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Original research article

A study on clinical profile of patients with peritonitis secondary to hollow VISCUS perforation

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Abstract

The body's response to other types of harm, such as trauma or surgery, is mirrored by the systemic response to peritoneal infection. A key aspect of the systemic reaction is the onset of hypovolemia, which most likely follows the peritoneal cavity's fluid influx. Informed, written consent was taken from the participants in the local language. Each patient presenting with peritonitis was examine thoroughly after taking a detailed history. The diagnosis was confirmed by history, clinical features and erect abdominal X-ray. Absence of bowel sounds were noted in around 78% of cases making it the most common sign in the subjects presenting with peritonitis, present in 78% of cases, followed by guarding and rigidity noted in 61% of cases. About 55% of the patient had obliteration of liver dullness. Patients with suspected perforated peritonitis underwent two different types of x-rays, chest x-ray and erect x-ray abdomen. Majority of cases, had air under diaphragm in 67% of cases and was not noted in the rest of the cases. Many of these cases had sealed off perforation intraoperatively, the other reason can be due to presence of minimal air.

Keywords: Peritonitis, hollow VISCUS perforation, hypovolemia

Introduction

The mesothelial cells that make up the peritoneum are supported by a basement membrane that is in turn supported by a layer of connective tissue that is highly vascularized. The peritoneum's surface area is large, approximately 1.8m2 (adult male). In relation to the significant fluid changes brought on by diffuse peritonitis, it has been calculated that a 1mm increase in peritoneal thickness can lead to the sequestration of 18 litres of fluid [1].

The inflammatory reaction that takes place in the peritoneal cavity and is marked by hyperaemia, a fluid inflow, the recruitment of phagocytic cells, and the deposition of fibrin. Any unpleasant stimuli, such as an endotoxin linked to gram-positive, gram- negative, or bacteroides species, or an irritant like gastric juice, bile salts, or meconium, most likely triggers an inflammatory response by damaging mesothelium cells or by directly activating the complement system. Following activation, the peritoneal inflammatory process involves changes in blood flow, an increase in bacterial phagocytosis, and the deposition of fibrin to trap or contain germs [2].

The body's response to other types of harm, such as trauma or surgery, is mirrored by the systemic response to peritoneal infection. A key aspect of the systemic reaction is the onset of hypovolemia, which most likely follows the peritoneal cavity's fluid influx. The resulting alteration in intravascular volume causes the cardiac output and venous return to decrease. The release of TNF, IL-1, platelet activating factor, and nitric oxide may also cause systemic hypotension [3].

Reduced cardiac output, renal blood shunting, and increased aldosterone and anti-diuretic hormone release all contribute to decreased urine flow. This situation has been referred to as "warm" septic shock, and symptoms include tachycardia, fever, oliguria, hypotension, and warm extremities [4].

Diaphragmatic mobility is restricted by abdominal distention brought on by peritoneal fluid build-up, which also reduces ventilatory capacity and eventually leads to atelectasis. Lung compliance and labour of breathing are both lowered by fluid build- up in the pulmonary interstitium and alveoli. The development of respiratory alkalosis and hyperventilation are the early symptoms. The adult respiratory distress syndrome will occur as the pulmonary oedema worsens and the alveoli collapse, resulting in severe hypoxemia (ARDS). As a result of peritonitis, tissue metabolism is significantly changed.

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Metabolic acidosis is caused by anaerobic glycolysis in hypoxic tissues. Utilizing nutritional assistance only partially mitigates the quick and severe loss of lean body mass that might result from protein catabolism [5, 6].

Methodology

- **Study Design:** Prospective observational study.
- **Sample size:** Taking prevalence to be 10% and precision to be 6% and applying the formula 4pq/l2, sample size is 100.

Methodology

Informed, written consent was taken from the participants in the local language. Each patient presenting with peritonitis was examine thoroughly after taking a detailed history. The diagnosis was confirmed by history, clinical features and erect abdominal X-ray. Cases of peritonitis secondary to hollow VISCUS perforation undergoing emergency laparotomy was assessed for the site of perforation, its pathological condition and the amount of peritoneal contamination. Depending on the site of perforation and pathological condition, appropriate procedure was adopted for its management, that includes omental patch closure, simple closure, open appendectomy, resection anastomosis and loop ileostomy. Postoperatively patients was examined for the development of any complications.

Inclusion criteria

Patients admitted to hospital, who was diagnosed with peritonitis secondary to hollow VISCUS perforation and undergoing exploratory laparotomy.

Exclusion criteria

1. Peritonitis secondary to esophageal perforation.
2. Peritonitis secondary to reproductive tract perforation, blunt trauma.
3. Patients not willing to give consent for the study.

Data analysis

Statistical analysis was done and mean, median and mode was used for the analysis of this descriptive study relevant statistical tests applied wherever necessary. Results was presented in the form of tables and charts.

Results

Table 1: Frequency of Number of Days of Pain in Patients with Perforation

Days of pain	Frequency	Percentage
Day 1	71	71
Day 2-3	26	26
Day >3	3	3

Pain was the most common symptom, present in all of the cases, but the presentation of the patient to the hospital with the duration varied as shown by the table and chart, with about 71% of the patients presenting on the day of onset.

