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The non traumatic acute abdomen and its clinical spectrum

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ABSTRACT

Background: Acute abdomen poses a big challenge to the general surgeons in terms of both diagnosis and management. The aim of this study was to know in detail the clinical and postoperative outcome in non traumatic acute abdomen.
Methods: Prospectively collected data of 326 patients with non traumatic acute abdomen admitted in PES institute of medical sciences and research, Kuppam from November 2016 to June 2018. All patients were subjected to clinical examination, relevant blood and imaging investigations, Intra and postoperative findings events were recorded.
Results: Non traumatic acute abdominal pain was more common in 2nd to 5th decade of life. Males are more affected than females with a male to female ratio of 3.4:1. Acute appendicitis forms the commonest cause of acute abdomen (n=160=49%) followed by perforative peritonitis (n=85=26%). Most common surgical procedures done were laparoscopic/open appendectomy for acute appendicitis, exploratory laparotomy with Graham's omentoplasty for perforative peritonitis.
Conclusions: Systematic approach in history taking and a proper clinical examination with supportive imaging findings are most important in making an accurate diagnosis and need of appropriate surgical intervention in patients with non traumatic acute abdomen.

Keywords: Acute appendicitis, Non traumatic acute abdomen, Perforated peptic ulcer

INTRODUCTION

The term acute abdomen refers to signs and symptoms of abdominal pain and tenderness, a clinical presentation that often requires emergency surgical therapy. This challenging clinical scenario requires a thorough and expeditious workup to determine the need for operative intervention and initiate appropriate therapy.[1] Acute abdominal pain may represent the cardinal symptom behind a vast number of possible underlying causes that require surgical treatment. The acute abdomen thus represents the most common surgical emergency, the most common reason for a surgical consultation in the emergency room and the more common reason for a non-accidental hospitalization.[2] Acute abdominal pain, is a severe abdominal pain, if accompanied by guarding and muscular rigidity, essentially describes the clinical picture of peritonitis and usually calls for an emergency operation.[3] The general thumb rule is that any pain abdomen which is persistent for a period of more than 6 days is usually caused by a disease of surgical significance.[4] This led to the common misconception that the acute abdomen is synonymous with the surgical abdomen. However, not all cases of acute abdomen are best treated with surgery.

In literature as well as in clinical practice the borders between the acute abdominal pain and acute abdomen overlap and are used interchangeably. Obtaining a careful medical history and performing a physical examination are the initial diagnostic steps for these patients. On the basis of the results of this clinical evaluation and

laboratory investigations, the clinician will consider imaging to help establish the correct diagnosis. History and physical examination findings should be based on sufficient clinical experience, precise knowledge of the anatomy and physiology of the abdominal cavity and a clear understanding of the pathological processes. For any patient presenting with acute abdominal pain, any abnormality of pulse rate, blood pressure, respiratory rate, temperature and sensorium should raise the suspicion of an intra-abdominal catastrophe immediately. Chest pain, back pain, shortness of breath, vaginal bleeding and hemodynamic instability are warning signs, but can also be associated with extra-abdominal causes and therefore require the involvement of other disciplines.

The main symptom of acute abdomen is 'pain', and a subtle differentiation may be crucial to find the correct diagnosis. Due to the nature of the afferent nerve pathway, two basic patterns can be observed

- Visceral pain which sensation is typically due to irritation of the abdominal organs, if they are subjected to strain, tension, torsion or contraction.
- Somatic (parietal) pain which arises directly on the parietal peritoneum and is described as intense and constant.[5]

Demographics (age, gender, ethnicity, family history, sexual orientation, cultural practices, and geography) influence both the incidence and the clinical expression of abdominal disease[6].

