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Original Research Article

Study of spectrum of perforation peritonitis and it`s management: A cross sectional study at a tertiary care institute

Ajender Singh[1*], Irfan Hussain Khan[2], S.P. Singh[3]
[1*]Resident, [2]Assistant Professor, [3]Professor and Unit head
Department of General Surgery, National Institute of Medical Sciences Medical College and Hospital, Jaipur (Rajasthan) India

***Corresponding author**
Ajender Singh
Email: ajender_singh@yahoo.com

Abstract: Perforation peritonitis is one of the most common surgical emergencies all over the world. The aetiology of peritonitis in tropical countries differs from western studies and is still a common cause of death, if timely medical or surgical intervention is not done. This study was done to know the spectrum of peritonitis in our setup at National Institute of Medical Sciences Medical College And Hospital, Jaipur. The study was a cross sectional hospital based research comprising fifty cases of perforation peritonitis and was done over a span of one year. It was noted that peptic ulcer (60%) is the most common cause followed by typhoid ulcers (20%). Abdominal pain (100%) with vomiting (98%) was the chief complain. Diagnosis is easy with typical clinical features and gas under the diaphragm in abdominal radiograph (94%). Early surgery is life saving with delay in surgical management leads to increased morbidity and mortality. Suture site infection and respiratory complications are the most common cause of post-operative morbidity.
Keywords: Abdominal pain, Perforation peritonitis

INTRODUCTION

Perforation peritonitis is a leading emergency encountered by general surgeons all over the world [1]. Peritoneal cavity is the largest cavity in the body which is divided into greater and lesser sac which communicates through foramen of win slow or epiploic foramen [2]. Inflammation of this cavity can be due to many causes, perforation being the most common one, with highest mortality and morbidity. Even after advances in the diagnostic techniques, ICU care and antibiotics, Perforation peritonitis still proves to be a difficult condition to tackle with.

Perforation of hollow viscus like perforated duodenal ulcer, perforated typhoid ulcers, perforated tubuercular ulcer, gastric ulcer, colonic ulcer, perforated meckels diverticulum results in spillage of contents of gastrointestinal tract int the peritoneal cavity. Gram negative and anaerobic bacteria including common gut flora such as E.coli and Klebsiella enters peritoneal cavity and produces endotoxins which result in cellular damage, septic shock and multiple organ dysfunction syndrome.

Clinical features depend upon whether pain is generalized or localized. Features may include severe abdominal pain, persistent vomiting, and increased pulse rate, high grade fever with chills, rebound tenderness, guarding and rigidity etc[2]. Investigations that can be done to diagnose peritonitis are CBC, blood, plain X ray abdomen erect and supine, abdominal USG, CECT and diagnostic laprotomy[1]. Treatment of perforation peritonitis consists of early aggressive resuscitation which includes restoring intravascular volume by fluids, restoring oxygenation by face mask or mechanical ventilation, restoring perfusion by dopamine or nor adrenaline and restoring normality by war against sepsis. In cases of perforation surgical intervention is required in form of emergency laprotomy [2]. Although with advancement of antibiotics, early surgery, peritonitis is very much treatable but there can be certain complications which results in increased morbidity and mortality. This study was undertaken to accentuate the spectrum of peritonitis in our setup with special emphasis on aetiology, diagnosis and post-operative complications at National Institute of Medical Sciences Medical College and Hospital Jaipur.

MATERIAL AND METHODS

This was a hospital based cross sectional study conducted from January 2015 to June 2016 at National institute of medical sciences medical college and hospital, Jaipur on 50 cases of perforation peritonitis. All the cases were diagnosed with perforation peritonitis. Patients were studied irrespective of their age, sex type, severity and causes of peritonitis. Every case was resuscitated in the beginning after which a detailed clinical history with examination was done. Routine blood examinations like CBC, LFT, and RFT were done, followed by X-ray flat plate abdomen. In some cases perforation was not diagnosed by X-ray FPA, these cases were subjected to Usg abdomen and CECT abdomen.