Table 2: Frequency of Site of Pain

Site of Pain	Frequency	Percentage
Diffuse	70	70
Epigastric	21	21
Hypogastric	3	3
RIF	6	6

The site of pain in perforation patients varied accordingly. Most commonly the patients presented with diffuse type of pain in 70% of cases followed by epigastric site, noted in 21% of patients.

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Table 3: Frequency of Other Symptoms in Patients with Perforation

Symptoms	Percentage
Vomiting	68
Fever	52

Vomiting and fever were the next common symptoms patients presented with after pain being the most common and present in all of the cases. Vomiting was present in 68% of cases and fever in 52% of cases. Significant past history such as acid peptic disease was also noted in most of the patients presenting with duodenal perforation.

Table 4: Distribution of Signs in Patients

Signs	Percentage
Guarding and rigidity	61%
Obliteration of liver dullness	55%
Absent bowel sounds	78%

Absence of bowel sounds were noted in around 78% of cases making it the most common sign in the subjects presenting with peritonitis, present in 78% of cases, followed by guarding and rigidity noted in 61% of cases. About 55% of the patient had obliteration of liver dullness. Patients with suspected perforated peritonitis underwent two different types of x rays, chest x-ray and erect x-ray abdomen. Majority of cases, had air under diaphragm in 67% of cases and was not noted in the rest of the cases. Many of these cases had sealed off perforation intraoperatively, the other reason can be due to presence of minimal air.

Table 5: Frequency of Free Air under Diaphragm

Free air under diaphragm	Percentage
Yes	67%
No	23%

As shown in the table, the most common site of perforation in our study was duodenal, with all of them in anterior location followed by appendiceal perforation which was more common in the younger age group followed by ileal and colonic perforation.

Discussion

Following on with the frequently associated site of perforation as mentioned in table 3, the commonest site was duodenal which was noted in 71% followed by 16% appendiceal perforation, 7%with ileal secondary to significant past history of typhoid and 5% due to colonic malignancy.

Duodenal ulcer being the most common site of pathology (71%), presentation of patients were similar with most common complaints of pain abdomen(100%), vomiting(68%) and fever(52%) and per abdominal tenderness, guarding, rigidity and obliteration of liver dullness being the predominant signs.

In our study conducted all the patients complained of pain abdomen, diffuse in nature in 70% of cases, epigastric pain in 21%. Vomiting was present in 68 of the cases and fever in 52 cases. Abdominal signs such as guarding and rigidity were present in 61 cases, obliteration of liver dullness in 55 cases and absent bowel sounds in 78 cases.

Liver dullness was noted in all of the gastric and ileal perforation and majority of duodenal perforations. Out of the total 71 cases with duodenal perforation only 55 had obliteration of liver dullness. Liver dullness was not obliterated in 16 patients which might be due the sealing off of the perforation by the omentum or lack of free air under the diaphragm or presence of adhesions at the site of perforation. Liver dullness was not obliterated in all cases of appendiceal perforation.

The presence of pneumoperitoneum on radiograph confirmed the diagnosis. Air under diaphragm was noted in 67% of the cases. It was noted in 55% of the duodenal perforation cases and all of the 12 cases with ileal perforation. The results correlated with other studies [7, 8].

Conclusion

- The most common site of perforation was duodenum (71%), followed by appendicular (16%), ileal 7%, colonic (5%).
- The abdominal signs such as guarding and rigidity were noted in 61% cases, obliteration of liver dullness in 55% cases and absent bowel sounds in 78% cases.

References

1. Rajender Singh Jhobta, Ashok Kumar Attri, Robin Kaushik, Rajeev Sharma, Anupam Jhobta. Spectrum of perforation peritonitis in India- review of 504 consecutive cases. World J Emerg. Surg, 2006, 126.

ISSN:0975 -3583,0976-2833 VOL14, ISSUE 10, 2023

2. Danapat.MC, Mukherjee SB, Mishra PC. Howlader Gastro-intestinal perforations Indian of Surgery. 1991;53(5):189-93.
3. Capoor MR, Nair D, Chintamani MS, Khanna J, Aggarwal P, Bhatnagar D. Role of enteric fever in ileal perforations; An over stated problem in tropics? Indian Journal of Medical Microbiology. 2008;26(1):54-7.
4. McMinn RMH. Abdomen Last's Anatomy Regional and Applied. 9 ed., 1996, 312-42.
5. Thomas Genuit "Peritonitis and Abdominal Sepsis" e-Medicine, 2004 Sep, 1-11. www.emedicine.com
6. Hiyama DT, Roberst S Bennion. Peritonitis and Intraperitoneal Abscess: Maingot's Abdominal Operation Micheal J. Zinner, Seymour I, Schwartz, Harold Ellis. (ed.) McGraw Hill. 1997;1:634-53.
7. Von Recklinghausen FT. Zur Fettresorption. Arch Path. Anat Physiol, 1863, 26-172.
8. Dixon CT, Rixford EL. Cytologic response to peritoneal irritation in man: a protective mechanism. Am. J Surg. 1934;25:504.