

Common presentations of non-traumatic acute abdomen on Ultrasound in patients presenting to the Emergency Department of Hayatabad Medical Complex, Peshawar

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ABSTRACT

Background: Abdominal pain commonly brings patients to the emergency room, some of may require emergency intervention due to acute abdomen. Ultrasound offers a non-invasive tool to investigate underlying pathology and reduce diagnostic errors as well as unneeded laparotomies.

Objective: To determine the causative spectrum of non-traumatic acute abdomen as detected by abdominal ultrasound in patients presenting to Emergency Department of Hayatabad Medical Complex, Peshawar.

Materials & Methods: A cross-sectional study was conducted in the Emergency department of Hayatabad Medical Complex, Peshawar, from 1st June- 31st August 2016. Non-probability convenience sampling was used to collect data of 400 patients of non-traumatic acute abdomen after informed consent and approval from hospital ethical board. Questionnaire included demographic data, clinical and laboratory findings, and ultrasound data; diagnoses were obtained and confirmed from patient records. Data analysis was done through SPSS 20 for descriptive statistics.

Results: Of 400 patients, 245(61.3%) were males and 155(38.8%) females. Most, 189(47.3%) were aged between 21-30 years, and 160(40.0%) had significant radiological findings on ultrasound, of whom 39.4% had renal stones, 21.3% had appendicitis and 16.9% had cholelithiasis; cholecystitis was present in 11.3%, acute pancreatitis in 08.1%, and choledocholithiasis in 03.1%.

Conclusion: Renal stone was the most common presentation, followed by appendicitis in patients visiting emergency department of a major public tertiary care hospital of Peshawar.

Keywords: Abdomen, Acute; Abdominal Pain; Ultrasonography; Diagnostic ultrasound; Emergency Service, Hospital; Nephrolithiasis; Appendicitis.

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INTRODUCTION

Abdominal pain is one of the most common reasons for patient visits to the Emergency Department (ED) of a hospital. Although symptoms are mostly benign and self-limited, a subset develops an acute abdomen due to critical intra-abdominal pathology necessitating emergency intervention.¹ Abdominal pain is reported to account for about 5%–10% of all ED visits.² Leading common causes of acute abdominal pain includes acute appendicitis, acute cholecystitis, acute bowel obstruction, urinary colic, perforated peptic ulcer, acute pancreatitis, acute diverticulitis, and nonspecific, non-surgical abdominal pain.³ A thorough, yet expeditiously obtained history and physical examination are paramount to developing the differential diagnosis for patients typically presenting with an acute abdomen. Most abdominal pain is benign in the adult population; however, as many as 10% of patients in the ED setting have a severe or life-threatening cause or require surgery. It presents a diagnostic challenge for emergency physicians, as the causes are numerous, ranging from benign to fatal conditions.⁴

Acute abdominal pain may present diagnostic and management problems. Various techniques have been introduced over the past two decades to help manage an acute abdomen. An accurate diagnosis is essential for appropriate treatment, which could prevent patient death in many cases. Definitive history of an acute abdomen depends on the pathological process involved, which in some instances may resolve spontaneously, or with treatment, and at other times progress to generalized peritonitis and death. Hasty decisions are rarely necessary and, if carried out, may be incorrect or misleading.⁵ An unhurried surgeon makes for a good history; physical examination remains the cornerstone of an accurate diagnosis, confirmed by laboratory data and, when necessary, by radiographic studies. If this valuable information is adequate to establish a proper diagnosis, and urgent or immediate operations are unnecessary, the disease can be controlled, thereby preventing unnecessary surgical intervention.

Today the combination of improved diagnostic procedures, antibiotics, better anesthesia, and preoperative and postoperative patient care has caused a decrease in morbidity and mortality of patients with an acute abdomen.⁴ Despite extensive evaluation, a quarter of patients usually remained with a nonspecific cause, but now with the latest radiological imaging advances, that number has decreased.⁶ Ultrasound is a very practical, less expensive, and least invasive tool of investigation in these conditions. It can effectively reduce misdiagnosis and negative laparotomies in the case of an acute abdomen. The only disadvantage of sonography is operator errors and less tissue penetration in case of obesity.⁷ Ultrasound is helpful in both acute and chronic abdominal pain evaluation. In case of acute abdominal pain, Ultrasound adds more than 40% of the information required for final diagnosis.⁸

This study was conducted to find the common causes of non-traumatic acute abdomen, clinical presentations, and Ultrasound findings of patients presenting to the Emergency Department of a public tertiary care hospital of Peshawar, Khyber Pakhtunkhwa, Pakistan.

