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Research Article

The Role of Urological Conditions in Cases Presenting to the Emergency Department with Acute Abdominal Pain: First Report from Somalia

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Abstract **Objective:** This study aimed to investigate the pattern and outcomes of Acute abdominal pain (AAP) in an adult population presented to the Emergency Department (ED) in the only tertiary care center of Somalia by analyzing the role of urological conditions in detail. **Materials and Methods**: Demographic and clinical data of the adult (i.e., age>18) patients who presented to the ED for AAP between December 2021 and June 2022 were retrospectively analyzed. **Results**: During the study period, 600 patients presented to the ED with the chief complaint of AAP. The mean age of the participants was 56.7±12.4(15–93). Most (34.8%) patients were aged between 18 and 30. The most frequent diagnosis was NSAP (24%), followed by appendicitis(11.1%), bowel obstruction(7.2%), renal colic(6.8%), and biliary colic-cholecystitis(6.5%). Appendicitis, renal colic, bowel obstruction, and perforated peptic ulcer were more frequent in males than females. Among the 273(45,5%) patients admitted to the hospital, 168(54.9%) were male, and 105(35,7%) were female. While 24.2% of all admissions were due to appendicitis, 15.4% were due to intestinal obstruction. **Conclusions:** Non-specific abdominal pain is the most common diagnosis in both age and gender groups despite being slightly more frequent in younger and female patients. In addition to NSAP, appendicitis, bowel obstruction, and renal colic are the most common diagnoses in patients who presented to ED with the chief complaint of AAP.

Keywords Abdominal pain; Non-specific abdominal pain; Renal colic; Appendicitis; Surgery, Emergency.

Introduction

Acute abdominal pain (AAP) is a medical emergency characterized by non-traumatic abdominal discomfort lasting no more than five days (1). It is the chief complaint in 7–10% of all visits to the emergency department (ED) (2,3). The challenging differential diagnosis can lead to medico-legal litigation and unfavorable outcomes (4,5).

Acute abdominal pain can be due to various diseases, ranging from mild, self-limiting illnesses to life-threatening conditions (6). An accurate and timely diagnosis may result in better management and favorable outcomes. It should be considered that AAP can be associated with various medical disciplines, including gynecology, surgery, urology, and internal medicine, and it may necessitate surgical intervention. Appendicitis, peptic ulcer, urinary stones, inflammatory bowel disease, hepatobiliary illnesses, ectopic pregnancy, endometriosis, pelvic inflammatory disease, and other extra-abdominal pathologies should be considered in the differential diagnoses of AAP in adults (7-12). Ultrasound and computed tomography are radiological methods often used in the emergency room to improve diagnostic accuracy (13).

According to published reports, approximately 25% of patients with abdominal pain require surgical procedures (14). On the other hand, it was reported that a quarter of the patients with AAP were discharged from the ED, while 35–41% were admitted (15).

Most studies on AAP originate from high-income countries, where non-specific abdominal pain (NSAP) is the most frequent diagnosis.[9] These studies also noted that the profile of the patients presenting to ED with AAP varied based on geographical region and socioeconomic factors (9,14,15). Nevertheless, there is limited data regarding the characteristics of the patients residing in low- and middle-income countries (16).

To the best of our knowledge, no study related to the sociodemographic and clinical profile of patients presenting to the ED with AAP in Somalia has been reported to date. Therefore, our study demonstrated the profile of the adult patients who presented to the ED of the only tertiary care center in Somalia.

Materials and Methods

This study was approved by the ethics committee of Somalia Turkiye Training and Research Hospital (MSTH/6741). Adult (i.e., age>18) patients who presented to the ED of the same hospital with the chief complaint of AAP between December 2021 and June 2022 constituted the target population of this retrospective, cross-sectional study. Patients with AAP due to trauma, patients with multiple ED visits, and those with incomplete data were excluded.

Data, including demographic features (age and gender), primary diagnosis, and the decision to admit or discharge the patient, were retrieved from the electronic patient folders.

Statistical analyses were conducted using the Statistical Package for Social Sciences program (SPSS version 23.0). Data were given as frequencies and percentages. All cases were categorized according to age, gender, and diagnosis. Cross-tabulation was used to examine the relationship between each group.

Results

During the study period, 10,774 adult patients presented to the ED. Among these patients, 600 (5.6%) presented with the chief complaint of AAP. The mean age of the participants was 56.7±12.4 [15-93]. While most patients were aged between 18 and 30 (34.8%), 22.7% were in the 31-45 age group, and 13.7% were in the 46-56 age group. Analysis regarding gender distribution revealed that 51% (n=306) of the patients were male, while 49% (n=294) were female (Table 1).

