Original Research Paper



MORTALITY AND MORBIDITY IN OPERATED PATIENTS WITH NON-TRAUMATIC PERFORATION PERITONITIS

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ABSTRACT INTRODUCTION: Non Traumatic generalized peritonitis resulting from the perforation of a gastrointestinal tract is frequently encountered in India. Despite of overall improvement in diagnostic facilities, surgical modalities and treatment strategy, antimicrobial therapy and postoperative intensive care, this condition continues to be associated with high mortality and morbidity.

Peritonitis usually presents as an acute abdomen and diagnosis is usually made on clinical examination with radiological finding of gas under diaphragm in plain X-ray abdomen erect view. Exploratory laparotomy is the only option for these patients.

This study has been carried out to evaluate the pattern of mortality and morbidity associated with non-traumatic perforation peritonitis presented in L.N. medical college & J.K. hospital Bhopal.

**MATERIAL AND METHODS:** This retrospective study was conducted in L.N. medical college & J.K. hospital Bhopal. A total of 100 operated cases of non-traumatic perforation peritonitis were included in the study. Case records of patients of non-traumatic perforation peritonitis who were admitted in surgical wards and operated, were obtained from medical record department and all the relevant information noted. **RESULTS:** A total of 100 patients of non traumatic perforation peritonitis were included in this retrospective study with mean age of 37.5 years. 53% patients were below 50 years, but the mortality was more in patients with age more than 50 (12.7%) in comparison to below 50 years age group (9.4%). The male to female ratio was 3:1 (75 male and 25 female). Mortality in female patients was more (16%) in comparison to male (9.3%). Patients with lower socioeconomic status were most commonly admitted (67%) with perforation peritonitis and mortality was more in this group (11.9%). Most of the patients presented late to the hospital after the onset of symptoms. Only 4 patients presented 4 to 7 days after the onset of symptoms with 1 death. 36 patients were admitted after 7 days with 1 death only. Hypertension was most common medical illness (9) associated with patients of non-traumatic perforation peritonitis with mortality 5.5%. Other medical illness associated was diabetes (6) with mortality of 33.3% and tuberculosis (3) with mortality 33.3%. Most common systemic finding at the time of admission was tachycardia and dehydration, followed by oliguria and Septicemia shock. Most common local clinical findings were abdominal tenderness followed by guarding, rigidity and absent or diminished bowel sound.

Total patient admitted with peptic perforation was 35 and 4 patient died with this diagnosis (mortality 11.4%). 56 patients with ileal perforation peritonitis were admitted and 6 patients were died of typhoid and tubercular ileal perforation peritonitis (mortality 10.7%). Only 1 patient out of 9 patients was died of appendicular perforation peritonitis (mortality 11.1). No patient with colonic perforation peritonitis was admitted in our study.

Most common procedure in peptic perforation and ileal perforation was primary closure and appendicectomy in case of appendicular perforation. Other procedures which were performed in ileal perforation were resection anastomosis and loop ileostomy.

 $Overall\,morbidity\,and\,mortality\,recorded\,in\,this\,study\,were\,52\%\,and\,11\%\,respectively.$ 

**CONCLUSION:** Non traumatic Perforation peritonitis in India is a very common emergency presented to hospitals and has a different statistic as compared to the western countries. Mortality in these patients varies according to age, sex, socioeconomic status, days of presentation, etiology of perforation and different operative treatment. Morbidity is still high despite of better treatment strategy. Better primary health care services and health education definitely will help to reduce mortality and morbidity. Early exploratory laparotomy, postoperative intensive care under broad spectrum antibiotics is imperative for good outcomes minimizing morbidity and mortality.

# KEYWORDS : Assess, Quality of Life, Elderly, Old Age Homes.

# INTRODUCTION

Non Traumatic generalized peritonitis resulting from the perforation of a gastrointestinal tract is frequently encountered condition in India and continues to be associated with high mortality and morbidity. Despite of overall improvement in diagnostic facilities, surgical modalities and treatment strategies, newer antimicrobial therapy and intensive postoperative care, the mortality and morbidity in patients with perforation peritonitis continue to exist across the different age, socioeconomic status and geographical groups.

