



## MORBIDITY IN ACUTE PERITONITIS – CLINICAL EXPERIENCE

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### ABSTRACT

Cases of Acute Peritonitis, attending in two years period (2009 & 2011), in the department of General Surgery, Mamata General Hospital, were studied and analyzed for clinical profile, surgical interventions and morbidity. Out of 1117 cases of surgical emergencies seen at Mamata General Hospital from June, 2009 to May, 2011 number of emergency operations performed for acute peritonitis was 420 (35.69%). This study showed the varied etiology like perforation of duodenal ulcer (32.85%) followed by appendicular peritonitis, enteric perforation etc. Around 159 cases developed complications, giving a morbidity rate of 37.85%. The interval from onset of symptoms to attending hospital appears to be the best prognostic indicator. Before 72 hours, there was no significant change in mortality, but after 72 hours mortality sharply increased to 60%.

### INTRODUCTION

The peritoneum is formed by single layer of mesothelial cells together with an underlying supporting layer of highly vascular loose connective tissue [1]. With a total area of 1.8 m<sup>2</sup>, even an increase by 1mm in peritoneal thickness potentially sequester about 18L of fluid can result in fluid shifts and associated systemic responses [1]. Peritonitis means inflammation of the peritoneum and secondary peritonitis is the presence of purulent exudates in the abdominal cavity derived from an enteric source [2, 3].

Acute peritonitis is the most frequently seen emergency in surgery department and remains the important cause of morbidity and mortality in emergency surgery. There is a need to evaluate acute peritonitis to know its etiology, reasons for complications and morbidity to improve its management.

Cases of Acute Peritonitis, attending in two years period (2009 & 2011), in the department of General Surgery, Mamata General Hospital, will be studied and

analyzed for clinical profile, surgical interventions and morbidity.

### METHODS AND MATERIALS

Cases of Acute Peritonitis, seen starting from June, 2009 to May 2011, in the department of General Surgery, Mamata General Hospital, are to be studied and analyzed. Acute intestinal obstruction and acute appendicitis not complicated by diffuse peritonitis are not to be included in the series. A detailed history and clinical examination findings were obtained from patients to evaluate the need for of surgical intervention. Accordingly, patients were dealt and investigated and prepared for surgery. While taking history emphasis was laid on presence of systemic diseases Peptic ulcer, Diabetes mellitus, Hypertension, Tuberculosis etc., and their treatment. Details of personal habits like Smoking, Alcoholism, Eating, menstrual history and family history and previous treatment are obtained. In addition to routine investigations, plain X-Ray abdomen (erect), ultrasound abdomen, CT scan, abdominal para centesis etc. were performed. The clinical findings, surgical intervention post op management, complications, measures taken to reduce the morbidity and follow up details are recorded.

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## RESULTS

Out of 1117 cases of surgical emergencies seen at Mamata General Hospital from June, 2009 to May, 2011, number of emergency operations performed for acute peritonitis was 420 (35.69%). Most of these 420 cases are seen between the ages of 20-50 years, with a male predominance of 81% (341/420). Patients were also seen in the ages of below 10 and above 60 years of life. Out of 341 male patients seen 231 were seen in 3<sup>rd</sup> and 4<sup>th</sup> decades of life. The common causes of acute peritonitis were appendicular peritonitis (15.7%, 66/420), duodenal ulcer perforation (36.4%, 153/420), typhoid peritonitis (7.8%, 33/420) and stab and blunt injuries (4.6%, 49/420). Other causes observed were, Spleen and liver injuries (10), Intestinal obstruction with Gangrene (18), Tuberculous peritonitis (14), Salpinitis (2), Gastric ulcer perforation (21), Pancreatitis (25), primary peritonitis (8) and Ruptured Amoebic liver abscess (21). The duration of hospitalization for patients varied from minimum of 7 days to a maximum of 62 days with an average duration of 16 days. Complications seen are surgical site Infection (34), respiratory Infection (50), partial dehiscence of wound (33), septicemia (26), uremia (21), faecal and biliary fistulae (10), thrombophlebitis (10), urinary tract infection (10) and cases expired were 40 (9.7%).

The most common cause of peritonitis in this study was found to be perforated duodenal ulcer in 153 cases (36.42%) with Male (125 cases) predominance. The maximum age incidence was in the age groups of 21-30 and 41-50 years (27.57%). Cases which were in severe shock and unfit for anesthesia were treated conservatively along with insertion of bilateral flank drains. Surgical treatment offered was, simple closure with omental patch 130 (85%), closure of perforation and gastro-jejunostomy 15 (9.8%) and closure of perforation and feeding jejunostomy 8 (5.2%). Complications were seen in 50 (32.67%) cases and treated conservatively. Mortality rate was 5.8% (9 cases).