Table 1: Age-gender distribution and admission-discharge status of the patients

Variables		Frequency	Percentage (%)
Age group	18-30	209	34.8
	31-45	163	27.2
	46-56	82	13.7
	56-65	74	12.3
	65-85	70	11.7
	>85	2	0.3
	Total	600	100.0
Gender	Male	306	51.0
	Female	294	49.0
	Total	600	100.0
Admission-discharge status	Admitted	273	45.5
	Discharged	327	54.5
	Total	600	100.0

After evaluation in the ED, 273 patients (45.5%) were admitted to the hospital.

The most frequent diagnosis was NSAP (n=139.24%), followed by appendicitis (n=67, 11.1%), bowel obstruction (n=43, 7.2%), renal colic (n=41, 6.8%), biliary colic-cholecystitis (n=39, 6.5%), cystitis and other urologic pain (n=35, 5.8%) and perforated peptic ulcer (n=33, 5.5%) (Table 2).

Table 2: Causes of acute abdominal pain

Variables	Frequency	Percentage (%)
Nonspecific abdominal pain	139	23.2
Appendicitis	67	11.2
Bowel obstruction	43	7.2
Renal colic	41	6.8
Biliary colic and cholecystitis	39	6.5

Cystitis and other urologic pain (i.e., testicular or prostatic pathologies)	35	5.8
Perforated peptic ulcer	33	5.5
Pyelonephritis	24	4.0
Gynecologic disease	23	3.8
Liver disease (i.e., liver cirrhosis, hepatitis, hepatobiliary cancers)	21	3.5
Gastroenteritis	19	3.2
Gastric perforation	18	3.0
Gastritis/peptic ulcer	17	2.8
Pancreatitis	13	2.2
Inflammatory bowel disease	13	2.2
Diverticulitis	11	1.8
Abdominal hernias	11	1.8
Intestinal tuberculosis	8	1.3
Myocardial ischemia,	8	1.3
Intrabdominal abscess	7	1.2
Colon cancer/mass	5	0.8
Others	5	0.8
Total	600	100.0

The participants were categorized according to their primary diagnoses and age (<56 years and ≥56 years). Categorizing the patients based on age revealed that NSAP was the most common diagnosis in patients younger than 56 (i.e., mean age) and those aged 56 or above. However, its frequency was slightly higher in the former group than in the latter (24.7% vs. 19.4%). Also, appendicitis, renal colic, and gynecological emergencies were more than three-fold more common in the former group than in the latter (14%, 8.6%, and 5.1% vs. 4.1%, 2.4%, and 0.6%). On the

other hand, peptic ulcer, pyelonephritis, and diverticulitis were more than three-fold more common in the latter group than in the former (6.5%, 9.4%, and 4.7% vs. 1.4%, 1.9%, and 0.7%) (Table 3).

Table 3: Causes of acute abdominal pain based on age group

Etiology	<56 years (%)	>56year (%)
Gastritis/peptic ulcer	1.4	6.5
Urinary tract infection and other urologic pain (i.e., testicular or prostatic pathologies)	6.3	4.7
Biliary colic and cholecystitis	6.3	7.1
Gastric perforation	3.5	1.8
Perforated peptic ulcer	5.3	5.9
Pancreatitis	0.7	5.9
Appendicitis	14.0	4.1
Renal colic	8.6	2.4
Bowel obstruction	6.7	8.2
Pyelonephritis	1.9	9.4
Inflammatory bowel disease	2.1	2.4
Diverticulitis	0.7	4.7
Gastroenteritis	3.3	2.9
Gynecologic disease	5.1	0.6
Abdominal hernias	1.2	3.5
Liver disease (i.e., liver cirrhosis, hepatitis, hepatobiliary cancers)	2.6	5.9
Nonspecific abdominal pain	24.7	19.4
Intestinal tuberculosis	1.9	0.0
Myocardial ischemia,	0.9	2.4
Colon masses	0.7	1.2
Intra-abdominal abscess	1.4	0.6
Others	0	2.9

Analyses based on gender distribution revealed that appendicitis, renal colic, bowel obstruction, perforated peptic ulcer, liver disease, and perforated peptic ulcer were more frequent in males than females (Table 4). On the other hand, biliary colic/cholecystitis, cystitis, other urologic pain, and gastroenteritis were significantly higher in females than in males.