Peritonitis is the inflammation of peritoneum which may exist in an acute or chronic form, and may be either localized or diffused and usually presents as an acute abdomen.

persistent generalized abdominal pain, fever with chills or rigor, sweating, constipation and vomiting. Systemic findings include tachycardia, tachypnea, restlessness, dehydration, oliguria, disorientation and ultimately septicemic shock. Local clinical signs include abdominal tenderness, guarding or rigidity, distension and diminished bowel sounds.

The diagnosis is based mainly on clinical examination. Plain X-ray abdomen erect view is very good diagnostic tool for detection of peritonitis due to perforation. Other useful investigations are ultrasound and CT scan that can ascertain the diagnosis occasionally.

Symptoms of peritonitis are nausea, poor appetite, severe

This study has been carried out to evaluate the pattern of mortality among various group of age, sex, socioeconomic status, rural and urban population in patients with non-traumatic perforation peritonitis. Also the aim of this study is to find out various etiological factors, modes of clinical presentation, morbidity and mortality pattern of different types of non-traumatic perforation peritonitis presented in J.K. hospital.

### **MATERIAL AND METHODS**

This retrospective study was conducted in J.K. hospital Bhopal. A total of 100 operated cases of non-traumatic perforation peritonitis were included in the study. Case records of patients of non-traumatic perforation peritonitis who were admitted in surgical wards and operated, were obtained from medical record department.

Patients who were not fit for surgery due to poor condition and who were kept on conservative management were excluded in study. Cases with perforation peritonitis due to trauma and malignancy were also excluded in the study. Patients fit for surgery, were operated and included in the study.

Following details of patients were recorded like age, sex, socioeconomic status, associated medical illness, clinical examinations, treatment and operative procedure. Patient's records were analyzed with special reference to postoperative complications.

In all patients of non-traumatic perforation peritonitis in case records, protocols of resuscitation and management were found to be same, with initial diagnosis was made on the basis of detailed history, physical finding and presence of gas under diaphragm on erect abdominal X-ray. All the investigations like complete blood count, liver function test, renal function test, serum electrolyte, random blood sugar and urine albumin and sugar, viral markers, ECG and X –ray chest were noted. Ultrasound of abdomen and computed tomography scan was rarely done in selected patients with uncertain diagnosis.

Nasogastric tube aspiration, catheterization, intravenous fluid resuscitation, antibiotics and analgesics were included in treatment protocols. On exploratory laparotomy, after copious peritoneal irrigation, repair of perforation site was done. In some cases resection anastomosis, ileostomy or colostomy was done. After drain insertion abdomen was closed in layers.

### RESULTS

The aim of this study was to analyze statistics over mortality in patients with non-traumatic perforation peritonitis to explain trends and differential in overall mortality and assessment of various methods of treatment used to decide priorities for health action and proper utilization of resources. Records of patients of non- traumatic perforation peritonitis admitted in surgical wards and operated were taken from medical record department. After analyzing the data, the following observations were obtained.

# Age-

Age group	Total admission	Total death
<10 years	1	0
11-30	12	2
31-50	40	3
51-70	47	6
	100	11
Age	Total admission	Total death
< 50 years	53	5
> 50 Years	47	6

Highest number of patients belongs to the age group of < 50 years (53%). But the mortality was more in patients with age more than 50 (12.7%) in comparison to below 50 years age group (9.4%).

#### Sex-

	Total admission	Total death
Male	75	7
Female	25	4
	100	11

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The male to female ratio was 3:1. Out of total admission of 75 (75%) male patients with perforation peritonitis 7 patients died (9.3%). Similarly out of 25 female patients (25%), only 4 died of perforation peritonitis (16%).

#### Socioeconomic status –

	Total admission	Total death
Lower	67	8
Middle	28	2
Upper	5	1
	100	11

Patients with lower socioeconomic status were most commonly admitted (67%) with perforation peritonitis and mortality was found more in this group (11.9%).

### Days of presentation -

Duration of illness	Total admission	Total death
<1 day	4	1
2-3 days	36	3
4-7 days	54	6
> 7 days	6	1
Total	100	11

Most of the patients presented late to the hospital after the onset of symptoms. Only 4 patients were presented within 24 hours of onset of symptoms with 1 death. 36 patients presented between 2 to 3 days with 3 deaths. 54 patients presented 4 to 7 days after the onset of symptoms with 6 deaths. 6 patients were admitted after 7 days with 1 death only.

