

Study of clinical features and outcomes in patients presenting to the emergency department with acute abdomen

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Abstract

Background: Abdominal pain is one of the most common reasons for an emergency department (ED) visit. The present study, evaluated the clinicodemographic profile of patients presenting with acute abdomen to the ED in a tertiary care institute, South India.

Methods: A prospective, observational study was done in patients presenting with non-traumatic acute abdomen to the ED at our teaching tertiary Care hospital between March 2016 and April 2017. Demographic profile, detailed history, physical examination, management and outcome were noted.

Results: Of 200 patients, 56% were males. Their mean age was 46.2 years. Peptic ulcer disease (22%) was the most common presentation followed by surgical causes such as acute appendicitis (20%) and acute intestinal obstruction (11%). Diabetes mellitus was the most common co-morbid condition (25%) followed by hypertension (15%) and ischaemic heart disease (6%). Abdominal Ultrasonography was helpful in the diagnosis of 83% of the patients and 13% of the patients required computed tomography abdomen.

Conclusion: Our observations suggest that peptic ulcer disease, acute appendicitis and acute intestinal obstruction were most common causes of acute abdomen. A high index of suspicion will help in early diagnosis and instituting effective treatment.

Keywords: Acute abdomen, computed tomography, emergency department, ultrasound

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INTRODUCTION

Abdominal pain is one of the most common reasons for an emergency department (ED) visit, accounting to about 5%–10% of all ED visits.^[1] It poses a diagnostic challenge for the emergency physicians, as the causes are numerous. Most abdominal pain is benign in the adult population, as many as 10% of patients in the ED setting has a severe or life-threatening cause or requires surgery. It poses a diagnostic challenge for the emergency physicians,

as the causes are numerous, ranging from benign to life-threatening conditions. Causes include gastrointestinal, urological and gynaecological among others.^[2] Despite extensive evaluation, a quarter of patients usually remained with a non-specific cause, but now with latest radiological imaging advances that number has decreased.^[3] The elderly patients have atypical presentations with longer duration of pain at presentation.^[4] Associated features such as vomiting,

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guarding and tachycardia were of diagnostic value, whereas other features were not very useful.^[5] There are several studies describing about clinicodemographic profile of patients presenting with acute abdomen to the emergency room. We conducted this research with the aim to study the clinicodemographic profile of patients presenting with acute abdomen to the emergency room in our tertiary care institute, South India.

MATERIAL AND METHODS

A prospective, observational study was conducted at our tertiary care teaching hospital in Tirupati, South India, after obtaining approval from the Thesis Protocol Approval Committee and Institutional Ethics Committee. All patients with non-traumatic acute abdomen presenting to the ED were included in the study. Patients initially evaluated and treated elsewhere and referred our institute only for additional management; patients with acute abdomen due to trauma; patients or patient attendants who were not willing to participate in the study and patients with age <12 years were excluded from the study.

After explaining in detail about the study protocol, written informed consent was obtained from patient or attendants who are willing to participate in the study. The study protocol was explained. Telephone number and contact address were taken for the 30-day follow-up. Demographic profile of the patient was recorded. Detailed history and physical examination were done. Based on history and examination, preliminary diagnosis was made, and appropriate investigations are sent as per the institute standard protocol.

All the patients were initially stabilised depending on the severity of the illness. After initial stabilisation, primary and secondary evaluation was done in all patients, and the details were recorded which include character of pain, site, duration, radiation, aggravating and relieving factors, associated features such as nausea, vomiting, malaena, urinary symptoms and past and family history. After evaluation, patients are subjected to appropriate investigations. Based on history, physical examination and preliminary investigations, definitive diagnosis was made. Once the definitive diagnosis was made, all patients were transferred to respective departments, and they were managed either conservatively or surgically. All patients were followed until their discharge from hospital or in hospital death. All the data collected were entered in the structured pro forma.

Statistical analysis

All collected data was double checked to exclude any clerical errors and was represented in the Excel chart and analysed using Microsoft Excel 2007 (Microsoft Corp, Redmond, WA). Descriptive statistical data were presented as mean \pm standard deviation or median (interquartile range) for continuous variables and as percentages for categorical variables. “Worst case scenario” analysis was undertaken where all patients discharged against medical advice were considered to have died.^[6]

RESULTS

A total of 200 patients were enrolled for the study, and the data were analysed. Of 200 patients, 56% are males and 44% are females. The range of age distribution in the study population is 13–82 years. The mean age in the study population is 46.19 years. One-fifth of the patients (20%) presented on the day of onset of symptoms. More than half of the patients (51.0%) presented within 3 days (72 h) of the onset of symptoms. Type of lesion and time of presentation showed that patients with obstructive symptoms were found to be presented within 24 h of onset (36.0%) [Table 1]. Types of pain include dull aching (36%), colicky (18.2%), pricking (10.2%), crushing (9.8%) and throbbing (3.4%) type of pain. Eighteen per cent of patients had vague abdominal pain. Lower abdominal pain was reported by 45.8% of participants, whereas 26.9% had pain in upper abdominal location. The pain was generalised in 27.3% of patients. The majority of patients (64.8%) did not have any radiation of the pain [Table 2]. Common associated symptoms include nausea (67.4%), vomiting (57.2%), urinary symptoms (38.3%), loss of appetite (21.2%), constipation (19.3%), obstipation (12.1%), diarrhoea (10.6%), abdominal distension (5.7%), per vaginal (PV) bleeding (3.4%), gastrointestinal bleed (2.7%) and jaundice (1.9%) [Table 3].