After the diagnosis of peritonitis secondary to perforation was confirmed, all patients were prepared for surgery and a preoperative antibiotic prophylaxis with broad spectrum drug was given. All patients underwent emergency exploratory laparotomy. Perforations were located, repaired and a protective ileostomy made when required. Peritoneal fluid was sent for culture and sensitivity after which the peritoneal cavity was thoroughly lavaged with 4 to 5 liters of normal saline. Abdomen was closed after placement of two intra-peritoneal drains and patients were managed in ICU or post-operative ward depending on their condition. The general principles of post operative care included the administration of intravenous fluids, antibiotics, nasogastric aspiration, other supportive treatment and routine clinical monitoring of the patient. Post operative complications were taken care of as required. General condition of patient was noted after clinical evaluation at the time of discharge. Patients were followed till three months and were examined for any complication.

Data was collected and was recorded on a proforma designed for the study and SPSS 20 version was used to interpret the data.

RESULTS

In a period of one year, 50 cases of perforation peritonitis were studied. The mean age of the patients was 39.1 years with a range of 25 to 79 years. Maximum patients were in range of 31-40 year age group. Males (76%) out-numbered females (24%) with a male to female ratio of 19:6. Pain abdomen was the presenting feature in all the cases (100%) followed by vomiting (98 %), fever (22%). On clinical examination, tenderness was present in all the cases while abdomen rigidity was present in 48% cases and distension in 66% of cases. The liver dullness was obliterated in 60 % and bowel sounds were absent in 82 % of cases. Anaemia (Hb < 10) was present in 42 (84%) of patients.

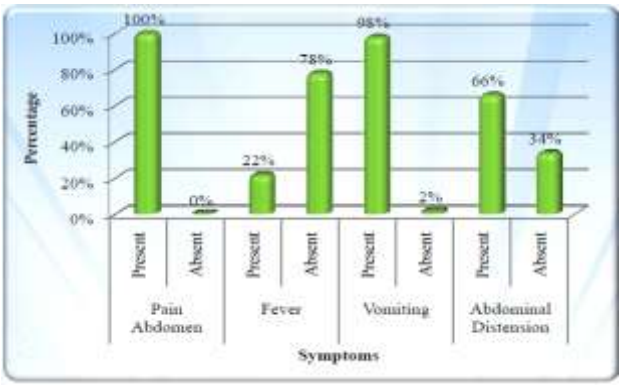

Fig 1: Symptoms of Peritonitis

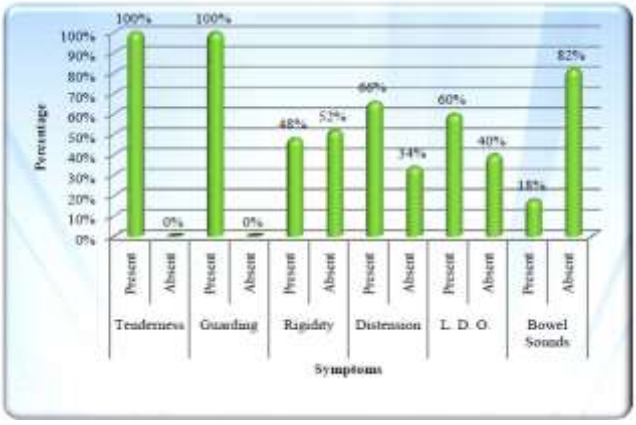

Fig 2: Signs of Peritonitis

Gas under diaphragm on flat film abdomen is the gold standard in diagnosing hollow viscus perforation and was present in 94% of cases. On ultrasonography, free fluid in peritoneal cavity which was suggestive of intestinal perforation was seen in 84% cases and appendicular pathology in form of lump was reported in 8% cases. Waiting period for surgery depends on diagnosis, resuscitation and patient`s willingness for surgery. In less than 6 hours maximum number of cases 72% were taken up for surgery. Only 26% of patients were taken up for surgery within 7-12 hours and 2% of the patients were operated after 12 hours. This gross delay was usually due to patient's unwillingness for surgery.

