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ORIGINAL RESEARCH

Clinical study and management of non traumatic acute abdomen

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Abstract

Background: Acute abdomen constitute one of surgical emergencies for surgeons worldwide.Acute onset of abdominal symptoms that possibly threatens life thus demands early diagnosis as well as early treatment.Key to successful diagnosis is high level of suspicion and frequent physical examination with close observation added with diagnostic evaluation.

Objectives: To study the proportion of occurrence of various causes of non-traumatic acute abdomen with respect to its various parameters like age, sex, clinical features,surgical treatment and complications of the treated patients.

Methods: The data for this prospective study was obtained from 1st April 2020 to 31st March, 2021 with a follow-up period of 1 month in patients diagnosed to have acute abdomen and undergoing treatment in Guru Nanak Dev Hospital, attached Govt. Medical College, Amritsar. Permission was taken for the study from the institutional ethical committee.

Results: There was male preponderance as compared to femalesand the male to female ratio is 1.6:1.Majority of patients were seen in the age group 31 to 40 years. All the cases 100% have pain as major symptom, followed by fever which was present in 78 % cases.The most common sign that can be observed in cases of acute abdomen was tenderness and majority of cases were Appendicitis in 35% of cases followed by perforation peritonitis and cholecystitis 23% each.

Conclusion: Acute abdominal pain usually represents a spectrum of conditions including benign and self-limited disease to surgical emergencies. Evaluation of abdominal pain requires an approach that mostly relies on the likelihood of disease, patient history, physical examination, and investigations.

Keywords: Acute Abdomen, Non Traumatic Abdomen, Abdominal Emergency

Introduction

Acute abdomen is acute onset of abdominal symptoms that occur suddenly or gradually over a period of several hours and presents a bunch of symptoms that possibly threaten life thus demanding early diagnosis as well as early treatment. Acute abdomen remains one of the important cause of mortality and morbidity in the emergency. Thus making it very necessary for the well skilled surgeon to be familiar with the presentation of common causes of acute abdominal pain as well as with the validity of diagnostic modalities.[1]

Surgeon managing the case of acute abdomen should be aware of the diverse etiology of acute abdomen. So, there is a need to enlist the different etiologies leading to acute abdomen

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and the most enlist the different etiologies leading to an acute abdomen and the most common among them, so that the decision regarding the management of such a case can be taken at the earliest.[1] A thorough history followed by meticulous clinical examination are no doubt cornerstone of efficient patient management.[2]
The various clinical presentations of non-traumatic acute abdominal pain, the importance of the clinical examination in formulating a provisional diagnosis. Appropriate laboratory blood investigations, relevant imaging investigations, plain roentgenogram, Ultrasonography (USG), Computed tomography (CT) are recommended for approaching a correct diagnosis before any surgical intervention is planned.[3]

Aims and objectives
To study the proportion of occurrence of various causes of non-traumatic acute abdomen with respect to age, sex, clinical features and complications of the treated patients.

Materials and methods
The data for this prospective study was obtained from 1st April 2020 to 31st March 2021 with a follow-up period of 1 month in patients diagnosed to have acute abdomen and undergoing treatment in Guru Nanak Dev Hospital, attached Govt. Medical College, Amritsar. Permission was taken for the study from the institutional ethical committee. Consent was taken from the patients before the study. Pre-operative history of all acute abdominal emergencies was taken to arrive at pre-operative diagnosis with the help of clinical examination and the various investigations, including general blood and pathological investigations and radiological investigations. In all the cases, operative findings and post-operative diagnosis were recorded. Data was systematically collected according to a proforma. Routine investigations like haemoglobin, bleeding time, clotting time, total WBC count, renal function test, radiological investigations like X-ray, USG were done in some cases. All patients were given informed consent for surgery. At the end of study, the data was collected, analyzed and subjected to statistical analysis using Statistical Package for Social Sciences (SPSS) software.

Inclusion criteria
All cases of acute abdomen of age more than 13 years presenting with non-traumatic acute abdominal pain were included.