MATERIALS & METHODS

This cross-sectional study was conducted in the Emergency Department of Hayatabad Medical Complex (HMC), Peshawar. The duration of sample collection was three months from 1st June- 31st August 2016. Non-probability convenience sampling was used, and a total of 400 admitted patients were included in the study after informed consent. Specific Pediatric age group (12 years and below), traumatic cases (blunt and penetrating), acute abdomen in pregnancy, and gynecologic causes of acute abdomen were excluded. Ethical approval was obtained from the Ethical Review Board of Hayatabad Medical Complex.

Data regarding demography, clinical presentation, examination findings, laboratory reports, and ultrasound findings were recorded on a structured Performa; final diagnosis was confirmed from hospital records. Hospital ultrasound machine TOSHIBA FAMIO 8 MODEL 2009 was used in the study. Data were entered in SPSS version 20 and analyzed for descriptive statistics.

RESULTS

Of 400 patients, there were 155(38.75%) females and 245(61.25%) males. Most patients (189, 47.3%) were in the age group of 31 to 40 years, followed by the age group of 21-30 years (76, 19%). Patients older than 40 years were 126(31.5%).

Table 1: Demographic data of acute abdomen patients (n=400).

Demographic Variables	Frequency	Percent
Gender		
Males	245	61.25
Females	155	38.75
Age Groups (Years)		
15 to 20	09	02.3
21 to 30	76	19.0
31 to 40	189	47.3
41 to 50	60	15.0
50+	66	16.5
Total	400	100.0

The distribution of causes of acute abdomen in males and females by their age groups are shown in Figures 1a & 1b. For males, Renal Stones were the most common causes in the age group of 21-30 years and 31-40 years, followed by Acute Appendicitis in the 21-30 years age group.

For females, Renal Stones were most common in the age group of 21-30 years and 31-40 years, followed by Acute Appendicitis in the age group of 21-30 years and Acute Cholecystitis in the 31-40 years age group.

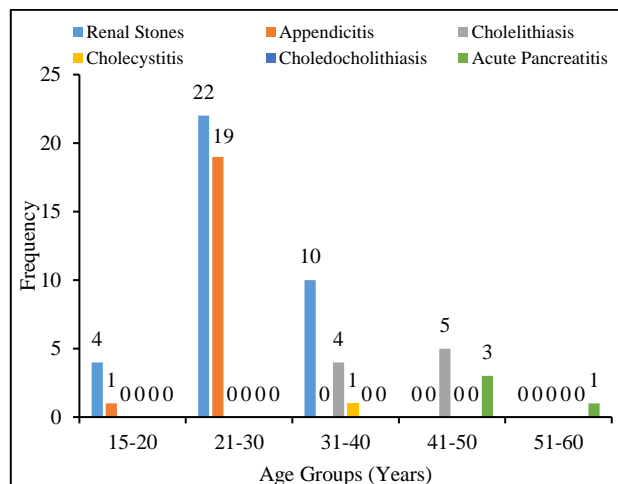


Figure 1a: Distribution of causes of acute abdomen in males by age groups (n=70).

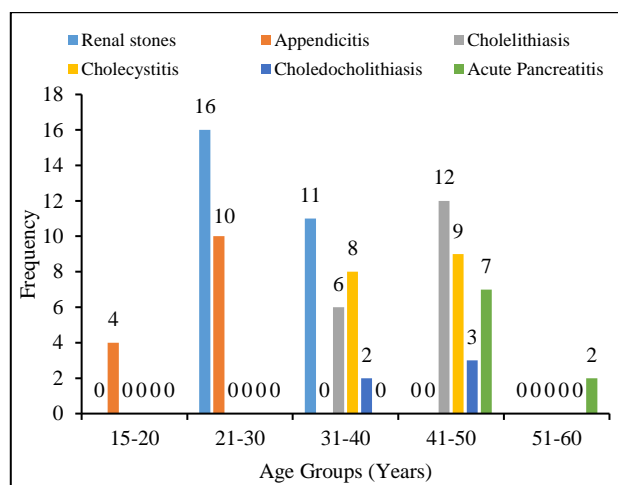


Figure 1b: Distribution of causes of acute abdomen in females by age groups (n=90).

