

EPIDEMIOLOGICAL TRENDS AND CLINICAL CHARACTERISTICS OF PERFORATION PERITONITIS IN KERALA: A REVIEW OF 186 CASES

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Abstract

Background: Perforation peritonitis is prevalent among surgical emergencies in India, requiring prompt surgical intervention. This study aimed to explore the spectrum of perforation peritonitis in patients requiring emergency surgery in North Kerala. **Materials and Methods:** A retrospective study was conducted among 186 patients reported to have perforation peritonitis treated in the Department of General Surgery from 1st June, 2020, to 31st July, 2021. Mortality was predicted using the Mannheim Peritonitis Index (MPI) scoring system. The primary outcome considered was the thirty-day mortality. **Result:** The mean age of the study population was 43 years (SD-16.28), with the majority being males (82.8). The 30-day mortality rate was 12.4%. Among various parameters, the presence of comorbidities, time of presentation after the onset of symptoms, and MPI score demonstrated a statistically significant association with mortality. **Conclusion:** The spectrum of perforation peritonitis in India differs from the West, with variations in age and perforation site. Prompt surgical intervention is crucial for favorable outcomes, minimizing morbidity and mortality.

INTRODUCTION

Perforation peritonitis constitutes one of the most common surgical emergencies in India.^[1,2] Multiple studies have highlighted a varied etiological pattern of perforation peritonitis in India in comparison to the rest of the world.^[3,4] The diagnosis of perforation peritonitis is typically established through an assessment of the patient's symptoms and physical examination. X-ray, Ultrasound or Contrast enhanced CT scan may be used to confirm the diagnosis and identify the location of the perforation. Several severity scoring systems have been developed, but most of them are laborious to measure and necessitate the latest diagnostic investigations that are not readily available in resource-poor countries.^[5] Kerala lacks sufficient data on the etiology, prognostic indicators, and morbidity and mortality patterns of perforation peritonitis. This study was conducted to investigate the spectrum of perforation peritonitis in patients necessitating emergency surgery in North Kerala.

MATERIALS AND METHODS

A retrospective study was conducted among 186 patients reported to have perforation peritonitis from

1st June 2020, to 31st July 2021, and treated in the Department of General Surgery, Govt. Medical College, Kozhikode, included in the study. The study was approved by the Institutional Ethical Committee (IEC) Govt. Medical College, Kozhikode. A written informed consent was obtained from all the patients included in the study. A detailed history and thorough physical examination were performed. Cases were examined with respect to their clinical features during presentation, comorbid conditions, radiological investigations, operative findings, and postoperative progress. Upon confirming the clinical diagnosis of perforation peritonitis, and after completing appropriate resuscitation, exploratory laparotomy was performed for all patients. During the exploratory laparotomy, operative findings were documented, and the source of peritonitis was identified and addressed accordingly. After receiving definitive treatment, patients were monitored, with the primary outcome being the thirty-day mortality. Mortality was predicted based on the Mannheim Peritonitis Index (MPI) scoring system.^[6] Data were entered into MS Excel and analyzed with SPSS (IBM SPSS Statistics for Windows, version 21.0. IBM Corporation, Armonk, NY, USA, 2012).

RESULTS

The mean age of the study population was 43 years (SD-16.28), with the majority being males (82.8). Thirty-eight percent were in the age group of 31-50 years, and 31.18% of the patients had at least one comorbidity. Postoperative complications occurred in 44.7% of cases. The baseline characteristics of the study population are presented in [Table 1]. Among the various causes of perforation peritonitis, only 43.5% exhibited a positive finding of air under the diaphragm. The stomach (33.8%) emerged as the most common site of perforation, followed by the appendix (30.6%).

Duodenal perforation accounted for 5.8%, while colonic perforation constituted 8.9%. The most common postoperative complication was surgical site infection. 87.5% of the patients had an MPI score in the range of 31-40. The 30-day mortality rate was 12.4%. Among various parameters, the presence of comorbidities, time of presentation after the onset of symptoms, and MPI score demonstrated a statistically significant association with mortality. The distribution of patients based on clinical outcomes is depicted in [Table 2]. Out of the 186 patients, 9.1% (17) arrived at the emergency department more than 48 hours after the onset of symptoms, and among them, 58.8% (10) expired.

