

A Clinical Study and Management of Non Traumatic Acute Abdomen

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ABSTRACT

Background: The acute abdomen is a condition that demands urgent attention and treatment, ranging from trivial to life threatening conditions. The aim of this study was to know in detail the epidemiology and outcome in non-traumatic acute abdomen.

Methods: An institution based, cross-sectional study was conducted from December 2019 to April 2020, at Department of General Surgery Govt. Medical College Kota Rajasthan. The study included 100 cases of non-traumatic abdomen.

Results: Non-traumatic acute abdominal pain was more common in 2nd to 6th decade of life. The males to female ratio is 2.85:1. Hollow viscus perforation (30%) forms the commonest cause of acute abdomen followed by acute appendicitis, Sub acute intestinal obstruction, renal/ureteric colic, cholelithiasis, pancreatitis, non-specific pain abdomen, OBG related pathology, liver abscess, Meckel's diverticulitis and splenic abscess in 24%, 23%, 8%, 4%, 3%, 3%, 2%, 1%, 1% and 1% respectively. Sixteen patients managed conservatively. Most common surgical procedures done were exploratory laparotomy with needful for hollow viscus perforation and open/laparoscopic appendectomy for acute appendicitis.

Conclusions: Proper history taking, clinical examination with supportive imaging findings are most important to narrow the differential diagnosis and for immediate intervention to limit morbidity and mortality.

KEYWORDS: Non-traumatic acute abdomen, Hollow viscus perforation, Acute appendicitis, Intestinal obstruction

INTRODUCTION

Acute abdomen has abruptness of onset and requires instant intervention. Acute abdomen is defined as "a wide range of surgical, urological, gynaecological and medical conditions ranging from inconsequential to life threatening conditions, which require hospital admission, investigations and

treatment.^[1] Abdominal pain is one of the most common reasons for an emergency department (ED) visit, accounting to about 5% to 10% of all ED visits.^[2] Demographics (age, gender, ethnicity, family history, sexual orientation, cultural practices, and geography) influence both the incidence and the clinical expression of abdominal disease.^[3]

Acute abdomen can be the manifestation of a wide range of disease processes, which include acute exacerbation of chronic diseases like peptic and duodenal ulcers, pancreatitis, inflammatory bowel disease and acute conditions like appendicitis, hollow viscus perforation, volvulus, urological and gynaecological problems. Common non-surgical reasons include metabolic and cardiac emergencies (e.g., myocardial infarction).^[4] Patients with acute abdomen complained a broad range of clinical signs and symptoms. Usually, the sign and symptoms are subtle and are frequently overlapping. Missed and/or error in etiological diagnosis is common among acute abdomen patients. The chances of error are more in the emergent situation and more so if, health infrastructures are poorly equipped and overburdened. The aged patients have uncommon presentations with longer duration of pain at presentation.

Acute abdominal pain if accompanied by guarding and muscular rigidity, essentially describes the clinical picture of peritonitis and usually calls for an emergency action. Similarly, for any patient presenting with acute abdominal pain, any abnormality of pulse rate, blood pressure, respiratory rate, temperature and altered consciousness should raise the suspicion of an intra-abdominal catastrophe immediately.

History and physical examination findings should be based on adequate clinical experience, detailed knowledge of the anatomy and physiology of the abdominal organs and a clear understanding of the pathological processes.

Investigations like x-ray or ultrasonography can help establish the diagnosis which later confirmed by operative findings. Ultrasound is a well-established imaging modality for assessing the abdomen, as it is non-invasive, portable, readily obtainable, comparatively inexpensive, and without the risks of ionizing radiation or iodinated intravenous

contrast. [5, 6]

According to commendations by American college of radiology, the use of imaging studies for evaluation of acute abdominal pain, Ultrasonography (USG) is recommended to evaluate the right upper quadrant pain and CT scan is recommended for pain in the right and left lower quadrants. CT has major advantages over USG: it is enormously fast and the time burden is often less than that of a USG examination. [7]

This study was conducted to find out the frequency and etiological spectrum of acute abdominal emergencies among patients admitted through general surgical department of a tertiary care hospital, analyse the prognosis of early and late diagnosed non-traumatic acute abdomen.

METHODOLOGY

An institution based cross-sectional analytical study was conducted from December 2019 to April 2020, at department of General Surgery Govt. Medical College Kota, Rajasthan, India. The study was approved by Institutional Ethics Committee. Patients admitted in department of general surgery with surgical non-traumatic acute abdomen were study population in the present study.

The study included 100 study subjects after obtaining written informed consent from them. A predefined proforma was used to collect data.

Routine investigations namely complete blood count, total leucocyte count, differential count, Erythrocyte sedimentation rate, renal function test, liver function test, amylase and lipase, urine routine was carried out. Relevant procedures like four quadrant aspirations were carried out in some cases. The radiological investigations comprised of plain abdominal x-ray, ultrasonography and CT scan for which no ordering protocol was followed. It was left to the discretion of the treating unit to order the investigation which they felt appropriate for each case.