Table 4: Causes of acute abdominal pain based on gender

Diagnosis	**Male (%)**	**Female (%)**
Nonspecific abdominal pain	19.0	27.6
Appendicitis	14.1	8.2
Renal colic	10.1	3.4
Bowel obstruction	9.2	5.1
Perforated peptic ulcer	7.8	3.1
Liver disease (i.e., liver cirrhosis, hepatitis, hepatobiliary cancers)	5.6	1.4
Pyelonephritis	5.2	2.7
Gastric perforation	4.2	1.7
Urinary tract infection and other urologic pain (i.e., testicular or prostatic pathologies)	3.3	8.5
Biliary colic and cholecystitis	3.3	9.9
Gastritis/peptic ulcer	2.6	3.1
Intestinal tuberculosis	2.6	0.0
Diverticulitis	2.0	1.7
Pancreatitis	2.0	2.4
Inflammatory bowel disease	1.6	2.7
Gastroenteritis	1.3	5.1
Abdominal hernias	1.3	2.4
Intra-abdominal abscess	1	1.4
Gynecologic disease	0.0	7.8
Colon cancer/mass	1	0.7
Myocardial ischemia,	0.3	2.4

Others	0	1.7

Among the 273 patients admitted to the hospital, 168 (54.9%) were male, and 105 (35.7%) were female. While 24.2% of all admissions were due to appendicitis, 15.4%, 11.4%, and 6.6% were secondary to intestinal obstruction, perforated peptic ulcer, and gastric perforation, respectively. These four diagnoses accounted for approximately half of all hospitalizations related to AAP. On the other hand, NSAP (40.7%) was the most common diagnosis among the patients discharged home. It was followed by renal colic (11.6%), cystitis, and other entities (10.1%), as depicted in the table (Table 5).

Table 5: Rates of admissions based on the cause of acute abdominal pain

Diagnosis	**Admission-discharge status**			
	Hospital admissions		Hospital discharges	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Appendicitis	66	24.2	1	0.3
Bowel obstruction	42	15.4	1	0.3
Perforated peptic ulcer	31	11.4	2	0.6
Gastric perforation	18	6.6	0	0.0
Pyelonephritis	15	5.5	9	2.8
Gynecologic pain	13	4.8	10	3.1
Liver disease (i.e., liver cirrhosis, hepatitis, cancers)	12	4.4	9	2.8
Biliary colic and cholecystitis	11	4.0	28	8.6
Abdominal hernias	11	4.0	0	0.0
Diverticulitis	8	2.9	3	0.9
Pancreatitis	6	2.2	7	2.1
Nonspecific abdominal pain	6	2.2	133	40.7
Intra-abdominal abscess	5	1.8	2	0.6

Intestinal tuberculosis	3	1.1	5	1.5
Renal colic	3	1.1	38	11.6
Gastritis/peptic ulcer	2	0.7	15	4.6
Urinary tract infection and other urologic pain (i.e., testicular or prostatic pathologies)	2	0.7	33	10.1
Myocardial ischemia	6	2.2	2	0.6
Colon cancer/colonic mass	2	0.7	3	0.9
Gastroenteritis	1	0.4	18	5.5
Inflammatory bowel disease	0	0.0	13	4.0
Other	1	0.4	4	1.2

Discussion

Acute abdominal pain of non-traumatic origin has been proven to be one of the most common complaints bringing patients to the emergency department. Our findings indicated that AAP constituted 5.6% of ED visits. This rate is lower than those reported in the studies from Tanzania (8.5%), Nigeria (9.6%), India (16.66%), and Kenya (16.7%) (16-19). However, an Italian study reported a rate of 5.8%, close to the rate we found in our cohort (20).

The gender distribution in our study is different from other reports.[15,16,18,20,21] For example, a national population-based cohort study from Australia found that the number of female patients (63.3%) tended to be higher than that of males (15). In contrast, other studies conducted by Mjema et al. (36.7%), Bhagat et al. (45%), and Semal et al. (47.4%) reported that males presented with AAP more frequently than females (16,18,21). In addition, a national population-based cohort study from Italia also detected that the rate of female patients (52%) tended to be higher than that of males (20).

In our cohort, most patients were aged between 18 and 30 (34.8%). Similarly, a retrospective study from Nepal found that presentation to ED with the chief complaint of AAP was most prevalent

(44.6%) in patients aged between 18 and 30 (21). However, in sharp contrast to our study, patients who presented to ED with AAP in Europe were mainly over 70 years (22).