Exclusion criteria
Pediatric patients less than <14 years. Those with acute traumatic abdomen. Acute abdomen due to gynaecological disorders in females.

Results
Table 1: age-wise and genderwise distribution

Age (Years)	Male		Female		Total	
	No. of cases	%age	No. of cases	%age	No. of cases	%age
11-20	2	3.28	0	0.00	2	2.0%
21-30	18	29.51	4	10.26	22	22.0%
31-40	20	32.79	21	53.85	41	41.0%
41-50	12	19.67	5	12.82	17	17.0%
51-60	7	11.48	8	20.51	15	15.0%
61-70	0	0.00	1	2.56	1	1.0%
71-80	2	3.28	0	0.00	2	2.0%
Total	61	100.00	39	100.00	100	100.0%

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Table 2: Distribution of cases based on symptoms of acute abdomen

Symptoms	No. of Cases	Percentage
Pain	100	100.0%
Distention	46	46.0%
Constipation	32	32.0%
Vomiting	37	37.0%
Fever	78	78.0%
Jaundice	22	22.0%
Altered Sensorium	20	20.0%
H/o Tuberculosis	21	21.0%

('p' Value <0.05, significant)

Table: Showing description of abdominal pain

Abdominal Pain		No. of cases (n=100)	Percentage
Severity	1-3 (Mild)	12	12%
	4-6 (Moderate)	61	61%
	7-10 (Severe)	27	27%
Onset	Sudden	85	85%
	Gradual	15	15%
Duration (days)	<1	56	56%
	1-3	31	31%
	>3	13	13%
Site	Lower abdomen	12	12%
	Upper abdomen	14	14%
	Periumbilical	23	23%
	Generalized	51	51%
Radiation	None	45	45%
	Groin	12	12%
	Back	06	06%
	Shoulder	29	29%
	Unable to express/Convey	08	08%
Character	Colicky	02	02%
	Dull/Boring	15	15%
	Cramping	01	01%
	Burning	03	03%
	Vague/Can't Discribe	79	79%

Table 4: Distribution of cases based on signs of acute abdomen

Signs	No. of cases (n=100)	Percentage
Tenderness	90	90.0%
Gaurding	82	82.0%
Rigidity	75	75.0%
Liver dullness obliteration	52	52.0%
Shock	12	12.0%
Tachycardia	42	42.0%

('p' Value <0.05, significant)

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Table 5: Distribution with respect to final diagnosis

Final Diagnosis	No. of cases	Percentage
Appendicitis	35	35.0%
Perforation peritonitis	23	23.0%
Intestinal obstruction	21	21.0%
Ruptured liver abscess	1	1.0%
Bowel ischemia	5	5.0%
Acute pancreatitis	2	2.0%
Renal colic	3	3.0%
Cholecystitis	10	10.0%
Total	100	100.00%

Table 6: Frequency of surgery performed

Type of Surgery	No. of cases	Percentage
Exploratory laparotomy	40	40.0%
Open appendectomy	32	32.0%
Retroperitoneal drainage of abscess	3	3.0%
Cholecystectomy/CBD exploration	23	23.0%
Pancreatic necrosectomy	1	1.0%
Nephrectomy	1	1.0%

Table 7: Distribution of postoperative complication

Complication	No. of cases (n=100)	Percentage
Wound Infection	36	36.0%
Respiratory infection	22	22.0%
Septicemia	12	12.0%
Mortality	5	5.0%
Fecal Fistula	1	1.0%

Discussion

Sex

There was male preponderance as compared to females in the present study (Table 1).The male is to female ratio is 1.6:1. The present study is similar to most of previously conducted studies which shows male predominance present in the study of Poudal R et al (2019)[4], Gajjar R et al (2017)[5], Jain A et al (2019)[6] and Kumar MS et al (2019)[7] in which there was high male is to female ratio. Among the other studies which were similar to the present study conducted Thakur et al (2019)[8],Mutulaya et al (2019)[9],Memon et al (2008)[10]1and Jangude H et al (2018)[11]where the majority of the subjects were males. Another study by Ghalige et al (2021)[12] concluded that males comprised 53.5% of the study sample and females were 46.5%. Various studies conducted by Gabrie et al (2019)[13],Jain R (2016)[14],Chimkode R et al (2015)[15], Danish A (2022)[16],Reddy AK et al (2019)[17]showed finding similar to the present study.

