

NON TRAUMATIC GASTROINTESTINAL PERFORATION AS A CAUSE OF ACUTE ABDOMEN

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ABSTRACT

Background

Any part of the GI tract may become perforated, releasing gastric or intestinal contents into the peritoneal space. Causes vary. Symptoms develop suddenly, with severe pain and may be followed by signs of shock. Diagnosis is usually made by the presence of free air in the abdomen on imaging studies. Treatment is with fluid resuscitation, antibiotics, and surgery. Mortality varies with the underlying disorder and the patient's general health.

Objectives

To study the clinical pattern of various gastrointestinal perforations in surgical emergency department in Sulaimany.

Patients and methods

This prospective study was done in Sulaimany Teaching Hospital, including all emergency, non-traumatic acute abdomen those were caused by gastrointestinal (GI) perforation from the 1st of February 2011 to the 1st of September 2012. A total of 100 patients were collected. Patient's data were analyzed by history, examination and various laboratory investigations and radiological studies.

Results

The commonest cause of perforation was peptic ulcer (70%), nineteen cases (19%) were infection, and the remaining (11%) were from other causes. Seventy-two patients (72%) were male and (28%) were female, fifty cases were of age between 15-45 years. Most of the patients presented with pain in the abdomen (93%), eighty four (84%) had tenderness and rigidity, twenty cases (20%) had abdominal distension, twenty-six (26 %) were febrile, and (7%) had shock. Ninety-eight (98%) cases were surgically treated, of which 60 were recovered uneventfully, thirty-one cases developed complications and 8 died post-operatively.

Conclusion

To manage a case of perforated hollow viscus of any sort, a skilled surgical team which can handle these situations confidently is of prime importance.

Keywords: *Acute abdomen, GI perforation, NSAID, and Peptic ulcer.*

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INTRODUCTION

Acute abdomen secondary to bacterial peritonitis due to spontaneous (non traumatic) perforation of hollow viscus is one of the commonest surgical emergency in developing countries. Perforation can be from peptic ulcer, non-specific ileal, enteric, and colonic perforation⁽¹⁾. Perforations of the upper gastrointestinal tract in developing countries constitute the majority unlike western series where lower gastrointestinal tract perforations predominate⁽²⁾.

Surgical management requires a multidisciplinary approach to guide the timing and the number of interventions necessary to eradicate the septic foci and create optimal healing with the fewest complications⁽³⁾. Peptic ulcer perforation is a common surgical emergency and perforation of an ulcer is the second most common manifestation of peptic ulcer disease⁽⁴⁾. These perforations are usually encountered along the first part of the duodenum anteriorly and in the pylorus of the stomach. The number of patients undergoing surgical intervention for complications such as perforation remains relatively unchanged or has increased^(5, 6, 7).

The perforation of a hollow viscus leads to contamination of peritoneal cavity. This can lead to an infective processes, sepsis, disseminated intravascular coagulation, multi-system organ failure (MSOF) and death in the presence of irreversible damage to the vital organs^(7,8). Plain supine and erect radiographs of the chest and abdomen are recognized as the most appropriate first-line investigation when a perforated viscus is considered⁽⁹⁾. Findings suggestive of perforation include the following:

- Free gas under diaphragm (pneumoperitonium).
- Clear definition of the inner and outer surface of bowel wall.
- Water-soluble contrast media given orally can be used as an adjunct diagnostic tool to detect any intraperitoneal leak.

Ultra sonogram of the abdomen is widely available in emergency departments and increasingly used by emergency physicians. Localized gas collection related to bowel perforation may be detectable. Free fluid can be detected^(10, 11). The mainstay of treatment for intestinal perforation is surgery, but if symptoms and signs of generalized peritonitis are absent, a non-operative policy may be used with antibiotic therapy

directed against gram-negative and anaerobic bacteria⁽¹²⁾. Operative management depends on the cause of perforation, general condition of the patient, site of perforation, number of perforations & degree of peritoneal soiling⁽¹³⁾. Surgical options; primary closure of perforation, wedge resection of area and closure, resection of bowel with or without anastomosis, closure of perforation and entero-enteric anastomosis & enterostomy (ileostomy or colostomy)⁽¹³⁾.