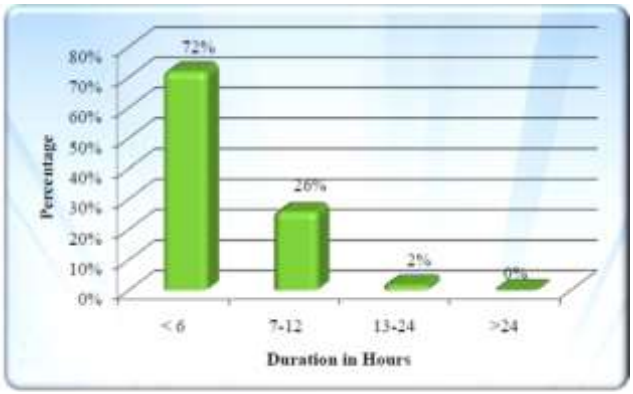

Fig 3: Waiting period for surgery

Peptic perforation was the main cause of perforation peritonitis (60%). Duodenal perforation was the main cause in 26 cases of the series followed by Gastric perforation in 4 cases in the series, Ileal perforations because of enteric fever present in 10 cases and traumatic perforation presented in 2 cases in ileum and 1 case in jejunum. Appendicular perforation was noticed in 4 cases of series. Gangrene of the small gut leading to perforation was seen in 1 case of volvulus intestine and massive gangrene was seen in 1 case following superior mesenteric artery thrombosis.

Table 1: Distribution of Number of Patients According to Causes of Peritonitis

Sr. No.	Etiology		No. of patients	Percentage
1.	Duodenal perforation	Acid-peptic	26	52 %
2.	Gastric perforation	Acid-peptic disease	4	8 %
3.	Ileal perforation	Typhoid	10	20%
		Traumatic	2	4%
4.	Jejunal perforation	Trauma	1	2 %
5.	Appendicular perforation		4	8%
6.	Gall Bladder perforation	Acute cholecystitis	1	2%
7.	Small Bowel perforation	Gangrene	01	2%
		Superior mesenteric thrombosis	01	2%
Total			**50**	**100 %**

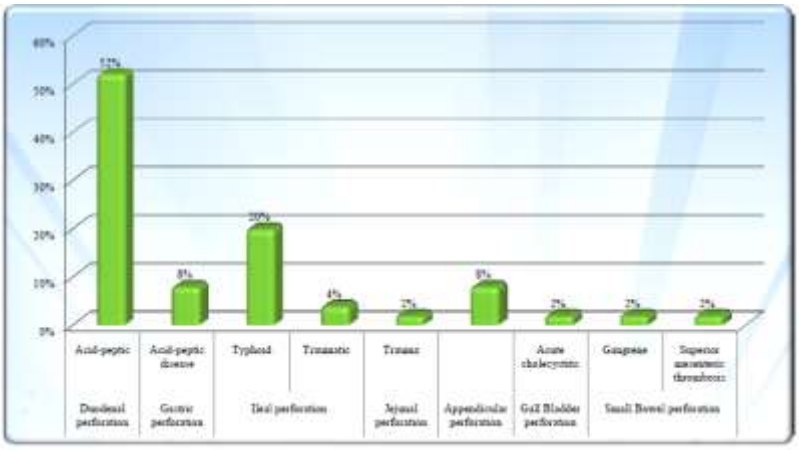

Fig 4: Distribution of Number of Patients According to Causes of Peritonitis

All the patients were treated surgically. Closure of perforation and omentopexy and peritoneal cleaning was done in cases of duodenal and gastric perforations while Jejunal and ileal perforations were corrected by primary closure. Appendectomy was done in perforated appendix and ileostomy in cases of typhoid perforation was done in 8 % cases each. Cholecystectomy (perforated gall bladder) and resection anastomosis in gangrene of gut was done in 2% each. One patient who had mesenteric vascular thrombosis had undergone massive small gut resection with control fistulae of both ends of gut was made in 2% of cases. The most common bacteria isolated from peritoneal fluid was E. Coli 30% followed by klebsiella (4%) and pseudomonas 4% (in cases of gangrene). Staphylococcus was found in 2% of cases. The culture was sterile in 60 % of cases. Many complications were faced post operatively. Maximum number of patients (80%) had no post operative complication and had an uneventful recovery. Wound infection (localized) was noticed in 5 (10%) cases, chest infection in 3 (6%) cases and feacal fistula in 1 (2%) cases. Abdominal dehiscence occurred in 1 (2%) elderly patient.