Age

In the present study, the age-wise distribution of patients was majority of patients were seen in the age group 31 to 40 years, that has 41% followed by 21 to 30 years 22% patients. In the age group of 41 to 50 years, there were 17% patients while 15% patients were present in the age group of 51 to 60 years. The minimum age of the patient reported in the study was 17

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years, while maximum age reported was 79 years. The mean age observed in the study was 39±12 years.

The present study was similar to the study conducted by Thakur et al (2019)[8],Mutulaya et al (2019)[9], Jangude H et al (2018)[11]Jain R et al (2016)[14] and Chimkode R (2015)[14]that has majority of cases in the age group of 21-40 years. In another study by Kumar MS et al (2019)[7] and Memon et al (2008)[10] also had similar finding as that of present study, i.e minimum no of cases were (9.89%) cases in fifties or above. The present study was different from the study by Reddy AK et al (2019)[17], Sabitha P et al (2015)[18] where the maximum number of patients belonged to the 61-70years age group.

Symptoms

In the present study all the cases, 100% have pain as major symptom, followed by fever which was present in 78 % of cases and vomiting in 37% of cases, constipation in 32% of cases. Jaundice was present in 22% of cases and history of tuberculosis was present in 21% of cases while20% of cases had altered sensorium.(Table II)The finding of the present study is similar to the study conducted by Ray S et al (2016)[19]Sabitha P et al (2015)[18]Gajjar R et al (2017)[5],Jain R et al (2016)[14],L Chanana et al (2015)[20]Gabrie et al (2019)[13],Chimkode R et al (2015)[15],Agboola et (2014)[21] and Thakur JK et al (2019)[8]where pain abdomen was the most common clinical feature and was present in almost all the cases.

Pain

In the present study, pain was present in all 100% of cases.(table III)The finding was comparable with the study conducted by Gajjar R et al (2017)[5,] where pain onset was sudden in 64% of cases. Common types of pain included colicky (34%), dull aching (49%), throbbing (07%), pricking (02%), and burning (07%). 21% had upper abdominal location, generalized in 40% while 39% of patients reported lower abdominal pain. No radiation of the pain was seen in 80% of patients. The common sites of radiating painwere in groin, back and shoulder.In another study conducted by Chanana L. et al(2015)[20] who observed that the common types of pain included colicky (18.2%), dull aching (36%), crushing (9.8%), pricking (10.2%), and throbbing (3.4%), sudden in onset in 54.9% of patients and 18% of patients were unable to characterize the pain. 45.8 % of cases reported lower abdominal pain, while 26.9% had upper abdominal location. The pain was generalized in 27.3% of patients. No radiation of the pain was seen in 64.8% of cases. Common sites of pain radiation being the groin, back and shoulder and Bhagat et al (2019)[22] who observed that pain with a frequency of (60.0%) in the patient dull aching pain was seen among 27.5% cases, burning among 8.5% patients and throbbing pain among 4.0% cases

Signs

In the present study, the major sign(TABLE IV) that can be observed in cases of acute abdomen was tenderness in 90% cases, followed by 82% cases having guarding and 75% cases having rigidity. Liver dullness obliteration was present in 52% cases, tachycardia in 42% cases and shock in 12% cases.The findings of the present study were similar to the study of Ray S et al (2016)[19] where the abdominal tenderness in 86%, guarding and rigidity was in 54% of cases and bowel sounds were present in 30% of casesand Jain R et al (2017)[14] which observed that abdominal tenderness 97 (99.0%) was the most common sign, followed by abdominal guarding/ rigidity in (61.2%) and absent bowel sounds in (51.0%) and Hagos M et al (2015)[23] concluded that abdominal tenderness is the commonest sign (96%) followed by abdominal guarding/rigidity (90%).The finding of the present study is similar to the finding of Thakur JK et al (2019)[8]Ghalige et al (2021)[12], Gabrie et al (2019)[13] Danish A et al

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(2022)[16]Chimkode R et al (2015)[15] Jain AK et al (2019)[6] Singh G et al(2014)[24] and Hagos M et al (2015)[23]that most consistent sign was abdominal tenderness.