The aim of the study was to study clinical presentation, pathological finding and the rates of various complications of gastrointestinal perforations.

PATIENTS & METHODS

This prospective study was done in Sulaymaniya teaching hospital including all emergency non traumatic acute abdomens those were caused by gastrointestinal (GI) perforation from the 1st of February 2011 to the 1st of September 2012.

A total of 100 patients were collected as acute abdomens caused by GI perforation, of them 72 patients were male and 28 patients were female. Data were analyzed by history, examination and various laboratory investigations and radiological studies.

RESULTS

From a total of 100 patients 72 were males and 28 were females. Majority of the patients (38) were between (31-45) years age group as shown in (table 1).

The commonest presentation was abdominal pain in (93) patients, followed by abdominal tenderness and rigidity, fever, abdominal distention and shock as shown in (Table 2). The most common positive past history was using non-steroidal anti-inflammatory drugs (NSAID) one week before presentation, followed by smoking and the presence of other comorbid diseases as shown in (table.3).

Plain X-ray of the upper abdomen revealed pneumoperitonium in 71 cases out of 98, while abdominal ultrasound showed free fluid only in 22 cases as shown in (table 4).

Non traumatic gastrointestinal perforation as a cause

Table 1. Patients distribution according to their age, sex and number.

Age	Male	Female	Total number	Percentage
15-30 years	9	3	12	12%
31-45 years	23	15	38	38%
46-60 years	19	5	24	24%
Above 60 years	21	5	26	26%
Total	72	28	100	100%

Table 2. The most common clinical presentation.

Clinical presentation	No. of patients	Percentage
Pain	93	93%
Tenderness and rigidity	84	84%
Fever	26	26%
Distension	20	20%
Shock	7	7%

Table 3. Past medical and social history

Past history	Total number
NSAID	49
Smoking	44
Comorbid diseases	37

Table4. Imaging techniques & results.

Imaging	Positive	Negative	Not done
Plain X-ray (pneumoperitium)	71	27	2
Ultrasonography (Free fluid)	22	58	20
CT scan	2	1	97

The commonest site of perforation was duodenum which found in (57) patients, followed by stomach, caecum, jejunum, ileum, colon and rectum. While no lower esophageal perforation found as shown in (table5).

Peptic ulceration (PU) was the commonest pathology causing perforation which found in 70 patients followed by infection, strangulation, closed loop and malignancy as shown in (table 6).

From 100 patients 98 underwent operation either with suturing or resection the site of perforation, one patient was sealed by itself without surgical intervention and treated conservatively, and one patient died on table before any intervention as shown in (table 7).

The most common postoperative complication was prolonged paralytic ileus found in 37 patients followed by cardiopulmonary problems, wound infections, sepsis, leak and wound dehiscence as shown in (table 8).

Table 5. The common site of perforation.

Site of perforation	Number	Percentage
Lower esophagus	0	0 %
Stomach	13	13 %
Duodenum	57	57 %
Jejunum	7	7 %
Ileum	7	7 %
Caecum	8	8 %
Colon	7	7 %
Rectum	1	1 %
Total	100	100%

Table 6. Pathology of perforated site.

Pathology	PU	Infection	Strangulation	Closed loop	Malignancy
Number	70	19	7	3	1
Percentage	70%	19%	7%	3%	1%

Table 7. The operative intervention.

Operative intervention	Number	Percentage
Suturing + omental patch	70	70%
Simple suturing	13	13%
Resection + stoma	8	8%
Resection + anastomosis	7	7%
Nothing	2	2%
Total	100	100%

Table 8. Postoperative complications.

Postoperative complications	Prolonged ileus	Cardio-pulmonary	Wound infection	sepsis	Leak	Dehiscence
Number	37	35	25	14	9	8
Percentage	37%	35%	25%	14%	9%	8%

DISCUSSION

Peritonitis is usually caused by intra-abdominal perforation of a hollow viscous ⁽¹⁴⁾. About three quarters of admissions were male (72%) and just over one quarter were female (28%), this agrees with T. Kemparaj *et al* (2001) ⁽¹⁵⁾ and Yadav S. S., Shrinarayan ⁽¹⁴⁾ whom claimed that most commonly affecting young men in the prime of life, and not agrees with Watkins RM ⁽¹⁶⁾. The male to female ratio decreased over the review period from 4.9:1 to 1.9:1 owing to a reduced incidence of perforation in men and an increased incidence in women.

