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Management of Peritonitis as Skilled Emergency Surgical Treatment

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ABSTRACT
Peritonitis is an often seen urgent surgical condition in hospitals, with high rates of illness and death. This remains a significant worry for surgeons, especially in a tropical nation like India. During the presentation, the patient's overall health was often significantly worsened and required skilled emergency surgical treatment. Temporary diagnoses were determined based on the patient's medical history and physical examination. In order to confirm the final diagnosis, several tests were conducted including standard tests such as haemoglobin (Hb), bleeding time (BT), clotting time (CT), total leukocyte count (TLC), differential leukocyte count (DLC), erythrocyte sedimentation rate (ESR), and comprehensive urine examination. Urea levels in the blood, sugar levels in the blood, creatinine levels in the serum. Four quadrant aspiration tests revealed that faecal materials was present in the aspirate in 37% of patients. In 23% of cases, there was transparent fluid. Bile fluid was found in 13% of patients. Hemorrhagic fluid was found in 5% of instances, while pus was found in 5% of cases. In 23% of instances, there was no presence of aspiration fluid. Laparotomy and closure of the perforation remains the most often performed surgical procedure for ileal and jejunal perforations, followed by complete peritoneal irrigation using normal saline.

INTRODUCTION

Peritonitis is described as inflammation of the peritoneal cavity, which occurs when the gastrointestinal tract becomes compromised, leading to the flow of intestinal contents into the peritoneal cavity. Perforated peritonitis is a frequently occurring surgical emergency in India. Despite improvements in surgical methods, antibiotic treatment and intensive care, the management of peritonitis remains challenging, difficult and intricate. Typhoid fever is the most frequent cause of ileal perforation in India. Following the first administration of fluids through a vein and the treatment of electrolyte imbalance, an emergency surgical procedure called laparotomy is carried out. This procedure aims to either fix or remove the damaged part of the intestine and reconnect the healthy sections, to bring the affected part of the intestine outside the body.

The range of peritonitis cases can also be categorised based on the cause as primary, secondary, or tertiary peritonitis. On the other hand, a more specific occurrence in peritonitis is the development of abscesses, a situation marked by the containment and separation of the infected process from the remaining abdominal cavity[1-3]. The death rate of an intra-peritoneal infection in the early 1900s was about 90%. This ailment was treated without surgery until Kishner proposed the fundamental principles of surgical treatment for infections inside the abdomen: (1) getting rid of the infected areas, (2) removing dead tissue and (3) draining pus. In the 1930s, the death rate had decreased by 50%. The mortality rate continued to decline gradually with the advent of antibiotics. The usage of cephalosporins by the early 1970s was linked to a decrease in mortality to below 30-40%. Further progress in the comprehension of physiology, the monitoring and assistance of the cardiopulmonary systems, the appropriate utilisation of new medications and intensive care unit (ICU) treatment contributed to maintaining death rates at approximately 30%[1,4].

There is no disagreement on the standard treatment, which involves controlling the source and cleansing the inside of the abdomen. However, in patients with advanced peritonitis, the infection source may not be entirely eliminated with just one surgery. Therefore, a dispute occurs, particularly concerning matters such as the timing and frequency of repeated laparotomies, as well as the handling of the exposed wound/abdomen. In addition, the intense resuscitation needed in these patients leads to swelling in the gut and abdominal wall, which can result in higher pressure within the abdomen. This can be made worse by closing the abdominal wall too early. Until now, it is evident that the decrease in mortality to less than 20% has been due to a greater comprehension of the significance of damage management, prevention of intra-abdominal compartment syndrome and the use of improved antibiotic options that have a wide range of effectiveness Between[5-15]. Peritonitis is an often seen urgent surgical condition in hospitals, with high rates of illness and death. This remains a significant worry for surgeons, especially in a tropical nation like India. During the presentation, the patient's overall health was often significantly worsened and required skilled emergency surgical treatment.

MATERIALS AND METHODS

70 patients with a preliminary diagnosis of peritonitis arrived at the surgical emergency. The many approaches to management that influenced the result were examined. Temporary diagnoses were determined based on the patient's medical history and physical examination. In order to confirm the final diagnosis, several tests were conducted including standard tests such as haemoglobin (Hb), bleeding time (BT), clotting time (CT), total leukocyte count (TLC), differential leukocyte count (DLC), erythrocyte sedimentation rate (ESR) and comprehensive urine examination. Urea levels in the blood, sugar levels in the blood, creatinine levels in the serum.

Examining the fluid collected by paracentesis under a microscope and testing its sensitivity to different cultures. Radiographic examinations: Chest X-ray (posteroanterior view) taken while standing, capturing both domes of the diaphragm.X-ray of the abdomen in a standing position, including both domes of the diaphragm, ultrasound of the abdomen, CT scan of the abdomen (where necessary) and subsequent therapy as needed (Table 1-4).

RESULTS

A total of 70 patients with a preliminary diagnosis of peritonitis were included in the study. The main reasons for peritonitis were puncture wounds (42 instances).