Table-2: Post-operative Complications

Complications		Frequency	Percent
Uneventful		40	80 %
Infections	Localised	5	10 %
	Chest infection	3	6%
Fever		4	8 %
Faecal fistula		1	2 %
Wound dehiscence		1	2%
Total		50	100 %

Majority of patients (96%) were discharged on 9th to 12th day (IInd week). One patient who had post operative complication was discharged in the 3rd week of his stay and one patient succumbed in the series. All cured patients were followed up for three months. The main complaints of patients in first week after discharge were epigastric pain, pain at wound site and generalized weakness. Skin excoriation was noticed in 3 patients of ileostomy. 16 patients (32%) had no complaints after one week. 44 patients who came for follow up after one month had no complaints. Ileostomy closure was done in 5 (10%) patients after three months who had eventless recovery. 5 patients (10%) were lost in follow up in the series. Only one patient (2%) succumbed to disease in the series. 98% patient's had complete cure of disease.

DISCUSSION

Gastrointestinal perforation forms a large chunk of emergency cases in surgery department. Incidence of types and causes of perforation peritonitis varies largely [3, 4]. The age group affected is younger in developing countries as compared to western countries [5, 6, 10]. Similar observation was noted in our study too. Male to female ratio of 19:7 in our series was similar to other studies[7]. This can be due to the lifestyles and risk factors like cigarette smoking, consumption of caffeine, alcohol abuse, and physical stress. Men seem to be more prone to these effects, and so the ratio favours men in our study.

Peptic perforation is the most common cause of perforation peritonitis followed by typhoid ulcer

perforations [3, 8, 9]. Over-the-counter sale of NSAIDs, high prevalence of H-pylori infection, unhygienic life style due to poor socio-economic conditions and lack of proper medical care seems to be the main cause of higher incidence of peptic and enteric perforations in developed countries [11, 12]. In our study too peptic perforation topped the list with infectious disease following through. This is in sharp contrast from west, where large bowel perforations due to malignancy are the most common. The western life style with genetic predisposition is the main reason behind this [13- 15] Also the traumatic perforation is more in west when compared to developing countries, because of more availability of vehicles.

Duodenal to gastric ratio was 6.5:1 in our series, which was similar to a large study done by Rajender *et al.;* in India. In this study, pain abdomen was present in all the cases (100%). This was found by many other people, and seems to be the most common symptom [17]. Fever was present in only 22% of cases, which can be due to early presentation to emergency department as the patient get severe pain abdomen in the early stage only. Most common post-operative complication was surgical site infection (10%) followed by respiratory complications (6%). Suture site infection seems to be due to contamination of wound by intestinal flora during surgery. This can be minimised by washing the wound with normal saline thoroughly. Respiratory complications results because of prolonged duration of general anaesthesia, pain in upper abdomen which restricts the respiratory movements. Timely physiotherapy and good analgesics helps in this condition.

Mortality rate was only 2% in our study. The mortality reported in literature is between 6 and 27% [18]. The reason for this can be due to less no of cases in our study. However, it can be said that overall mortality in cases of perforation peritonitis is decreasing due to early presentation, broad spectrum antibiotics, proper resuscitation fluids availability, better anaesthesia and advance care in intensive care units. Majority of the patients of the series were discharged in second week after complete recovery. Similar duration has been reported by many other authors [19-21]. Mild pain at wound site was the main complaint only in 25% of cases in first week. Minor complaints like generalized weakness, upper abdominal pain were reported in (6%) and (16%) of patients respectively. None of the patient of the series had any complaint after completion of first week. Similar findings have also been reported by Parmar H.D *et al.;* [22].

CONCLUSION

Peptic perforation remains the leading cause for perforation peritonitis. Strict action against over-the-counter sale of analgesics and control of H-Pylori infection may help in controlling it. Typhoid ulcers and appendicitis, the other culprits can however be tackled with better medical facilities and early contact to medical personals. Diagnosis remains easy with X-ray FPA but sometime it can create a dilemma. Adequate aggressive resuscitation followed by early surgical intervention, proper antibiotic coverage and proper post-op care is crucial for best outcomes, thus minimizing morbidity and mortality.

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