Data was collected by individual interview of the patient or their attenders, and from patient clinical notes. Finally, for every case, detailed history, associated signs and symptoms, necessary blood and radiological investigations, management details including intra operative findings and post-operative follow up details were collected and noted.

Data were codified and entered in MS Excel spread sheet. Frequency distribution tables were prepared to show results.

RESULT

The age at presentation was from the youngest being 6 years and eldest was 80 years. Third decade had the most number of incidence (25%) followed by second decade accounting to 18 %, collectively more common in 2nd to 6th decade of life. The mean age was 27 (SD=18.38). Total numbers of male patients were 74 and female 26. The male

Age (years)	Hollow viscus perforation	Acute Appendicitis	Intestinal Obstruction	Others
0-10	-	-	-	1
11-20	3	10	4	1
21-30	6	9	4	6
31-40	5	1	2	9
41-50	5	3	3	2
51-60	7	1	5	4
61-70	2	-	4	-
71-80	2	•	1	-
	30	24	23	23

Table 1: Age wise distribution of acute abdominal cases

to female ratio was 2.85:1.

In our study acute appendicitis was the most common cause of acute abdomen in 2nd and 3rd decade of life while as the age of patients progresses hollow viscus perforation, Intestinal Obstruction becomes the leading cause of acute abdomen with Other less common causes including cholelithiasis, acute pancreatitis, ruptured liver abscess and renal colic etc. Table 1.

Cause of Acute Abdomen	No.	Mortality
Hollow viscus perforation	30	3
Acute appendicitis	24	0
SAIO	23	1
Kidney, Ureter, Bladder related cause	8	0
Cholelithiasis	4	0
Pancreatitis related cause	3	0
Non-specific pain abdomen	3	0
OBG related cause	2	0
Meckel's diverticulitis	1	0
Liver abscess	1	1
Splenic infarct with abscess	1	0
Total	100	5

Table 2: Incidence of acute abdominal conditions

Overall, the most common disease presented as acute abdomen was hollow viscus perforation accounting to 30% followed by Acute appendicitis as the second most common disease 24%, followed by Sub acute intestinal obstruction 23% and others. Table 2

Disease	Male	Female	M:F ratio
Hollow viscus perforation	26	4	6.5:1
Acute Appendicitis	20	4	5:1
Intestinal Obstruction	16	7	2.3:1
Others	12	11	1.1:1
Total	74	26	2.8:1

Table 3: Sex Distribution of Acute Abdomen.

In our study, male to female ratio for Hollow viscus perforation, Acute Appendicitis, Intestinal Obstruction and for others was 6.5:1, 5:1, 2.29:1 and 1.09:1 respectively. In general, all types of acute abdomen had got preponderance in males. Table 3

Co-morbid conditions of hypertension, diabetes mellitus and ischemic heart disease were present in 27, 14 and 3 patients respectively. Sixteen patients had a past history of abdominal surgery. In our study 30 patients had hollow viscus perforation peritonitis, out of these 19 had peptic perforation while 11 patients had ileal perforation.

In our study most common pathological type of appendix was inflamed appendix without perforation.

Out of 23 cases of sub-acute intestinal obstruction, the commonest cause was obstructed inguinal hernia (5) followed by postoperative intestinal adhesion (4), volvulus (3) and others. Eight patients had kidney, ureter and urinary bladder related causes of acute abdomen, that were nephrolithiasis (4), nephrolithiasis with bladder stone (1), bladder stone (1) and others.

Out of all cases of acute abdomen, two patients admitted with obstetric and gynaecological related cause. One patient had Lt ovarian cyst torsion which was further operated and managed in general surgery department, while other one had urine pregnancy test positive and diagnosed as ectopic pregnancy was transferred to the respective speciality. Three patients had pancreas related cause of acute abdomen, out of these 2 had acute pancreatitis and 1 with its further complicated stage that is pseudo pancreatic cyst. Nausea was the main symptom seen in 72, followed by constipation, vomit, abdominal distension, fever in 61, 60, 50, 43 respectively and others.

Abdominal tenderness was the most common clinical sign present in 92 patients, others are Absent bowel sound, Rigidity & guarding, Free fluid in peritoneal cavity in 72, 66, 55 patients respectively.

In our study 16 patients managed conservatively. Most common surgical procedures done were exploratory laparotomy, Appendectomy for acute appendicitis and ileostomy, resection anastomosis, jejunostomy, colostomy, adhesiolysis for intestinal obstruction and hernioplasty for obstructed

inguinal hernia, and others. Eleven patients had major post-operative complications including surgical site infection followed by lower respiratory tract infection, burst abdomen which occurred on 6th to 8th postoperative day, followed by entero-cutaneous fistula following laparotomies which were treated conservatively.