Table 1: The baseline characteristics of the study population

	N	%
Sex		
Male	154	82.8
Female	32	17.2
Age		
<20	19	10.2
21-30	26	14
31-40	36	19.4
41-50	36	19.4
51-60	44	23.7
61-70	18	9.7
71-80	7	3.8
Pneumoperitoneum in Chest X-ray		
Yes	81	43.5
No	105	56.5
Diagnostic investigations		
X-Ray	81	43.5
USG	49	26.3
CECT	56	30.1
Site of Perforation		
Stomach	64	33.8
Duodenum	11	5.8
Jejunum	13	6.8
Ileum	18	9.52
Appendix	58	30.6
Caecum	4	2.2
Colon	17	8.9
Rectum	4	2.1
Co-morbidities		
Yes	58	31.18
No	128	68.82
Time of presentation after onset of symptoms		
<24 hours	79	42.5
24-48 hours	90	48.4
>48 hours	17	9.1
Symptoms at presentation		
Abdominal pain	186	100
Vomiting	80	43
Fever	70	37.6
Constipation	12	6.5
History of trauma		
Yes	18	9.7
No	168	90.3
Malignancy		
Yes	18	9.7
No	168	90.3
Post-op complications		
None	103	55.3
Respiratory	41	22
Sepsis	24	12.9
Surgical site infection	71	38.1
Burst abdomen	7	3.7
DVT	5	2.6
Outcome		

Mortality	23	12.4
Survival	163	87.6

Table 2: The distribution of patients based on clinical outcome

	N	Non Survivors	Survivors	p-value
Sex				0.08
Male	154	22(14.3)	132(85.7)	
Female	32	1(3.1)	31(96.9)	
Age				0.21
<20	19	1(5.3)	18(94.7)	
21-30	26	3(11.5)	23(88.5)	
31-40	36	2(5.6)	34(94.4)	
41-50	36	3(8.3)	33(91.7)	
51-60	44	8(18.2)	36(81.8)	
61-70	18	5(27.8)	13(72.2)	
71-80	7	1(14.3)	6(85.7)	
Site of Perforation				0.86
Stomach	64	7(10.9)	57(89.1)	
Duodenum	11	2(18.1)	9(81.9)	
Jejunum	13	2(16.7)	11(83.3)	
Ileum	16	4(29.4)	12(70.6)	
Appendix	58	0	58	
Caecum	4	0	4	
Colon	16	5(31.3)	11(68.7)	
Rectum	4	2(50)	2(50)	
Co-morbidities				<0.001
Yes	58	15(25.9)	43(74.1)	
No	128	8(6.3)	120(93.8)	
Time of presentation after onset of symptoms				<0.01
<24 hours	79	5(6.3)	74(93.7)	
24-48 hours	90	8(8.9)	82(91.1)	
>48 hours	17	10(58.8)	7(41.2)	
Mannheim Prognostic Index				<0.001
0-10	31	3(9.7)	28(90.3)	
11-20	82	3(3.6)	79(96.3)	
21-30	65	10(15.4)	55(84.6)	
31-40	8	7(87.5)	1(12.5)	

DISCUSSION

Perforation peritonitis is a commonly encountered surgical emergency in India, and Kerala is no exception. It is frequently observed in a younger age group when compared to studies conducted in the West.^[1,3] Various postoperative complications observed included surgical site infections, respiratory complications, sepsis, and burst abdomen.^[4-7]

Perforations in the proximal gastrointestinal tract were noted to be more common than those in the distal gastrointestinal tract, as evidenced by previous studies conducted in India.^[2,3] This observation contrasts with research conducted in developed countries.^[7-10] In this study, the stomach (34%) was identified as the predominant site of perforation, closely followed by the appendix. Colorectal perforation accounted for 10.5%. Geographical variations are reported not only in terms of the site but also in etiological factors. Infections were identified as the most common cause in India. The most common infections include typhoid, tuberculosis, and amoebiasis. Other causes of perforation include malignancy, trauma, and appendicular perforation.^[11] In this study, the incidence of appendicular perforation is consistent with findings in other studies conducted in India.^[12]

The overall mortality attributed to perforation peritonitis falls within the range of 10 to 27%.^[13-14] The study documented a 30-day mortality rate of 12.4%. This was likely due to the lower mean age of patients in this study. Septicemia is a significant contributor to mortality, underscoring the importance of adequate preoperative resuscitation followed by early surgical intervention for favorable outcomes.