Most common affecting age group was (15-45 years), that is young age, this is because young patients in our study had history of using NSAID for minimal symptoms like flue one week before presentation, this goes with T. Kemparaj *et al* (2001) ⁽¹⁷⁾, and Syed Mahbulul Alam *et al* (2001) ⁽¹⁸⁾ in which 70% of patients were above 40 years. But does not goes with Tripathi MD *et al* (1993) ⁽⁷⁾ and Yadav S.S., Shrinarayan ⁽¹⁴⁾ who claims that PU is a problem mainly seen in elderly women and elderly people.

Our analysis showed that majority of patients presented with abdominal pain, tenderness and rigidity. Abdominal distension and fever were other features in minority of patients but still clinical diagnosis alone is not possible in all cases.

This result goes with Syed Mahbulul Alam *et al* (2001) ⁽¹⁸⁾ who claimed that all patients presented with abdominal pain of varying severity, vomiting, abdominal distension and fever were other striking features but 88% were diagnosed radiologically pre-operatively, but differ from a study done by T. Kemparaj *et al* (2001) ⁽¹⁷⁾ who claimed that the signs and symptoms are typical and it is possible to make a clinical diagnosis of peritonitis in all patients.

In our study 98 cases had erect CXR and gas under diaphragm found in (71%) of them, and 2 cases diagnosed by C-T scan, this result goes with T. Kemparaj *et al* (2001) ⁽¹⁷⁾, but does not goes with Syed Mahbulul Alam *et al* (2001) ⁽¹⁸⁾ who claimed that (88%) of cases were diagnosed radiologically.

The perforations of proximal gastrointestinal tract (70%) were more common than perforations of distal gastrointestinal tract (30%). This result goes with T. Kemparaj *et al* (2001) ⁽¹⁷⁾ and Syed Mahbulul Alam *et al* (2001) ⁽¹⁸⁾, which is in sharp contrast to studies from developed countries like United States ⁽¹⁷⁾ and Japan ⁽¹⁹⁾ which revealed that distal gastrointestinal tract perforations were more common.

In our study gastroduodenal perforation due to peptic ulcer account for (70%) of cases which were young males, while all other pathologies were accounting for only (30%). This is because young patients in our study had history of abuse of NSAID for minimal symptoms like flue, backache and they had increased stress and smocking habit, this result goes with T. Kemparaj *et al* (2001) ⁽¹⁷⁾ and Syed Mahbulul Alam *et al* (2001) ⁽¹⁸⁾, but not with studies in developed countries like United States ⁽¹⁵⁾ and Japan ⁽¹⁹⁾.

In our study (70%) of patients were treated by suturing and omental patch for gastroduodenal perforations and (13%) by simple suturing mostly for proximal perforations because they were mostly young and present early to hospital and their out come were overall good.

While distal perforations treated by resection and anastomosis or diversion stomas as this group were mostly elderly with co morbidities, presented late with generalized peritonitis and electrolyte imbalance and their out-come was overall poor, this agrees with T.

Kemparaj *et al* (2001)⁽¹⁷⁾ and Syed Mahbubul Alam *et al* (2001)⁽¹⁸⁾, we have no knowledge about any reference that does not agree with this explanation.

In our study prolonged ileus > 5 days was one of the most common postoperative complications (37%), this is because of pre and postoperative electrolyte imbalance, generalized peritonitis due to late presentation and lack or irregular use of analgesia which restrict patients postoperative mobility.

The other most common postoperative complication was cardiopulmonary (35%), this occurred mostly among elderly patients possibly because of their preoperative comorbid diseases and lack or irregular uses of analgesia.

Mortality rate was 9%, mostly in patients who presented late with generalized peritonitis and elderly with comorbid diseases, this is in agreement with T. Kemparaj *et al* (2001)⁽¹⁷⁾ but not with Calcuttawala MA⁽²⁰⁾ who claimed that mortality was zero in his study.

In conclusion, young age group male has greater incidence of GI perforation. The commonest site of perforation is duodenum, using NSAID and smoking increases the risk of perforation. So early diagnosis and treatment has important role in decreasing the morbidity.

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