidity and mortality of perforation peritonitis can effectively be reduced by early diagnosis and timely intervention. Peritonitis is defined as an inflammation of the serosal membrane that lines the abdominal cavity and the organs contained therein. The peritoneum, which is an otherwise sterile environment, reacts to various pathologic stimuli with a fairly uniform inflammatory response. Depending on the underlying pathology, the resultant peritonitis may be infectious or sterile. Intra-abdominal sepsis is an inflammation of the peritoneum caused by pathogenic microorganisms and their products. Intra-

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abdominal sepsis from a perforated viscus (i.e., secondary peritonitis or suppurative peritonitis) results from direct spillage of luminal contents into the peritoneum (e.g., perforated peptic ulcer, diverticulitis, appendicitis, and traumatic perforation). With the spillage of the contents, Gram-negative and anaerobic bacteria, including common gut flora, such as *Escherichia coli* and *Klebsiella pneumoniae*, enter the peritoneal cavity. Endotoxins produced by Gram-negative bacteria lead to the release of cytokines that induce cellular and humoral cascades, resulting in cellular damage, septic shock, and multiple organ dysfunction syndromes.

Aim and Objectives

A prospective study to know the demographic pattern and site of perforation of non-traumatic hollow viscus perforation peritonitis in Vindhya region.

MATERIALS AND METHODS

The proposed study entitled “a clinical study on post-operative outcome in perforation peritonitis patients with reference to a history of nonsteroidal anti-inflammatory drugs (NSAIDs) use” was carried out on 209 patients admitted in surgical wards in the Department of Surgery, Shyam Shah Medical College and Associated Sanjay Gandhi Memorial Hospital, Rewa, from June 1, 2018, to May 31, 2019.

Inclusion Criteria

All cases of perforation peritonitis admitted in the Surgery Department of Shyam Shah Medical College and Associated Sanjay Gandhi Memorial Hospital, Rewa, and have consented for participation in the study.

Exclusion Criteria

The following criteria were excluded from the study:

1. Patients left hospital during the course of treatment
2. Patients operated outside the institution
3. Patients with traumatic perforation peritonitis
4. Patients under 13 years of age due to different physiological status
5. Post-operative peritonitis
6. All pregnant females.

Sample Size

The sample size was 209 non-traumatic perforation peritonitis patients.

Methodology

All patients who were admitted in the surgical ward of Sanjay Gandhi Memorial Hospital, Rewa, for treatment of abdominal pain due to perforation peritonitis from June 1, 2018, to May 31, 2019. Brief history was recorded such as duration of abdominal pain, nature of pain, relieved by medication or by change in any posture, whether associated

with fever or not, associated with any comorbid conditions, any drug abuse, use of alcohol or tobacco, and corticosteroids or immunosuppressants for long time, and a detailed history regarding the use of NSAIDs was recorded. After confirming the diagnosis of perforation peritonitis, patients were resuscitated and underwent exploratory laparotomy and the results were concluded. Clinical examination included the complete general examination of the patient along with per abdomen examination. The general examination was usually performed in the supine position in adequate light and with proper exposure of the patient. Per abdomen, examination was done in the supine position with knee flexed in adequate light and proper exposure of the patient. Most of the patients of perforation peritonitis had abdominal pain which was constant and severe. On general examination, most of the patients were having tachycardia, hypotension, tachypnea, inability to pass flatus, and feces. On per abdomen examination, most of the patients had distended abdomen with diffuse tenderness along with diffuse guarding and board-like rigidity. On percussion, the obliteration of liver dullness was found in most of the patients. On auscultation of the abdomen, bowel sounds were often found sluggish or absent. Tenderness was present per rectal examination. The presence of free gas under the diaphragm in X-ray abdomen in standing position was mainstay for the diagnosis of perforation peritonitis. For the diagnosis of perforation peritonitis, X-ray abdomen has a sensitivity of 84.62% and specificity of 97.30%. Abdominal ultrasonography (USG) although is not a primary modality for evaluating pneumoperitoneum, free gas can be detected on ultrasound when gas shadowing is present along the peritoneum. USG has a sensitivity of 76.92% and specificity of 97.30% for the diagnosis of perforation peritonitis. Computed tomography became an important tool in the detection and characterization of acute abdominal involvement in perforation peritonitis. Computed tomography imaging is often the initial modality in the acute abdomen in a significant proportion of patients, and radiologists should have a high level of suspicion in the detection and interpretation of peritoneal abnormalities. Contrast-enhanced computed tomography has 100% of specificity and sensitivity for the diagnosis of perforation peritonitis. Laboratory investigations were carried out as per clinical relevance, including complete blood count, random blood sugar, serum electrolytes, renal function tests, liver function tests, blood grouping and typing, and Widal test. Thus, we observe the per abdomen clinical findings and presence of free gas under the diaphragm in X-ray abdomen in standing position and the results were calculated and tabulated, accordingly.