Table 1: Time of presentation to the hospital

Duration of presentation	No (%)
On the day	40 (20)
Within 3 days	103 (51.5)
Within 7 days	157 (78.5)

Table 2: Character of pain in the study population

Character of pain	No (%)
Dull	76 (38)
Colicky	38 (19)
Pricking	22 (11)
Crushing	20 (10)
Throbbing	8 (4)
Non-specific	38 (19)

Table 3: Associated symptoms in the study population

Associated symptoms	No (%)
Nausea	135 (67.4)
Vomiting	114 (57.2)
Urinary symptoms	76 (38.3)
Loss of appetite	44 (21.2)
Constipation	38 (19.3)
Obstipation	24 (12.1)
Diarrhoea	22 (11)
Abdominal distension	12 (6)
Bleeding PV	7 (3.4)
GI bleed	6 (2.7)
Jaundice	4 (1.9)

GI=Gastrointestinal; PV=Per vaginal

Among the medical causes, acid peptic disease is the leading cause which constitutes 22% of the total patients followed by acute gastroenteritis (15%). Among the surgical causes, acute appendicitis was the leading cause which constitutes about 20% followed by acute intestinal obstruction (11%). Diabetes mellitus was the most common comorbid condition found in 25% of the study population followed by hypertension (15%) and ischaemic heart disease (6%). Among the patients presenting to ED with acute abdomen, 4% had a history of prior abdominal surgery [Figure 1]. Ultrasound is helpful in the diagnosis of 83% of the patients. About 13% of the patients required CT abdomen for the definitive diagnosis. Patients who are managed medically/conservatively constitute 62%, and those who are managed surgically constitute 38%.

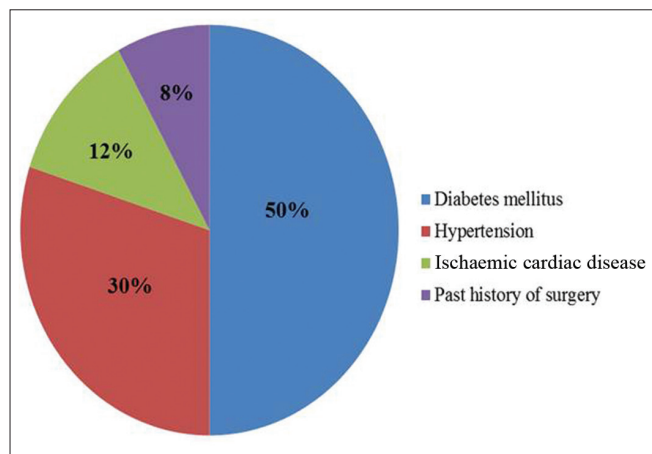


Figure 1: Comorbid conditions in the study population

DISCUSSION

We conducted a prospective, observational study in patients with acute non-traumatic abdominal pain presenting to ED. A total of 200 patients were prospectively analysed.

The mean age in the study population is 46.19 years. The range of age distribution in our study population is 13–82 years which is similar to other studies.^[9-11]

The term “acute abdomen” designates symptoms and signs of intra-abdominal disease usually treated best by the surgical operation. Many diseases of which, some do not require surgical treatment which produces abdominal pain, and thus, the evaluation of patient with acute abdominal pain must be methodical and careful.^[5] It poses a diagnostic challenge for the emergency physicians, as the causes are numerous, ranging from benign to life-threatening conditions. Causes include gastrointestinal, urological and gynaecological among others.^[6] Despite extensive evaluation, a quarter of patients usually remained with a non-specific cause, but now with latest radiological imaging advances that number has decreased.^[7]

In a study,^[7] surgical causes such as appendicitis and intestinal obstruction are the most common presentations with 30.3% and 27.9%, respectively; the other study done by Chanana *et al.*^[8] revealed that pancreatitis is the most common cause followed by appendicitis with 11% and 10.6%, respectively. Whereas in the present study, medical causes are responsible for acute abdomen. Among the medical causes, acid peptic disease was the leading cause (22%) followed by acute gastroenteritis (15%). Among the surgical causes, acute appendicitis was the leading cause (20%), followed by acute intestinal obstruction (11%). These findings were comparable with the earlier studies^[9,10] Conditions such as dengue can also cause abdominal pain.^[11] In our present study, 2% of the patients presented with acute abdominal pain were diagnosed as dengue and on imaging were found to have acalculous cholecystitis Table 4 shows the comparison of our study with other studies with respect to the causes of abdominal pain.