# Associated medical illness -

	Total admission	Total death
No medical illness	82	2
Diabetes mellitus	6	3
Hypertension	9	5
Tuberculosis	3	1
	100	11

Hypertension was most common medical illness (9) associated with patients of perforation peritonitis with 5 deaths. Other medical illness associated was diabetes (6) with 2 deaths and tuberculosis (3) with 1 death.

# Clinical findings -

		Total patients
Sys	stemic finding	
•	Tachycardia	92
•	Dehydration	72
•	Oliguria	63
•	Septicemic Shock	58
Ab	dominal finding	
•	Abdominal tenderness	100
•	Guarding / Rigidity	93
•	Absent or diminished bowel sound	88

Most common systemic finding at the time of admission was tachycardia and dehydration, followed by oliguria and Septicemic shock. Most common local clinical finding was abdominal tenderness followed by guarding / rigidity and absent or diminished bowel sound.

### Etiology –

Total patients admitted with non-traumatic perforation peritonitis were 100. Out of this total admission, 11 patients died (11%). Total patient admitted with peptic perforation was 35 and 4 patient died with this diagnosis. 56 patients with ileal perforation peritonitis were admitted and 6 patients were died of typhoid and tubercular ileal perforation peritonitis. Only 1 patient out of 9 died of appendicular perforation peritonitis. No patient with colonic perforation peritonitis was admitted in our study.

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	Total admission	Total deaths	Mortality rate
Peptic (Gastric and Duodenal)	35	4	11.4%
Ileal (Tubercular and Typhoid)	56	6	10.7%
Appendicular	9	1	11.1%
Colonic	0	0	0
Total	100	11	11%

#### Treatment and operative procedure -

	Total admission	Total death
Primary closure of peptic perforation with Graham's omental patch	35	2
Primary closure of ileal perforation	48	6
Resection anastomosis	3	1
Loop ileostomy	5	0
Appendicectomy	9	2

Exploratory laparotomy was performed in total 100 patients. Primary closure of peptic perforation with omental patch was done in 35 cases only 2 patients died.

Out of 56 total ileal perforation peritonitis cases, primary closure performed in 48 cases, 3 resection anastomosis and 5 loop ileostomy were done. No patient died after ileostomy procedure. Only 6 patients died with primary closure of ileal perforation. 1 patient died after resection anastomosis.

Out of 9 admitted patients of appendicular perforation peritonitis, 1 patient died.

# Complications and morbidity -

Most common complication was wound infection (27), followed by paralytic ileus (16). Other local complications were fecal fistula (4), intra-abdominal abscess (3) and abdominal dehiscence (2).

Name of complications	No. of cases	No. of death	Mortality
Wound infection	27	3	11.1%
Paralytic ileus	16	0	0%
Fecal fistula	4	3	75%
Intra-abdominal abscess	3	1	33.3%
Abdominal dehiscence	2	2	100%

# DISCUSSION

Non-traumatic perforation peritonitis is an emergency condition which is encountered by surgeons in emergency. Despite of all improvements in treatment modalities, still there is persistently high morbidity and mortality. In this retrospective study 100 patients with non traumatic generalized peritonitis were included. Out of this total admission, 11 patients died (11%).

#### Age

The average age in our study was 37.5 years, ranging from 35 to 65 years in various studies. It was almost similar to the mean age of 48.28 years found by Sujit M. Chakma et al1 and 36.8 years by Ranjeet S. Kamble et al2. Most common age affected in our study was below the 50 Years (53%). This was similar according to both authors (54.29% and 86% respectively).

	Average age	Most common age affected
Sujit M. Chakma et al <sup>1</sup>	48.28 years	< 50 years (54.29%)
Ranjeet S. Kamble et al <sup>2</sup>	36.8 years	<50 years (86%)
Present study	37.5 years	< 50 years (53%)

The high mortality was observed in older age group (12.7%) due to high incidence of perforation peritonitis in this age group. Emergency operations for perforation peritonitis in elderly patients are associated with high mortality due to age related changes in the immune system which play a significant role in the increased risk of infection and slower wound healing.

# Sex

The incidence of perforation peritonitis in this study was

significantly higher in male population like other studies. The male to female ratio was 3:1.