Enteric perforation as a cause of peritonitis was seen in 33 cases of our series. It is more commonly seen in 20 – 40 years of age group accounting for 7.85% of all cases with a Male to Female ratio of 3.1:1. Operative procedures (type of closures) adopted are Simple closure, resection and anastomosis and bilateral flank drains and their mortality rates are 6 out of 27 (25%), 2 out of 4 (50%) and 2 out of 2 (100%) cases respectively. The morbidity was 20 and 24 cases in the first two surgical procedures adopted.

Complications of Typhoid (enteric) peritonitis are seen in 15 cases, wound infection, Wound infection (5), Partial dehiscence (1), Burst Abdomen (1), Septicemia (1), respiratory infection (2), Fecal fistula (1), Uremia (3), and Residual abscess (1) with a Morbidity rate of 15 (45.45%) and Mortality rate 10 (30.3%).

Appendicular Peritonitis due to appendicular perforation is commonly seen in patients who exceeded 48

hours of interval between onset of symptoms and admission. Complications seen in (18%) appendicular peritonitis are wound infection (9), respiratory infection (2) and fecal fistula (1). No case of peritonitis died due to appendicular perforation.

## DISCUSSION

This study includes 420 cases of acute peritonitis admitted in surgical wards of Mamata General Hospital during a period of 2 years. Out of these 420 cases only 12 cases are selected to focus on the varied nature of etiology. The common causes of peritonitis in this study were perforated duodenal ulcer (36.42%), by peritonitis due to appendicular perforation (15.71%) and enteric perforation (7.85%). Less frequent ones are spleen and liver injuries (2.38%), ruptured amoebic liver abscess (5%), intestinal obstruction with gangrene (4.28%), Tuberculosis peritonitis (3.33), gastric ulcer perforation (5%), pancreatitis (5.95%), and primary peritonitis (1.9%). This picture of the varied etiology of peritonitis is similar to the study report from Rajender et al [4] on 504 cases of peritonitis.

Majority of cases are in the age group of 20 to 50 years of age. There is no variation in age distribution in relation to cause of peritonitis. Similar observations were made by Puneekar et al [5] and Sanjay Gupta et al [6]. Male predominance (Male to female ratio of 4:1) was seen in our series is comparable to the reported studies of Nitin Agarwal et al [2] and Puneekar et al [5] (2 to 2.5:1). Average time interval from onset of symptoms to attending the hospital is 36 hours, with a range being 2 hours to 8 days. This interval appears to be the best prognostic indicator in deciding the mortality and morbidity of the patient.

Surgical intervention was done within 24 hours of presentation in 41% of cases of perforation due to duodenal ulcer. Rajender et al [4] reported almost similar time taken for surgical intervention. The peritonitis yielded better results initially being mainly chemical, whereas after 24 hours the peritonitis being bacterial resulted in increased mortality and morbidity. This crucial period in cases of enteric fever was found to be 72 hours and the mortality and morbidity registered a sharp increase (60%) after this duration. The possible cause is septicemia. Preoperative resuscitation with crystalloids especially ringer lactate showed an important bearing on the mortality and morbidity.

It is also evident that the preoperative fluid intake makes a difference in the final outcome. Patients dying of enteric perforation average intake was 2 to 2 ½ liters, where as in those who survived the intake was 4.0 liters and above. Patient with low serum potassium (<3 meq/L) had high mortality rate as compared to survivors in whom the levels were normal. Hypokalemia was also reported in 30% of cases by Puneekar et al [5] which was associated with a higher mortality rate. Pain, vomiting and fever were



predominant symptoms (>73%) in our patients with peritonitis, whereas Punekar et al [5] and Rajender et al [4] reported >50% and >60% respectively. Punekar et al [5] reported tenderness and rigidity in more than 50% of cases were as we found it in majority of our cases (69%) and the area differed with the cause of peritonitis. Rigidity was not a clinical feature in enteric perforation. Abdominal distention was present in 65% of our cases. Rajender et al [4] and Punekar et al [5] reported similar (68 & 50%) clinical presentation in their studies. Other frequent findings were pneumoperitoneum (49%), DPL positivity (68%) and hypokalaemia (21%) and very much similar to Punekar and Rajender reports around 36%, 75% and 30% respectively. Peritoneal paracentesis was positive in 50% of cases. Plain X-Ray of abdomen showed pneumoperitoneum, ground glass appearance, evidence of paralytic ileus were seen in all cases.