Among the 186 patients, 9.1% presented to the emergency department more than 48 hours after the onset of symptoms, and within this group, 58.8% (10) expired. Emphasizing the significance of seeking prompt medical attention is crucial, as early diagnosis and treatment can enhance the likelihood of a favorable outcome.

CONCLUSION

The spectrum of perforation peritonitis in India remains distinct from its Western counterpart. It varies with regard to a younger age group and the site of perforation. Prompt surgical intervention is crucial for favorable outcomes, minimizing both morbidity and mortality. Routine use of MPI scores in clinical practice, particularly in low-resource settings, is recommended, as higher scores show a significant association with mortality.

REFERENCES

1. Yadav D, Garg PK. Spectrum of perforation peritonitis in Delhi: 77 cases experience. *Indian Journal of Surgery*. 2013 Apr;75:133-7.
2. Sharma L, Gupta S, Soin AS, Sikora S, Kapoor V. Generalized peritonitis in India—the tropical spectrum. *The Japanese journal of surgery*. 1991 May;21:272-7.
3. Dorairajan LN, Gupta S, Deo SV, Chumber S, Sharma LK. Peritonitis in India—a decade's experience. *Tropical gastroenterology: official journal of the Digestive Diseases Foundation*. 1995 Jan 1;16(1):33-8.
4. Ahuja A, Pal R. Prognostic scoring indicator in evaluation of clinical outcome in intestinal perforations. *Journal of Clinical and Diagnostic Research: JCDR*. 2013 Sep;7(9):1953.
5. Muralidhar VA, Madhu CP, Sudhir S, Srinivasarangan M. Efficacy of Mannheim peritonitis index (MPI) score in patients with secondary peritonitis. *Journal of clinical and diagnostic research: JCDR*. 2014 Dec;8(12):NC01.
6. Qureshi AM, Zafar A, Saeed K, Quddus A. Predictive power of Mannheim peritonitis index. *Journal-College of Physicians and Surgeons of Pakistan*. 2005 Nov 1;15(11):693.
7. Nomikos IN, Katsouyanni K, Papaioannou AN. Washing with or without chloramphenicol in the treatment of peritonitis: a prospective, clinical trial. *Surgery*. 1986 Jan 1;99(1):20-5.
8. Gauzit R, Péan Y, Barth X, Mistretta F, Lalaude O, Top Study Team. Epidemiology, management, and prognosis of secondary non-postoperative peritonitis: a French prospective observational multicenter study. *Surgical infections*. 2009 Apr 1;10(2):119-27.
9. Shinagawa N, Muramoto M, Sakurai S, Fukui T, Hori K, Taniguchi M, Mashita K, Mizuno A, Yura J. A bacteriological study of perforated duodenal ulcers. *The Japanese journal of surgery*. 1991 Jan;21:1-7.
10. Washington BC, Villalba MR, Lauter CB, Colville J, Starnes R. Cefamandole-erythromycin-heparin peritoneal irrigation: An adjunct to the surgical treatment of diffuse bacterial peritonitis. *Surgery*. 1983 Oct 1;94(4):576-81.
11. Khanna AK, Misra MK. Typhoid perforation of the gut. *Postgraduate Medical Journal*. 1984 Aug;60(706):523-5.
12. Bali RS, Verma S, Agarwal PN, Singh R, Talwar N. Perforation peritonitis and the developing world. *International Scholarly Research Notices*. 2014;2014.
13. Oheneh-Yeboah M. Postoperative complications after surgery for Typhoid Ileal perforation in adults in Kumasi. *West African journal of medicine*. 2007 Aug 30;26(1):32-6.
14. Bohnen J, Boulanger M, Meakins JL, McLean AP. Prognosis in generalized peritonitis: relation to cause and risk factors. *Archives of Surgery*. 1983 Mar 1;118(3):285-90.