

# Descriptive Study Regarding the Etiological Factors Responsible for Secondary Bacterial Peritonitis in Patients Admitted in a Tertiary Care Hospital in Trans Himalayan Region

Raj Kumar<sup>1</sup>, Rahul Gupta<sup>2</sup>, Anjali Sharma<sup>3</sup>, Rajesh Chaudhary<sup>4</sup>

<sup>1</sup>MS General Surgery, Civil Hospital Baijnath, Himachal Pradesh

<sup>2</sup>MD Community Medicine, District Programme Officer, Health and Family Welfare, Himachal Pradesh

<sup>3</sup>Resident Doctor, Department of Microbiology, DRPGMC Kangra at Tanda, Himachal Pradesh

<sup>4</sup>MS General Surgery, Civil Hospital Nagrota Bagwan, Himachal Pradesh

Corresponding Author: Rahul Gupta

## ABSTRACT

Peritonitis is an inflammation of the peritoneum. Primary peritonitis which is spontaneous bacterial peritonitis, Secondary peritonitis due to infection from intraabdominal source or spillage of its contents and Tertiary peritonitis which is recurrent or reactivation of secondary peritonitis. The present study was aimed to determine the etiology of generalized secondary peritonitis among the patients admitted in Department of General Surgery, Dr RPGMC Kangra at Tanda. This descriptive observational study was conducted in the department of surgery Dr. Rajendra Prasad Government Medical College Kangra at Tanda consisting of patients having acute generalised secondary peritonitis presented in emergency department or Surgery outdoor patient department over a period of one year from December 2016 through November 2017. The most common etiology of generalized secondary peritonitis in our patients was peptic ulcer disease (77.13%) followed by perforated appendicitis (9.8%). Etiological factors of secondary generalised peritonitis have a different pattern in different geographical regions. Peptic ulcer disease remains the commonest etiology of secondary peritonitis in India followed by enteric perforation which is in contrast to the western studies where appendicular and colon perforations are more common.

**Key Words:** Secondary Peritonitis, Trans Himalayan State, Etiology, Epidemiology

## INTRODUCTION

Peritonitis is an inflammation of the peritoneum which may be localized or generalised. It is often synonymously used for intra-abdominal infection or intra-abdominal sepsis in the literature. It is classified into: Primary peritonitis which is spontaneous bacterial peritonitis, Secondary peritonitis due to infection from intraabdominal source or spillage of its contents and Tertiary peritonitis which is recurrent or reactivation of secondary peritonitis.<sup>1</sup>

Secondary peritonitis is a common clinical problem that affects a wide range of

patients. It is caused by the loss of integrity of the gastrointestinal tract or other visceral organ. It may have several major causes like bacteria may enter the peritoneum through perforation in digestive tract which may be caused by a ruptured duodenal ulcer, appendix or perforated colon or from injury such as gun shot or knife wound; bile or chemicals released by pancreas may leak into abdominal cavity due to sudden swelling and inflammation of pancreas; tubes and catheter placed in abdominal cavity for peritoneal dialysis, feeding tubes and others may cause secondary peritonitis. The spectrum of perforation peritonitis in

India differs significantly from its western counterparts with duodenal ulcer perforation, perforating appendicitis, typhoid perforation and tubercular perforation being the major causes of generalized peritonitis.<sup>1,2</sup>

Due to the loss of epithelial integrity, bacterial pathogens can traverse into the peritoneal cavity leading to cascade of inflammatory response, sepsis multi system organ failure and death if not treated in a timely manner.<sup>2</sup> The present study was aimed to determine the etiology of generalized secondary peritonitis among the patients admitted in Department of General Surgery, Dr RPGMC Kangra at Tanda.

## METHODOLOGY

This descriptive observational study was conducted in the department of surgery Dr. Rajendra Prasad Government Medical College Kangra at Tanda consisting of patients having acute generalised secondary peritonitis presented in emergency department or Surgery outdoor patient department over a period of one year from December 2016 through November 2017. All the patients having generalised secondary peritonitis diagnosed clinically and/or radiologically over the age of 10 years were included in the study period. Exclusion criteria were terminal stage of pregnancy, pregnant female and children below 10 years.

**Statistical Analysis:** The data was collected, entered and cleaned in Microsoft

Excel spreadsheet and then analysed using Epi Info version 7.2.4. The categorical variables were expressed in terms of frequencies, and proportions, whereas continuous variables were expressed as mean and standard deviation.