Total 100 patients were included in our study then diagnosed in proper way, after that managed either conservatively or surgically. Out of these 92 were discharged once treatment completed or discharged on request, three patients were transferred to respective speciality once the final diagnosis achieved, while 5 patients died during the course of treatment in hospital.

DISCUSSION

In our study maximum number of cases were seen in 11-60 years. Rao D.C.M. et al. [8] in their study observed that the majority of cases of acute abdomen belonged to age group of 21-40 years, whereas Abhinav et al. [9] found it as 21-30 years. The peak age incidence among various studies has varied from 20 to 50 years.

In our study the male to female ratio on an average for all diseases together is 2.85:1. Abhinav et al. [9] observed male to female ratio for acute abdomen was 4.5:1.

The leading cause of acute abdomen in this study was hollow viscus perforation, constituting 30% of the case, the second common cause was acute appendicitis (24%), Intestinal obstruction accounted for 23% of the cases. Abhinav et al. [9] noted acute appendicitis (34%) was the most common cause of acute abdomen followed by perforated hollow viscus (33%) and intestinal obstruction (21%). In a study by Chanana L [10] observed ureteric colic (16.3%), UTI (12.5%), acute pancreatitis (11%) and acute appendicitis (10.6%) were the most common reasons for ED visits due to abdominal pain.

In a study done by Jain et al. in India, the most common cause was perforative peritonitis (39.7%), followed by acute appendicitis (37.7%), and followed by intestinal obstruction (14.2%). [11] This etiological difference may be due to selective referral of high-risk cases to these centers.

In our study peptic ulcer perforation was responsible for 19% of attacks of acute abdomen followed by ileal perforation (11%). Similar results were observed in a study conducted by Rao D.C.M et al. [8].

Acute appendicitis accounted for 24% of all cases of acute abdomen. The majority were in the 11-30 year bracket. Males were 5 times as many as females. Pain was present in all the 24 cases. At the time of onset, pain was mostly over the umbilical region. At the time of admission, the commonest site was the right iliac fossa. On examination, the tenderness was found in the right iliac fossa in the majority of cases. Other common features included tachycardia, guarding, rigidity and fever.

Intestinal obstruction was responsible for 23% of acute abdomen, the commonest causes were obstructed hernia, post-operative intestinal adhesions, volvulus, mesenteric ischemia, paralytic ileus and tubercular abdomen.

In our study maximum incidence of intestinal obstructions between 11-70 years while Bhudaraja^[12] reported maximum incidence between 21 – 50 years.

Obstructed hernias and adhesions have been documented as the commonest cause for intestinal obstruction and are of particular importance because they are the two main causes of strangulation of bowel.^[9]

Pain abdomen was presenting symptom in all 100 % Study subjects. Other associated presenting symptoms were nausea, constipation, vomit, abdominal distension, fever, loss of appetite, obstipation, diarrhoea and jaundice in 72%, 61%, 60%, 50%, 43%, 38%, 36%, 5% and 3% of study subjects respectively. In a study done in 100 patients by Abhinav et al., pain abdomen was the main complaint in all the 100 % patients, followed by vomiting in 78%, constipation in 29%, abdominal distension in 26% and fever in 17% of the patients.^[9]

In our study most consistent presenting sign was abdominal tenderness, it was present in 92% of study subjects. Other presenting signs were absent bowel sounds, abdominal guarding and rigidity and free fluid in abdominal cavity in 72%, 66% and 55% of study subjects respectively. Similar study done by Thakur JK^[4] observed abdominal tenderness, guarding, absent bowel sounds and tachycardia in 524 (100.0%) 334 (63.7%), 280 (53.4%), 256 (48.9%) of study subjects respectively.

In our study 92% of the patients were discharged postoperatively with an uneventful recovery, three patients were transferred to respective specialty once the final diagnosis achieved and 5% patients expired post-operatively. Mortalities were most common in intestinal perforation and intestinal obstruction cases. In a study reported by Chavan et al. which included only elderly patients, the mortality rate was 17% which may be due to the age factor who are more prone to infections and have less wound healing capacity compared to younger age group patients.^[13] In the study done by Barai et al.^[14], a low mortality of 1.72% was recorded which might be due to fewer number of complicated cases which required surgery as the treatment modality. The mortality rate depends on the type of pathology, age group and the co morbidities. Although the mortality rate was slightly higher than the study done by Barai et al.^[14], it was lower than the other studies done by Chavan DK et al.^[13]

CONCLUSIONS

It was observed that high incidence of morbidity and mortality in case of acute appendicitis and hollow viscus perforation peritonitis may be due to illiteracy, lower socioeconomic status and rural area with less access to tertiary care. Health education and improving access to health

services may help in early hospitalization, accurate final diagnosis and early treatment decreasing the incidence of hospital stay, morbidity and mortality.

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