As soon as the patient comes to the emergency room or a surgical out-patient department, it's very essential to quickly identify the cause for any immediate indication for surgical intervention.[7]

As many as one quarter of patients will not have a specific diagnosis made, even after an extensive evaluation.[8] When evaluating patients with abdominal complaints, it is just as important to recognize those patients requiring surgical intervention as it is to determine the exact diagnosis.[9]

Appropriate laboratory blood investigations should be obtained followed by relevant imaging investigations for approaching a correct diagnosis before a surgical intervention is planned. Plain roentgenogram has historically been the initial imaging modality used for the evaluation of abdominal pain, due to its ease of acquisition and cost. According to recommendations by American college of radiology, the use of imaging studies for evaluation of acute abdominal pain, Ultrasonography (USG) is recommended to assess the right upper quadrant pain and Computed tomography (CT) is recommended for pain in the right and left lower quadrants.[10]

In this study, the various clinical presentations of non traumatic acute abdominal pain, the importance of the clinical examination in formulating a provisional diagnosis ,the role of ultrasound examination in narrowing down the differential diagnosis and planning an appropriate surgical therapy and its outcome has been studied.

METHODS

This study was carried out in the department of General Surgery, PES Institute of Medical Sciences and Research, Andhra Pradesh, India from November 2016 to May 2018. This was a Hospital based prospective study. This study was conducted from November 2016 to June 2018 including a follow up period of 6 months. This study was conducted at Department of General Surgery, PES Institute of Medical Sciences and Research, Andhra Pradesh, India. Patients presenting with non traumatic acute abdomen who required surgical intervention were included. There were 326 patient selected for this study. Convenient sampling technique was used. This study was approved by Institutional Human Ethical Committee (IHEC), PESIMSR, Kuppam, Andhra Pradesh, India.

Inclusion criteria

All Patients aged more than 9 years presenting with non traumatic acute abdominal pain requiring surgical intervention

Exclusion criteria

- Pediatric patients less than 10 years.
- Those who did not undergo surgical intervention.
- Those with traumatic acute abdomen.
- Acute abdomen due to urological or gynecological disorders.
- Those patients who did not give consent for the study.

Method of data collection

After explaining about the study and obtaining informed consent from the patient, detailed history regarding the presenting complaint was collected from the patient or their attenders. Clinical findings were documented in a pre-defined proforma. Later, all the patients were subjected to ultrasound examination and the findings are noted. Finally, for every case, intra operative findings and post operative follow up details were collected and noted.

Investigations done

- Complete haemogram and other necessary blood investigations.
- USG abdomen and erect X-ray abdomen in cases where it is appropriate.

RESULTS

At PES institute of medical sciences and research, Kuppam, Andhra Pradesh, India, from November 2016 to

November 2017 a total of 326 patients were operated for acute abdominal emergencies. These 326 patients were reviewed in this study. The age at presentation was from youngest being 10 yrs and eldest was 77 years. Second decade had the most number of incidence (23.3%) followed by 4th decade accounting to 21.7%, collectively more common in 2nd to 5th decade of life (Table 1) .

Table 1: Age wise distribution of the study patients.

Age (years)	No. of patients	Percentage
11-20	76	23.3
21-30	63	19.3
31-40	71	21.7
41-50	49	15
51-60	28	8.5
61-70	26	7.9
71-80	13	3.9
Total	326	100.0

Table 2: Gender wise distribution of the study patients.

Gender	No. of patients	Percentage
Male	252	77.33
Female	74	22.67
Total	326	100.0

The mean age was 38.0 (SD=15.4). Total numbers of male patients were 252 (77.33%) and female 74 (22.67%). The male to female ratio was 3.4:1 (Table 2). Abdominal pain was the main symptom seen in all the patients (n=326) followed by fever (n=312), nausea and vomiting (n=273) (n=299) (Table 3).

Table 3: Distribution of symptoms among the study patients.

Signs and symptoms	Frequency	Percentage
Pain abdomen	326	100
Fever	312	96
Distension of abdomen	93	28
Vomiting	273	84
Nausea	299	92

Rebound tenderness was the most common clinical sign (n=273). The most common disease presented as acute abdomen was Acute appendicitis (n=160) accounting to 49% followed by perforative peritonitis as the second most common disease (n=85) 26%, followed by Acute intestinal obstruction (n=57) 17.4% (Table 4).