## RESULTS

There were 153 patients admitted who were diagnosed with peritonitis. The age of patient ranged from 12 years to 90 years with a mean age of 42.75 years (SD= 18.34). Minimum age of presentation was 12 years and maximum was 90 years. Majority of the patients 83(54.25%) were in age group of 21-50 years which are the most productive years of life. Among 153 patients, 132(86.27%) patients were males and 21(13.73%) of the patients were females with male: female ratio of 6.29:1.

The most common etiology of generalized secondary peritonitis in our patients was peptic ulcer disease in 118(77.13%) patients which included 111(72.55%) patients of duodenal ulcer perforation and 7(4.58%) patients of gastric ulcer perforation with duodenal : gastric ulcer ratio of 15.8:1. Other etiologies were perforated appendicitis 15(9.80%), enteric perforation 12(7.84%), trauma (3 patients with blunt abdomen trauma had jejunal perforation and 3 patients with penetrating trauma abdomen had ileal perforation) 6(3.92%) and colonic malignancy 2(1.31%). (Table 1)

ETIOLOGY		Number of patients	%
Peptic Ulcer Disease	Duodenal ulcer	111	72.55
	Gastric ulcer	7	4.58
Perforated Appendicitis		15	09.80
Enteric perforation		12	7.84
Colonic Malignancy		2	1.31
Trauma	Blunt trauma abdomen (jejunal perforation)	3	1.96
	Penetrating trauma abdomen (ileal perforation)	3	1.96

Duodenum was the most common site of perforation in 111(72.55%) patients. Ileum and appendix was the next common site of perforation in 15(9.80%) patients. Gastric perforation was found in 7(4.58%) patients

and jejunal perforation in 3(1.96%) patients followed by colonic perforation in 2(1.31%) patients.(Table 2)

Site of Perforation	Number of patients	%	
Gastric (Gastric ulcer)	7	4.58	
Duodenum (Duodenal ulcer)	111	72.55	
Jejunum (Blunt trauma abdomen)	3	1.96	
Ileum	Enteric perforation	12	7.84
	Penetrating trauma abdomen	3	1.96
Appendix (perforated appendix)	15	9.80	
Colon (colonic malignancy)	2	1.31	

## DISCUSSION

The mean age of patients was 42.75 years which is comparable to study conducted by Arveen et al with the mean age of 43.4 years.<sup>3</sup> Majority of the patients 83(54.25%) were in age group of 21-50 years which are the most productive years of life. Jhobta et al also reported in their study that perforation peritonitis affected young men in the prime of life as compared to the studies in the west.<sup>1</sup> Ghosh et al in their study also found that most of the patients with secondary peritonitis were in the age group of 31-50 years.<sup>4</sup>

In our study the ratio of male to female patients was 6.29:1. This observation is consistent with results of available literature. Most of the series from India have reported male preponderance over females in secondary peritonitis. The ratio of male to female was 5.25:1 in a study by Malik et al whereas in a study in Serbia by Doklestic SK et al male: female ratio was 1.19:1 which is contradictory to our study.<sup>5-6</sup>

In our study we observed that the most common etiology of generalized secondary peritonitis was peptic ulcer disease in 118(77.13%) which included duodenal ulcer perforation in 111 patients and gastric ulcer perforation in 7(4.58%) patients, perforated appendicitis 15(9.80%), enteric perforation 12(7.84%), trauma (3 patients with blunt abdomen trauma had jejunal perforation and 3 patients with penetrating trauma abdomen had ileal perforation) 6(3.92%) and colonic malignancy in 2(1.31%) patients. Our results are consistent with a lot of available studies from India reporting that duodenal ulcer perforations are the commonest, followed by small bowel and appendicular perforation, in this region of the world.<sup>7-11</sup>

However some series from India have shown different results with enteric perforation as their most common cause.<sup>12-14</sup> Western studies are in contrast to our observations where they have reported most of the perforations in appendix and colon perforation following malignancy.<sup>15</sup>

Among the peptic ulcer disease, duodenal ulcer perforation was more common than gastric ulcer with duodenal : gastric ratio of 15.8:1 which is also similar to the studies done by Ghosh et al.<sup>4</sup> In another study by Jhobta et al and Shanker et al duodenal : gastric ulcer perforation ratio was 7:1 and 4.5:1 respectively which is comparable to our study.<sup>1,16</sup> Jhobta et al in his study had also reported 22 cases of tubercular perforation out of 92 cases of small bowel perforation.<sup>1</sup> However there was no such case of tubercular small bowel perforation in our study.