Table 4: Comparison with other studies with respect to the cause of abdominal pain

	Agboola ^[7]	Lakshay Chanana ^[8]	Present study
Appendicitis	30.3	10.6	20
Intestinal obstruction	27.9	5.3	11
Peptic ulcer disease	7.6	8.0	22
Cholecystitis	2.2	4.2	8.0
Pancreatitis	0.7	11.0	6.0
Postoperative	0.7	NA	2.0
Carcinomas	1.5	NA	5.0
Non-specific	0.7	9.5	2.0

NA= Not available

Types of pain included dull aching (36%), colicky (18.2%), pricking (10.2%), crushing (9.8%) and throbbing (3.4%) types of pain. Eighteen per cent of patients were unable to characterise their pain. Lower abdominal pain was reported by 45.8% of participants, whereas 26.9% had upper abdominal location. The pain was generalised in 27.3% of patients. The majority of patients (64.8%) did not have any radiation of the pain. The groin was the most common site of radiation in the present study and was

reported in 20.1% of our patients. This correlates with the ureteric colic patients in our study. Common type of pain described by the patient in the present study was dull aching type followed by pricking type. Lower abdomen is the most common site of pain. There is no radiation of pain in majority of the patients. The most common presentation of pain is dull aching, pain can be also non-specific but may also coincides with most common presentation of acid peptic disease in our study population.

While diarrhoea is a frequent accompaniment of more benign abdominal conditions, its presence alone should never rule out serious disease. For example, diarrhoea is common with mesenteric ischaemia and is frequently reported in conditions such as appendicitis.^[12,13] In one series of 1000 ED patients presenting with abdominal pain, 18% presented with diarrhoea. No patient aged <40 with diarrhoea, and continuous pain was found to have a surgical cause for their symptoms. Conversely, diarrhoea can be reported up to one-fifth of patients with colonic obstruction.^[14] Cardiopulmonary symptoms such as cough and dyspnoea can point to a non-abdominal cause of abdominal pain. Syncope may indicate disease originating in the chest (pulmonary embolism and dissection) or abdomen (acute aortic aneurysm and ectopic pregnancy).

We have studied the associated symptoms of patients with acute abdomen in the study population. In our study, the common associated symptoms observed were nausea (67.4%), vomiting (57.2%), urinary symptoms (38.3%), loss of appetite (21.2%), constipation (19.3%), obstipation (12.1%), diarrhoea (10.6%), abdominal distension (5.7%), PV bleeding (3.4%), gastrointestinal bleed (2.7%) and jaundice (1.9%). However, their value in establishing a firm diagnosis could not be established, suggesting that associated symptoms often lack specificity, and atypical presentations are common.

Diabetes mellitus was the most common comorbid condition found in 25% of patients followed by hypertension (15%) and ischaemic heart disease (6%). Among the patients presenting to emergency with acute abdomen 4% had a history of abdominal surgery. Currently, there are no studies which have studied the incidence of comorbid conditions in the study population in an ED among the patients with acute abdomen. Understanding of the comorbid conditions of the patient helps in establishing the diagnosis in some cases. However, we did not correlate between the comorbid conditions with diagnosis.

One-fifth of the patients (20%) presented on the day of onset of symptoms. More than half of the patients (51.0%) presented within 3 days (72 h) of the onset of symptoms. Similar observations were observed in another study,^[15] In our study, 51% presented to the hospital within 3 days.

In some studies,^[16,17] abdominal ultrasonography was helpful in making the final diagnosis. In the present study, abdominal ultrasonography or computed tomography (CT) was used to establish a definitive diagnosis, abdominal ultrasonography was helpful in the final diagnosis in 83% of the patients of the study population. In 13% of the patients, CT abdomen has established a diagnosis. We did not compare the accuracy of ultrasound and CT in establishing the diagnosis.

Among the patients presenting with acute abdomen to the emergency room, patients who were managed medically/conservatively constituted 62%, and those who are managed surgically constituted 38%. About 2% of patients of the medically/conservatively managed patients got retreated surgically. Mortality was 5.5%.

Patients with medical/conservative management are mainly treated with proton-pump inhibitors. Broad-spectrum antibiotics such as third-generation cephalosporins and metronidazole were used. About 2% of patients of the medically/conservatively managed patients got re-treated surgically.

We conclude that abdominal pain is one of the most common presenting complaints in our ED, and clinicians must consider multiple diagnoses, especially in those cases that require immediate intervention to limit morbidity and mortality. In the present study, peptic ulcer disease is the most common presentation. It is extremely important for emergency physicians to develop the skill of identifying patients with an “acute abdomen” requiring immediate surgical intervention. In this study, a high proportion of patients with acute abdomen were young people in their twenties, thirties and forties. These are the productive age groups, and thus, the disease constitutes a great economic burden. Most of the patients presented with inflammatory lesions consisting mainly of appendicitis and its complications. Accurate diagnosis which is mainly clinical, prompt resuscitation and treatment ensures reduced mortality and morbidity in such patients.

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Conflicts of interest

There are no conflicts of interest.

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