	Male	Female
Jhobta RS <sup>3</sup>	84%	16%
Ranjeet S. Kamble et al <sup>2</sup>	88%	22%
Present study	75%	25%

Mortality was higher in female patient (16%) in comparison to male patient (9.3%). The reason of high mortality in female in our study is multifactorial. The females with perforation peritonitis generally don't have a better care and treatment by families in our country which leads to higher mortality in comparison to male patients. Most of the female admitted in our study was > 50 years that may also contribute to higher mortality.

### Socioeconomic status –

	Total admission	Total death
Lower	67	8
Middle	28	2
Upper	5	1
	100	11

Patients with lower socioeconomic strata were most commonly admitted with perforation peritonitis (67%) and mortality was found more in this group (8 deaths). Similar results were observed by Ramachandra ML4. The majority of patients from the low socioeconomic strata with high mortality in this study are because most of the patients admitted in our hospital with these strata are unable to attend private hospitals due to high cost of treatment.

### Days of presentation -

Duration of illness	Total admission	Total death
<1 day	4	1
2-3 days	36	3
3-7 days	54	6
> 7 days	6	1
Total	100	11

Most of the patients presented late to the hospital after the onset of symptoms. Other studies also suggest late presentation to hospital. Atul kumar et al<sup>5</sup> in a study found that only 36% patients had arrived to the hospital in less than 24 hours of onset of symptoms, while the remaining patients had presented at variable times beyond 24 hours of onset of symptoms. In our study only 4% patient presented in less than 24 hours. In our study maximum patients were with late presentation 54% within 3 to 7 days. Late presentation leads to higher mortality as documented by most other studies by BoeyJ et al° and Danpat MC et al′. Late presentation is because of late referral to higher centre. In our study found that patients with low socioeconomic strata especially from villages takes improper treatment from quacks and local doctor. Most of the patients referred after the deterioration of general condition and most of the patients present with well established peritonitis and septicemia to our hospital.

### Associated medical illness and co morbidity-

Associated medical illness and comorbidities like Diabetes, hypertension, tuberculosis, have a significant impact on both the morbidity and mortality in our study. 18% patients had associated medical illness. 50% patients with medical illness died due to perforation peritonitis. <u>Parwez Sajad Kha</u>n et al<sup>®</sup> found 58.5% of the patients with co morbidity developed complications and 39% died. In comparison, only 18.6% developed complications and only 1.6% died of the patients who had no co-morbid condition. A similar Observation found in other studies by Koperna T et al<sup>®</sup>, Mulari K et al<sup>10</sup> and BoeyJ et al<sup>6</sup>.

In case of association of medical illness patients with perforation peritonitis, operation in emergency cannot be done due to adverse effects of anesthesia and patients has to be kept on conservative management that further deteriorates the patient's general condition.

# Clinical findings -

Most common systemic finding at the time of admission was tachycardia and dehydration, followed by oliguria and Septicemic shock. Most common local clinical finding was abdominal tenderness, guarding / rigidity, obliteration of liver dullness and absent / diminished bowel sound. Most of the patients presented late in our study with these clinical features and finding. Similar classical finding are documented by Ramachandra ML et al<sup>4</sup>.

# Etiology-

Most common etiology was ileal perforation peritonitis including typhoid and tubercular origin (56%) followed by peptic perforation peritonitis (35%) and appendicular perforation peritonitis (9%). There was no death from colonic perforation peritonitis.

This is in agreement with western literature and some studies from India, where small bowel perforation secondary to typhoid and tuberculosis may constitute a higher percentage. Other studies from India suggest peptic perforation to be a major cause of Peritonitis.

In our study ileal perforation due to typhoid or tubercular origin was a major cause of peritonitis. High incidence of ileal perforation is due to typhoid fever which is prevalent in this region due to contaminated food and water with poor sanitation especially in lower socioeconomic status group. Though ileal perforation was still the most common cause of peritonitis, there was a decline in the number of peptic perforations because of improved medical treatment for Acid peptic disease.