In patients with age less than 40 years, the most common diseases that called for an emergency surgery were acute appendicitis, perforative peritonitis and acute intestinal obstruction where as in patients with an age more than 40 years; acute intestinal obstruction was the most common disease. Other less common causes were acute pancreatitis, ruptured liver abscess and common bile duct stones (Table 5).

Table 4: Distribution of the clinical diagnosis among the study patients.

Clinical diagnosis	Frequency	Percentage (%)
Acute appendicitis	176	54
Perforative peritonitis	71	22
Bowel obstruction	63	19.3
Others	16	4.9
Total	326	100

Table 5: Distribution of the diagnosis.

Intra operative diagnosis	Frequency	Percentage (%)
Acute appendicitis	161	49.3
Gastric perforation	24	7.3
Duodenal perforation	48	14.7
Ileal perforation	8	2.4
Gall bladder perforation	1	0.3
Colonic perforation	4	1.2
Small bowel obstruction	45	13.8
Large bowel obstruction	17	5.2
Acute pancreatitis	1	0.3
Abdominal tuberculosis	2	0.6
Common bile duct stones	2	0.6
Ruptured liver abscess	13	3.9
Total	326	100

Table 6: Frequency of type of surgeries performed.

Type of surgery performed	Frequency	Percentage (%)
Exploratory laparotomy	156	47.8
Open appendectomy	102	31.2
Laparoscopic appendectomy	59	18
Retroperitoneal drainage of abscess	6	1.8
Cholecystectomy /CBD exploration	2	0.6
Pancreatic necrosectomy	1	0.3
Total	326	100

Most common surgical procedures done were laparoscopic/open appendectomy for acute appendicitis, exploratory laparotomy with Graham's omentoplasty for perforative peritonitis and ileostomy for intestinal obstruction (Table 6). A total of 11 patients (3.3%) expired post operatively and 17 (5.2%) patients had major post-operative complications including lower respiratory tract infection followed by surgical site infection.

DISCUSSION

Acute abdominal pain is one of the most common causes of admission as a general surgical emergency. The term acute abdomen includes a long list of differential diagnosis which poses a great challenge to surgeons.

In this study, non-traumatic acute abdominal pain was more common in 2nd to 5th decade of life .The mean age was 38.0 (SD=15.4). The peak age at presentation was 3rd decade.

Male to female ratios in the most common diseases like acute appendicitis, perforative peritonitis and intestinal obstruction were 3:0 7.5:5.1, and 2.25:1 respectively. The male to female ratio on an average for all diseases together is 3.4:1. This is different from the ratio of 1.95:1 in USA but similar to a range of 2.5:1-4.5:1.[11-15] In this study it is observed that males are 3.4 times more likely to suffer an acute abdominal pathology than females.

In a study done in 100 patients by Abhinav et al, pain abdomen was the main complaint in all the 100 patients (100%), followed by vomiting in 78%, constipation in 29%, abdominal distension in 26% and fever in 17% of the patients.[16] In another study done in 3538 patients by Barai et al, pain abdomen was the main complaint in all the patients (100%), followed by vomiting in 42%, constipation in 27%, abdominal distension in 22.13% and fever in only 4% of the patients.[17]

In this study, abdominal pain is the main complaint in all the 326 patients (100%), followed by fever (96%), vomiting (84%) and distension of abdomen (28.6%). Fever in most of the patients indicates that most of the patients had features of systemic inflammatory response syndrome by the time they arrived at the hospital. Illiteracy and delay in seeking medical treatment in the study area might be the cause of this change in trend of clinical presentation with fever as major symptom contrary to other studies.