Anaemia was found in 13% of patients. 23% of subjects showed signs of septicaemia (total leukocyte count >12000/mm3). 41% of patients exhibited an electrolyte imbalance. Four quadrant aspiration tests revealed that faecal materials was present in the aspirate in 37% of patients. In 23% of cases, there was transparent fluid. Bile fluid was found in 13% of patients. Hemorrhagic fluid was found in 5% of instances, while pus was found in 5% of cases. In 23%

Table 1: Showing aetiology of peritonitis

Site	No. of cases	Percentage
Perforation	42	60
Intestinal obstruction	18	25.7
Appendicitis	10	14.2
Total	70	100

Table 2: Showing Type of Surgical Procedure

Aetiology	Suturing	Mental patching	Resection and anastomosis	Appendicectomy	Cecopexy	Ileostomy	Adhesiolysis	Peritoneum lavage with drain
Gastic perforation	12	12	0	0	0	0	0	12
Duodenal perforation	6	6	0	0	0	0	0	6
Jejunal perforation	2	0	0	0	0	0	0	2
Colon perforation	2	0	0	0	0	0	0	2
Appendicular	0	0	0	5	0	0	0	0
Ileal perforation	14	0	5	0	0	7	0	18
Identified Obstructions	0	0	5	0	3	2	3	10
Not Identified obstructions	0	0	0	0	0	0	0	3
Total	36	18	10	5	3	9	3	53

Table 3: Showing X-Ray Chest (Pa View) (42 Cases)

Findings	No. of cases	Percentage
Air under right/both domes of diaphragm	42	100
Total	42	100

Table 4: Showing X-Ray Abdomen (42 Cases)

Findings	No. of cases	Percentage
Air under right/both domes of diaphragm	42	100
Multiple air fluid level	2	4.7

of instances, there was no presence of aspiration fluid. Suturing of the perforation was the most frequent (36 instances) surgical procedure performed, mental patching with suturing in 16 cases and resection and anastomosis in 10 cases. Appendix removal was performed in six cases, ileostomy was performed in nine cases and adhesion removal was performed in four cases.

In this investigation, X-ray of the abdomen was performed on 70 patients. Pneumoperitoneum was observed in all cases with perforated peritonitis (42 out of 70 cases) and in 2 cases, multiple air-fluid levels with pneum-o-peritoneum were found. This study can be easily compared to the study conducted by SO Fic *et al*.[1] where X-ray images of the abdomen revealed the presence of free air in the abdominal cavity in 80% of cases with gastrointestinal perforation. On the other hand, Dickson JAS *et al*.[2] found air under the diaphragm in 40% of abdominal X-ray films of patients with terminal ileum perforation, while Aston *et al*.[3] reported the presence of free peritoneal gas in 25% of abdominal X-ray films of patients with perforation.

DISCUSSIONS

During the presentation, the overall state of the patient is typically significantly worsened and requires skilled emergency surgical treatment. The results of ultrasonography in this investigation are strongly backed by the studies of SO Fic *et al*.[16] (where free fluid was found in 80% of cases). Only two cases underwent CECT of the abdomen in our study. According to Fic *et al*.[16] it was noted that CT was more responsive to the presence of both liquid and a small amount of free air, which could not be detected using ultrasonic and X-ray. The current study primarily focused on surgical management. Exploratory Laparotomy was performed in all instances following 3-4 hrs of initial resuscitation. Pre-operative resuscitation involved administering intravenous fluids with electrolytes, performing Ryle's tube aspiration and Foley's catheterization, maintaining a balance between intake and output, conducting blood transfusion and administering intravenous antibiotics to target gram-positive, gram-negative and anaerobic bacteria. Regularly monitoring temperature, pulse and blood pressure. Two patients who were seriously ill and had a swollen abdomen causing difficulty in breathing had a drain put into their abdominal cavity before surgery. Pneum-o-peritoneum and indications of peritonitis were noticed in all instances of perforation.

Foul-smelling transparent liquid with or without small pieces was seen in 11 instances in the abdominal cavity, foul-smelling bile-like liquid with or without small pieces was seen in 6 instances, foul-smelling faecal matter with or without small pieces was seen in 18 instances, bloody liquid was seen in 2 instances and pus was seen in 2 instances. In 17 instances, there were observations of terminal ileal perforation occurring up to 30 centimeters proximal to the ileocaecal junction on the anti-mesenteric border. Gastric perforation was observed in 11 instances. In all instances of gastric perforation, it was singular and located either in the pyloric region or on the front surface of the stomach. Perforation on the front wall of the first part of the duodenum was observed in 5 cases, while perforation on the anti-mesenteric border of the jejunum was observed in 1 case. Colon perforation was observed in only one case. The goals of surgical intervention are twofold: to remove the pus and bowel contents from the peritoneal cavity and to prevent additional contamination.

A minimal necessary surgical operation was carried out. In all instances of peptic perforation, the edges were removed and the margins refreshed. The perforation was then closed in two layers by using at least one layer of non-absorbable suture.In nearly all cases, a pedicledomental patch was also used. Thorough cleaning of the peritoneal area was performed using normal saline. An abdominal drain

was placed in the pelvic cavity and paracolic gutter. In cases of intestinal perforation, the perforation was closed using a gentle needle in either two layers or a single layer. Since the patients were at a disadvantage in terms of their ability to undergo surgery and could only endure a little amount of anaesthetic, opting for a simple closure offers the benefit of being a fast and straightforward procedure. In other situations, alternative procedures such as resection and ileo-ileo anastomosis were also performed. A minimal necessary surgical operation was carried out. In all instances of peptic perforation, the edges were removed and the margins refreshed. The perforation was then repaired with non-absorbable sutures in a single layer. An mental patch was also used in nearly all cases. Thorough cleaning of the peritoneal area was performed using normal saline. Drains were placed in the abdominal cavity and Morrison's pouch. In cases of intestinal perforation, the perforations were closed using a gentle needle in either two layers or a single layer after preparing the edges. Since the patients had a high surgical risk and could only tolerate minimal anaesthesia, opting for a simple closure offers the benefit of being fast and straightforward. In certain cases, other procedures such as resection and ileoileal anastomosis were also performed.

CONCLUSION

Laparotomy and closure of the perforation remains the most often performed surgical procedure for ileal and jejunal perforations, followed by complete peritoneal irrigation using normal saline. Closure of perforation by mental patching is a standard surgical treatment for treating stomach and duodenal holes. It involves performing peritoneal toilet and applying an mental patch.

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