In our study, the most common site of perforation was duodenum in 111(72.55%) patients followed by ileum in 15(9.80%) patients and appendix in 15(9.80%) patients. 7(4.58%) patients in our study had gastric ulcer perforations while 3(1.96%) patients had jejunum perforation and 2(1.31%) had colonic perforation. Patil et al and Bali et al had also observed duodenum as most common site of perforation in 41%, 37.5% of cases respectively.<sup>17-18</sup>

## CONCLUSION

Etiological factors of secondary generalised peritonitis have a different pattern in different geographical regions. Peptic ulcer disease remains the commonest etiology of secondary peritonitis in India followed by enteric perforation which is in contrast to the western studies where appendicular and colon perforations are more common.

## REFERENCES

1. Jhobta RS, Attri AK, Kaushik R, Sharma R, Jhobta A. Spectrum of perforation peritonitis in India-review of 504 consecutive cases. World J Emerg Surg. 2006;1(1):26

2. Levison ME, Bush LM. Intra-abdominal Infection. In Mandell, Bennett, & Dolin's Principles and Practice of Infectious Diseases. In: Peritonitis and Intraperitoneal Abscesses. 6th ed. Churchill Livingstone: An Imprint of Elsevier; 2005
3. Arveen S, Jagdish S, Kadambari D. Perforated peptic ulcer in South India: an institutional perspective. *World J Surg.* 2009;33(8):1600-4.
4. Ghosh PS, Mukherjee R, Sarkar S, Halder SK, Dhar D. Epidemiology of Secondary Peritonitis: Analysis of 545 Cases. *Int J Sci Stud* 2016;3(12):83-88
5. Malik S, Singh A, Sidhu DS, Nagpal N, Sharma D. A prospective study to assess clinical profile and golden period for operative intervention in patients with perforation peritonitis. *Int Surg J* 2018;5:1492-8.
6. Doklestic SK, Bajec DD, Djukic RV et al. Secondary peritonitis –evaluation of 204 cases and literature review. *Journal of Medicine and life* 2014April-Jun;7(2):132-138
7. Svanes C, Salvesen H, Espehaug B, Søreide O, Svanes K. A multifactorial analysis of factors related to lethality after treatment of perforated gastroduodenal ulcer. 1935-1985. *Ann Surg* 1989 Apr;209(4):418–23.
8. Yadav D, Garg P. Spectrum of perforation peritonitis in Delhi: 77 cases experience. *Indian J Surg.* 2012;75(2):133-137.
9. Gupta SK, Gupta R, Singh G, Gupta S. Perforation peritonitis. A two year experience. *J K Sci* 2010;12:141-3.
10. Gupta S, Kaushik R. Peritonitis - The Eastern experience. *World J Emerg Surg* 2006;1:13.
11. Bhansali SK. Gastrointestinal perforations. A clinical study of 96 cases. *J Postgrad Med* 1967;13:1-12
12. Agarwal N, Saha S, Srivastava A, Chumber S, Dhar A, Garg S. Peritonitis: 10 years' experience in a single surgical unit. *Trop Gastroenterol* 2007;28:117-20
13. Dorairajan LN, Gupta S, Deo SV, Chumber S, Sharma LK. Peritonitis in India – A decade's experience. *Trop Gastroenterol* 1995;16:33-8.
14. Sharma L, Gupta S, Soin AS, Sikora S, Kapoor V. Generalized peritonitis in India – The tropical spectrum. *Jpn J Surg* 1991;21:272-7.
15. Malangoni MA, Inui T (2006) Peritonitis the western experience. *World J Emerg Surg* 1:25.
16. Shanker MR, M. Nahid, Prajwal S. A clinical study of generalised peritonitis and its management in a rural setup. *Int Surg J.* 2018 Nov;5(11):xxx-xxx
17. Patil PV, Kamat MM, Milan MH. Spectrum of perforative peritonitis-A prospective study of 150 cases. *Bombay Hosp J.* 2012;54:38-50
18. Bali RS, Verma S, Agarwal PN, Singh R, Talwar N. Perforation peritonitis and the developing world. *ISRN Surg.* 2014;2014:105492

How to cite this article: Kumar R, Gupta R, Sharma A et.al. Descriptive study regarding the etiological factors responsible for secondary bacterial peritonitis in patients admitted in a tertiary care hospital in trans Himalayan region. *Int J Health Sci Res.* 2020; 10(7):283-286.

\*\*\*\*\*