DIAGNOSIS:

In the present study, final diagnosis was established after the clinical examination and investigations. The majority of cases were Appendicitis in 35% cases followed by perforation peritonitis 23% and Intestinal obstruction was present in 21% of cases,cholicystitis 10%bowel ischemia in 5%, renal colic in 3%, acute pancreatitis in 2%cases and ruptured live abscess in only 1% cases.(Table V)The finding of the present study was similar to the study conducted by Gajjar R et al (2017)[5] which concluded that the final diagnosis was acute cholecystitis was most commonly diagnosed among the patients with non-traumatic pain abdomen.A similar finding was seen in the study by Rao et al (2017)[25], Poudal R et al (2019)[4], L Chanana et al (2015)[20], Memon et al (2008)[10],Tariq et al(2011)[26], Yeboah M et al(2006)[27]and Thakur JK et al(2019)[8]where the acute Appendicitis was the most common cause of surgical acute abdomen requiring emergency hospitalization.The finding differs from the study by Bhagat et al (2019)[22] which observed that Acute Cholecystitis in 43%, Renal Stones in 36%, Acute Appendicitis in 21% and Intestinal Obstruction 20% were seen in surgical diagnosis and Atalay et al (2021)[28] where majority of cases (40.60%) were found to have an intestinal obstruction followed by Appendicitis in 27.20% cases.

Surgery performed was exploratory laparotomy 40 (40.0%) cases, open appendectomy 32 (32%) cases, retroperitoneal drainage of abscess 3 (3%) cases, cholecystectomy/CBD exploration 23 (23%) cases, pancreatic necrosectomy 1 (1%) case and nephrectomy 1 (1%) respectively case.

Complications

In the present study, the patients were studied in follow up to study any complications in the cases. Major complication that was present was wound infection 36%, followed by respiratory infection in 22% of cases. Septicaemia was present in 12% of cases while only (1%) case was present in faecal fistula. Mortality was present in 5%of cases.(Table VII)A similar finding was present in study by Ray S et al 2016)[40] observed that a maximum of 15 cases of complications were seen in acute intestinal obstruction with 6% wound infections, 5% pulmonary complications, 2% cases of septicaemia and 2% cases of skin excoriation. Also, 1% of death of a patient was seen and differed from the study by Atalay et al (2021)[28] where Sepsis and septic shock (9.4%) were the most common complications. Surgical site infections (8.1%), acute respiratory diseases (3.9%), enter cutaneous fistula (2.9%), anastomotic leakage (2.3%) and wound dehiscence 4 (1.3%) were the remaining common complication types found respectively. In another study by Danish A et al (2022)[16] complications occurred in (17%) including surgical site infection, enterocutaneous fistula and abdominal burst and mortality rate was 3.6%.

Conclusion

Acute abdominal pain usually represents a spectrum of conditions including benign and self-limited disease to surgical emergencies. Evaluation of abdominal pain requires an approach that mostly relies on the likelihood of disease, patient history, physical examination, laboratory and radiological investigations. It is extremely important to develop the skill of identifying and investigating the patients with an "acute abdomen" requiring immediate emergency surgical intervention. Diagnosis of many acute abdominal conditions relies on a good history and physical examination and the appropriate use of radiological investigations. The limitations of the study are the sample size much affected by the covid pandemic and the technical bias among the clinical and investigational diagnosis of the disease. More such studies must be promoted in order to frame the guidelines and a review of all available

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evidence and can be used as a reference guideline for clinicians who treat patients with acute abdominal pain.

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