	Peptic	lleal	Appendicular	Colonic
Budhraja SN Chidambaram	47.7%	9.7%	27.18%	6.8%
M and Perianayagam WJ <sup>11</sup>				
Khanna AK, Mishra MK <sup>12</sup>	31%	10%	20%	6%
Nitin Agarwal, Sudipta Saha,	23%	43%	15%	6%
AnuragSrivastava <sup>13</sup>				
Present study	35%	56%	9%	0%

Treatment and final operative procedure -

	Total admission	Total death
Primary closure of peptic	35	2
perforation with Graham's omental		
patch		
Primary closure of ileal perforation	48	6
Resection anastomosis	3	1
Loop ileostomy	5	0
Appendicectomy	9	2

In our study, most common procedure in peptic perforation and ileal perforation was primary closure and appendicectomy in case of appendicular perforation. Other procedures which were performed in ileal perforation were resection anastomosis and loop ileostomy. These results were similar in other studies. In a study, Ranjeet S. Kamble<sup>2</sup> indicated that most common surgical procedure used is primary closure followed by diversion procedure, resection anastomosis and staged procedure. Karabhari et al<sup>14</sup> and Shashikumar H.B. et al<sup>15</sup> had almost similar findings.

# Morbidity and postoperative complications -

Morbidity and postoperative complications are common after gastrointestinal perforation peritonitis and it ranges from 17-63%. The overall morbidity in our series was 52%. Wound infection (27%) was the commonest complications in our study and it may be because of well established peritonitis due late presentation with copious purulent peritoneal fluid found during the exploratory laparotomy.

Other complications were postoperative paralytic ileus (16%), fecal fistula (4%), intra-abdominal abscess (3%) and abdominal dehiscence (2%).

Jhobta<sup>3</sup> in his review of 504 cases reported similar complications and high morbidity rate of 50% in 2006. Respiratory complications

(28%) were most common cause of morbidity. Other complications were wound infection (25%), septicemia (18%) and dyselectrolaemia (17%) and abdominal wall disruption (9%)

Desa and Mehta<sup>16</sup> reported wound infection in 17, burst abdomen in 10, renal failure in 13 and anastamotic leaks in 11 of his series of 161 patients with morbidity of 31.6%.

According to WabwireB, Saidi  $H^{17}$  the overall morbidity rate was 47.1%. The most common complications were superficial wound sepsis (45.7%), dehiscence (18.6%), fistula formation (12.9%) and deep space abscess (8.6%).

30% morbidity was found in a study by PratapVarute et al<sup>18</sup>. Most common complication was wound infection (13%) followed by wound gaping (9%), septicaemia (7%), faecal fistula (2%), burst abdomen (1%), pneumonia (1%), hiccough (1%), intraabdominal collection (1%), G.I. bleeding with CRF (1%) & CCF with septicaemia (1%).

S.N.	Authors	Morbidity
1.	Jhobta <sup>3</sup>	50%
3	Desa and Mehta <sup>16</sup>	31.6%
4	Wabwire B , Saidi H <sup>17</sup>	47.1%
4	PratapVarute et al <sup>18</sup>	30%
6	Present study	54.7%%

# Mortality

Mortality rate in our study was 11%. The mortality reported for secondary perforation peritonitis in the literature similar and varies from 7% to 50%. T. Koperna and F. Schulz<sup>°</sup> reported a mortality of 18.5%. Desa and Mehta<sup>16</sup> reported a mortality of 24.8%, while Angelo Nespoli<sup>19</sup> reported it to be 20.5%. A higher mortality was seen by Stephen<sup>20</sup>-50%. Nitin Agarwal, Sudipta Saha, Anurag Srivastava<sup>13</sup> reported a mortality of 10%. Bali et al<sup>21</sup> reported lowest mortality of 7% in his study.

S.N.	Authors	Overall mortality
1.	T. Koperna and F. Schulz9	18.5%
2	Desa LA, Mehta SJ, Nadkarni KM, Bhalerao RA16	24.8%,
3	Angelo Nespoli19	20.0%
4	Stephen M, Lowenthal J.20	50%
5	Nitin Agarwal, Sudipta Saha, Anurag Srivastava13	10%
6	Bali RS, Verma S, Agarwal PN, Singh R, Talwar N21.	7%
7	Present study	11%

# CONCLUSION

Non traumatic Perforation peritonitis in India is a very common emergency presented to hospitals and has a different statistic as compared to the western countries. Mortality in these patients varies according to age, sex, socioeconomic status, days of presentation, etiology of perforation and different operative treatment. Morbidity is still high despite of better treatment strategy. Better primary health care services and health education definitely will help to reduce mortality and morbidity. Early exploratory laparotomy, postoperative intensive care under broad spectrum antibiotics is imperative for good outcomes minimizing morbidity and mortality.

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