Midline incision was preferred because rapid opening and closing of abdomen can be done with less blood loss. However, right paramedian incision was used in cases of appendicular peritonitis. In cases of perforation due to duodenal ulcer a simple closure was done in 130 cases (84.96%); perforation closure with gastro-jejunostomy in 15 cases (9.8%) and closure with feeding jejunostomy in 8 cases (5.22%). In all cases bilateral flank drains were inserted. Similar surgical methods were opted by Nitin Agarwal et al [2] in their series of 59/61 patients with duodenal perforations.

In cases of enteric perforation the surgical options were simple closure of perforation after trimming of edges in 27 (81.81%), resection and anastomosis in 4 (12.12%) and insertion of bilateral flank drains in 2 (6.06%) cases. Simple closure of perforation after taking an edge biopsy and freshening edges using chronic catgut for inner continuous all layer and silk for outer interrupted seromuscular layer was found to be better than resection and end-to-end anastomosis in terms of mortality and was easy and quick. Similar options were preferred by

Rajender et al [8] their study of 41 patients of enteric perforations.

Appendectomy was done in cases of appendicular perforation. Cases with amoebic liver abscess rupture were treated with Malecot Catheter drainage of abscess cavity and insertion of bilateral flank drains. Either resection and end to end anastomosis or exteriorization was the treatment of choice in cases of intestinal obstruction with gangrene. Gastric ulcer perforations were treated only by closure. In stab and Blunt injury abdomen where intestines, stomach and colon were commonly injured and anastomotic leakage is high, only exteriorization was done. In cases of peritonitis due to salpingo-oophoritis, only peritoneal lavage and abscess cavities evacuation was preferred. In liver injuries debridement was necessary if tissue was lacerated and in splenic injuries splenectomy and splenoraphy were done.

Around 159 cases developed complications, giving a morbidity rate of 37.85%. Morbidity in relation to the cause of peritonitis was in 50 cases of duodenal ulcer perforation (32.67%), 15 cases in enteric perforation (45.45%) and 12 cases in appendicular perforation (18.18%). Wound infection was the commonest complication seen in 134 cases. Respiratory infection was seen in 50 cases and more commonly in elderly patients. Similar morbidity rates were reported by Rajender et al [4] in their study of 504 patients with peritonitis.

The bacteria most often responsible are [7-10]. *Streptococci* (both aerobic and anaerobic), *Staphylococci*, *Pneumococci*, *Escherichia coli*, *Bacteroides* etc. The mixed organisms exercise a definitive synergistic pathogenic action and richer the mixer, the greater the severity of the infection [11].

The contributory causes are delay in seeking the surgical advice, infection (toxemia) etc. In conclusion an early diagnosis and an appropriate management can prevent or reduce the complications (mortality & morbidity) of acute peritonitis.

## REFERENCES

1. Text Book of applied anatomy by R.J. Last 5<sup>th</sup> edition. (2003). *Anatomy of Peritoneum*, 312 to 318
2. Agarwal N et al. (2007). Peritonitis, 10 years' experience in a single surgical unit. *Trop Gastroenterol.*, 28 (3), 117-120.
3. Crawford E, Ellis H. (1985). Generalised peritonitis- the changing spectrum. A report of 100 consecutive cases. *Brit J Clin Pract*, 39, 177-8
4. Rajender S, Jhobta et al. (2006). Spectrum of perforation peritonitis in India-review of 504 consecutive cases. *World Journal of Emergency Surgery*, 1, 26.
5. Punekar SV, Patel CV, Parulkar GB. (1977). Fatal perforative peritonitis - (study of 38 cases). *J Postgrad Med*, 23, 28-32.
6. Sanjay Gupta et al. (2006). Peritonitis – the Eastern experience. *World Journal of Emergency Surgery*, 1, 13.
7. Schwartz principles of surgery- 9th edition, 117.
8. Steeb G, Wang YZ, Siegrist B, O'Leary JP. (2000). Infections with in peritoneal cavity a historical perspective. *American Surgeon*, 66, 2, 98
9. Saini S, Gupta N, Aparna, Lokveer, Griwan MS. (2004). Surgical infections, a microbiological study. *Braz J Infect Dis*, 8, 118-25.
10. Shinagawa N, Mizuno A, Mashita K, Yura J, Ishikawa S, Hirata K, Denno R, Mukaiya M, Ishibiki K, Aikawa N. (1994). Bacteria isolated from intraabdominal infection and their susceptibilities to antimicrobial agents. *Jpn J Antibiot*, 47, 1329-43.



11. Shinagawa N, Muramoto M, Sakurai S, Fukui T, Hon K, Taniguchi M, Mashita K, Mizuno A, Yura J. (1991). A bacteriological study of perforated duodenal ulcer. *Jap J Surg*, 21, 17.