Table 3 provides data regarding the distribution of diagnosed conditions based on gender. The most common condition was Nephrolithiasis diagnosed in 63 patients (36 males, 27 females), followed by Appendicitis in 34 patients (20 males, 14 females), and Cholelithiasis in 27 patients (09 males, 18 females); Other conditions such as Cholecystitis was present in 18 patients (01 male, 17 females), and Pancreatitis in 13 patients (04 males, 09 females).; Cholelithiasis was found in 05 females only. It is thus seen that more females were affected overall, and showed greater predisposition to diseases of the gall bladder and Pancreas compared to males, who had more cases of Nephrolithiasis and Appendicitis.

Table 3: Distribution of diseases by gender (n=160).

Diseases	Males f (%)	Females f (%)	Total f (%)
Renal stones	36 (57.1)	27 (42.9)	63 (39.3)
Appendicitis	20 (58.8)	14 (41.2)	34 (21.3)
Cholelithiasis	09 (33.3)	18 (66.7)	27 (16.9)
Cholecystitis	01 (05.6)	17 (94.4)	18 (11.3)
Acute pancreatitis	04 (30.8)	09 (69.2)	13 (08.1)
Choledocholithiasis	0 (0)	05 (100)	05 (03.1)
Total	70 (43.7)	90 (56.3)	160 (100)

DISCUSSION

An observational study was conducted prospectively on patients with acute non-traumatic abdominal pain typically presenting to Emergency Department of a major public tertiary care hospital of Peshawar, Khyber Pakhtunkhwa, Pakistan. The highest frequency distribution (47.3%) of ages was in the age group of 31-40 years. Similar study was conducted on a total of 200 patients with a mean age of 46.19 years in the study population.⁹ Other studies conducted in Emergency Departments also observe similar age distribution.¹⁰⁻¹²

The most common presentation in our study was renal colic (39.3%). Appendicitis was the next common (21.3%) followed by biliary and pancreatic causes. A study conducted in Nigeria¹³ reported appendicitis and intestinal obstruction as the most common presentations with 30.3% and 27.9%, respectively; another study carried out by Chanana et al¹⁴ revealed that pancreatitis remained the most frequent cause followed by appendicitis with 11% and 10.6%, respectively. Among the medical causes, acid peptic disease was the leading cause (22%), followed by acute gastroenteritis (15%). Among the surgical causes, acute appendicitis represented the leading cause (20%),

followed by acute intestinal obstruction (11%). In an observational study by Tariq et al¹¹ from Pakistan, the most common cause of an acute abdomen was acute appendicitis followed by acute pancreatitis and duodenal ulcer. A published study performed in Ghana, Africa, also reported acute appendicitis followed by typhoid fever with ileal perforation and acute intestinal obstruction as the most common causes of acute abdominal pain.¹⁵

In a study conducted in India,¹⁶ the leading causes of abdominal pain were surgical in 32% of patients, medical in 24% of patients, urinary tract related in 39.4% of patients; only 3% of patients presented with obstetric and gynecological causes of abdominal pain. The most general reasons for ED visits due to abdominal pain were ureteric colic (22%), acute gastroenteritis (11%), acid peptic disease (11%), UTI (7%), hollow viscus perforation (08%), and acute appendicitis (07%).¹⁶

Out of all patients presenting with acute appendicitis, about 73% were below 25 years of age. Abdominal pain remained the presenting issue in a significant percentage of medicolegal actions against both general and pediatric EM physicians.^{17,18} The modern physician should be humbled by the fact that, despite diagnostic and therapeutic advances such as Computed Tomography, Ultrasonography, and Laparoscopy, the misdiagnosis rate of the most routine surgical emergency, acute appendicitis, has changed subtly over time.¹⁹

CONCLUSION

Ultrasonography effectively established the causes of acute abdomen in patients presenting to the emergency department of a major public sector tertiary care hospital of Peshawar, Khyber Pakhtunkhwa, Pakistan. Renal stones and Appendicitis were the common causes in males, whereas Gall Bladder related conditions were more common in females.

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