OBSERVATIONS AND RESULTS

It is evident from Table 1 that there were 10,887 patients admitted in the surgical wards of Sanjay Gandhi Hospital,

Rewa, from June 1, 2018, to May 31, 2019, in which non-traumatic hollow viscus perforation peritonitis was diagnosed in 209 patients (1.9%).

It is evident from Table 2 that the majority of the patients (45.9%) of the perforation peritonitis belonged to 21–40 years of age group. A total of 30.6% of patients belonged to 41–60 years of age group which was the second most common age group of patients who presented with perforation peritonitis [Table 2 and Graph 1]. The minimum age of the patients was 14 years,

Table 1: Incidence of non-traumatic hollow viscus perforation peritonitis

S. No.	Total admissions in surgical ward	Number of non-traumatic hollow viscus perforation (n)	In %
1.	10,887	209	1.9

Table 2: Age-wise incidence of the patients

S. No.	Age (in years)	Total (n)	Males		Females	
			n	In %	n	In %
1.	14–20	30	27	90	3	10
2.	21–40	96	81	84.3	15	15.7
3.	41–60	64	52	81.2	12	18.8
4.	61–80	15	13	86.7	2	13.3
5.	>80	4	4	100	0	0
Total		209	177	84.6	32	15.4

Table 3: Sex-wise incidence of the patients

S. No.	Sex	Number of cases
1.	Males	177
2.	Females	32
Total		209

Table 4: Socio-economic status of patients of perforation peritonitis

Socioeconomic status	Low		Middle	
	Number of cases	In %	Number of cases	In %
Socioeconomic status	185	88.5	24	11.5
Total		209		

Table 5: Site of perforation

S. No.	Site of perforation	Number of cases
1.	Duodenum	76
2.	Gastric	48
3.	Ileum	41
4.	Appendix	32
5.	colon	12
Total		209

the maximum was 90 years, and the mean age noted was 37.5 years.

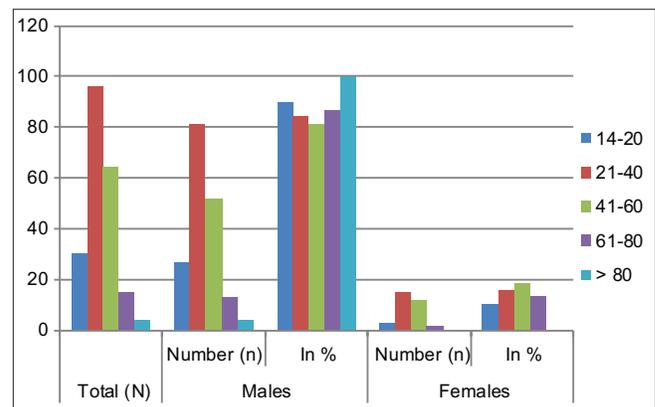
It is evident from Table 3 that the majority of the patients of perforation peritonitis were male (84.6%) with a male-to-female ratio of 5.5:1 [Table 3 and Graph 2].

It is evident from Table 4 that most of the patients of perforation peritonitis (88.5) belong to low-socio-economic status [Table 4 and Graph 3].

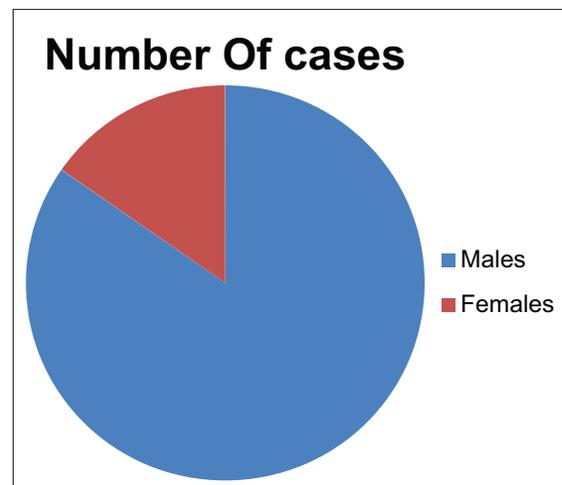
It is evident from Table 5 that most common site of perforation was duodenal (36.3%) followed by gastric (22.9%) and appendicular (15.3%) and the least common site of perforation was colon (5.7%) [Table 5 and Graph 4].