When compared to developed countries, the presentation and spectrum of diseases in a developing country like India is different. For example, a study done from Boston, Massachusetts in USA, the most common causes of non traumatic acute abdomen were urinary tract calculi (31.4%), acute appendicitis (23.6%), intra peritoneal abscess (17.4%), diverticulitis (16.9%) and acute small intestinal obstruction (10.6%) while in the sub-Saharan Africa, small bowel obstruction, acute appendicitis, typhoid ileal perforation and perforated peptic ulcer were the most common causes of acute abdominal pain.[12-16]

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%).[18]

Similarly, in a study done by Ray et al, perforative peritonitis was the most common cause for surgical intervention in patients with acute abdominal pain.[19]

In a study done on 299 patients by Hagos et al in Ethiopia (Africa), the most common cause for acute abdomen was Acute appendicitis 53.2% and Bowel obstruction 28.7% followed by perforative peritonitis 4.3%.[20]

In this study, acute appendicitis was the commonest cause of acute abdomen (49%) followed by perforative peritonitis (26%) secondary to perforated peptic ulcers and acute bowel obstruction (17.4%) which is similar to other studies in India.

In this study, emergency abdominal surgery was more commonly performed in 2nd to 5th decade of life. But the surgical indication was different for different age groups. In the younger group of patients i.e. 2nd and 3rd decades, acute appendicitis and perforated peptic ulcer disease was more common where as in the elderly patients, i.e. 5th and 6th decade, intestinal obstruction was more common.

All the patients diagnosed with acute appendicitis with ALVARADO score more than 7 underwent laparoscopic/ open appendectomy depending on patient's preference and at surgeon's discretion.

Most of the patients diagnosed to have perforative peritonitis presented to emergency department with an average history of 3 days duration of pain abdomen and on arrival they are found to have classical features of peritonitis with guarding and rigidity. Intra operatively those patients who had gastric and duodenal perforation underwent closure of perforation with Graham's omentoplasty where in a part of omentum is placed over the perforation site and perforation closure is done.

The etiology of intestinal obstruction in most of the patients was obstructed ventral hernias followed by adhesions followed by tubercular stricture, volvulus and malignant growth causing luminal obstruction.

Depending on the cause of obstruction, patients underwent adhesiolysis for adhesive obstructions, sticturoplasty or resection and anastomosis for strictures causing obstruction and derotation and fixing for volvulus In case of obstructed hernias, if the content is viable, reduction of contents and herniorrhaphy was done where as in case of strangulated bowel, resection and anastomosis was done. For malignant operable intra luminal growths causing intestinal obstruction, resection and anastomosis was done and in case of inoperable growths, diversion colostomies/ileostomies were done followed by definitive procedures on an elective basis or palliative therapies. other operative procedures which were less common included exploratory laparotomy and drainage of ruptured liver abscess, exploration of common bile duct stones and retrieval followed by T tube

drainage, necrosectomy for acute necrotizing pancreatitis with features of peritonitis.

In this study, acute appendicitis being the most common cause, the outcome was good. The major postoperative complications were seen in 17(5.2%) patients which included entero cutaneous fistula following laparotomies which were treated conservatively, followed by burst abdomen which occurred on 6th to 8th postoperative day, and respiratory complications like atelectasis and pneumonia. 91.5% of the patients were discharged postoperatively with an uneventful recovery. A total of 11 patients (3.3%) expired post operatively. mortalities were most common in intestinal perforation and malignant 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.[21] In the study done by Barai et al, 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, it was lower than the other studies done by Chavan et al and Ray et al.[19]

CONCLUSION

The incidence of Non traumatic acute abdomen has increased exponentially and constitutes majority of the cases admitted through emergency room. Early diagnosis and its management play an important role in a better clinical outcome. The study is a humble attempt to document incidence of various diseases diagnosed and its management in a rural tertiary care centre. The high incidence of acute appendicitis and peptic ulcer perforative peritonitis may be due to illiteracy, lower socio economic status and rural area with less access to tertiary care. Health education and improving access to health services may help in decreasing the incidence of such diseases in this area.

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