DISCUSSION

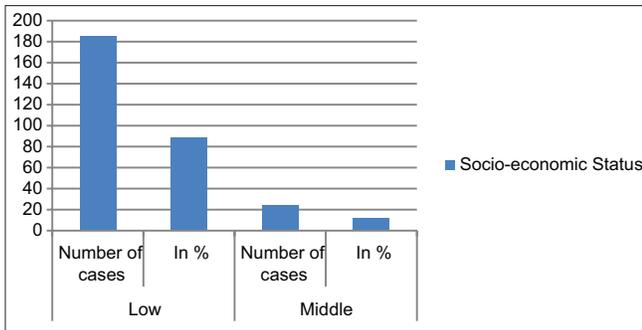
Non-traumatic hollow viscus perforation peritonitis is the source of major suffering and very huge cost for both the patient and the health-care system. Perforation peritonitis needs intensive care as it can be complicated by septic shock,



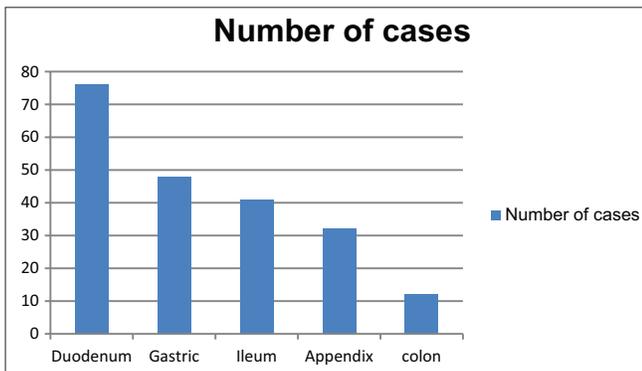
Graph 1: Age-wise incidence of the patients



Graph 2: Sex-wise incidence of the patients



Graph 3: Socio-economic status of patients of perforation peritonitis



Graph 4: Site of perforation

hypovolemic shock, and comorbidities. As reviewed in the literature, the non-traumatic perforation peritonitis cases are a major cause of morbidity and burden on health-care system.

In this study, the most common age group affected was 21–40 years and 45.9% of patients who were affected, belonged to this group. A significant number of patients (30.6%) were in the age group of 41–60 years. The mean age was 37.5 years. This is due to the fact that most of the persons who are addicted to alcohol and tobacco belong to 21–60 years of age. A similar study conducted by Chowdri *et al.* in 2006^[2] on perforation peritonitis and concluded that most common age group affected was 30–40 years, while in another study conducted by Rao *et al.* in 2015^[3] found 21–35 years as the most common affected age group. Perforation peritonitis was found in 84.6% in males and 15.4% in females. The male-to-female ratio of the study was observed to be (5.5:1), this result is comparable to the study conducted by Mewara *et al.* in 2017,^[4] in which 89% of patients were male, while rest was female. In most of the studies, it was seen that in most of the patients of perforation peritonitis, the duodenum was the most common site of perforation, followed by stomach and then ileum. Similar results were obtained by Abdulhameed *et al.*,

in 2017,^[5] in which duodenum was found to be the most common site of perforation, followed by the stomach.

CONCLUSION

A total of 10,887 patients were admitted in the Department of Surgery, Shyam Shah Medical College and Sanjay Gandhi Hospital Rewa, the Vindhya region in the Madhya Pradesh, in which 209 (1.9%) were diagnosed as a case of non-traumatic hollow viscus perforation peritonitis. The educational status of this territory is below average, and the peoples are very unaware of their health. Most of the people do hard work for their wages and for their tiredness, they are abusing the painkillers with their empty stomach. The majority of the patients (45.9%) of the perforation peritonitis belonged to 21–40 years of age group. A total of 30.6% of patients belonged to 41–60 years of age group which was the second most common age group of patients who presented with perforation peritonitis with a male-to-female ratio of 5.5:1. The most common site of perforation was duodenum (36.3%) followed by gastric (22.9%) and appendicular (15.3%) and the least common site of perforation was colon (5.7%).

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ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee.

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