In our cohort, 45.5% of the patients with AAP were admitted after evaluation at the ED. This finding contrasts with a study conducted in Tanzania, which found that two-thirds of the patients were admitted (16).

The most common (23.2%) diagnosis was NSAP in our cohort. This finding is in line with the study published by Irvin et al., which was conducted in Europe (35%), and Cervellin et al., which was conducted in Italy (36.1%) (22,23). Appendicitis, bowel obstruction, renal colic, biliary colic-cholecystitis, cystitis, and other urologic pain followed NSAP in terms of frequency in our study. However, in studies from Nigeria and Kenya, appendicitis and ectopic pregnancy were the most common causes of AAP in ED (17,19). Interestingly, a study from Tanzania reported that the most frequent diagnoses were intra-abdominal malignancy and intestinal obstruction among a series of patients who were evaluated in ED with the chief complaint of AAP (16). In contrast, intra-abdominal malignancy was a rare diagnosis in our cohort. It also contrasts the findings of Cervellin et al., who reported renal colic as the most frequent cause of acute abdominal pain in ED (23).

Analysis regarding the distribution of the different diagnoses based on patient age revealed that appendicitis and renal colic were 3-fold more common in patients younger than 56. In contrast, pyelonephritis and liver diseases were 3-fold more frequent in patients older than 56. These findings are consistent with studies from Italy and Sweden.[23,24] In a study including 5340 patients who presented to ED with AAP, Cervellin and coworkers found that NSAP was the most common cause of AAP in patients younger or older than 65 (23). Another study from Iran showed that cholecystitis and intestinal obstruction were more common causes of AAP in women than men (25). In our study, NSAP was the most common cause in both age groups despite being slightly

more frequent in younger patients (24.7%) than in older patients (19.4%). In addition, our study revealed that biliary colic-cholecystitis and hernias were more common causes of AAP in males than females.

To our knowledge, this is the first study to determine the profile of the patients presenting to the ED with non-traumatic AAP in Somalia. Nevertheless, it has some limitations that must be considered while evaluating its findings. First, it is a single-center-based retrospective study. Second, the sample size is relatively small, and the study duration is relatively short. Third, our analysis did not include data regarding comorbidities and outpatient follow-up.

Conclusions

Despite the above-mentioned limitations, we conclude that acute abdominal pain is a common complaint among adult patients presenting to the ED and is relatively more common in young patients. Of note, NSAP is the most common diagnosis in both age and gender groups despite being slightly more frequent in younger and female patients. In addition to NSAP, appendicitis, bowel obstruction, and renal colic are the most common diagnoses in patients who presented to ED with the chief complaint of AAP.

Ethics Approval

This study was approved by the institutional ethical review board of Somalia Turkiye Training and Research Hospital (MSTH/6741).

Informed consent

The research objective was explained to the participants; all patients were given oral and written informed consent for participation in this study.

Conflicts of interest

The authors declared no competing interest.

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Availability of data and materials

All study data and materials can be obtained from the

Reference

1. Gans SL, Pols MA, Stoker J, Boermeester MA. Guideline for the diagnostic pathway in patients with acute abdominal pain. Dig Surg 2015; 32:23-31.
2. Powers RD, Guertler AT. Abdominal pain in the ED: stability and change over 20 years. Am J Emerg Med 1995; 13:301-303.
3. Hastings RS, Powers RD. Abdominal pain in the ED: a 35-year retrospective. Am J Emerg Med 2011; 29:711-716.
4. Selbst SM, Friedman MJ, Singh SB. Epidemiology and etiology of malpractice lawsuits involving children in US emergency departments and urgent care centers. Pediatr Emerg Care 2005; 21:165-169.
5. Kachalia A, Gandhi TK, Puopolo AL, Yoon C, Thomas EJ, Griffey R, Brennan TA, Studdert DM. Missed and delayed diagnoses in the emergency department: a study of closed malpractice claims from 4 liability insurers. Ann Emerg Med 2007; 49:196-205.
6. Dang C, Aguilera P, Dang A, Salem L. Acute abdominal pain: Four classifications can guide assessment and management. Geriatrics (Basel, Switzerland) 2002;57:30-32.
7. McNamara R, Dean AJ. Approach to acute abdominal pain. Emerg Med Clin North Am 2011; 29:159-173.
8. Palmer J, Pontius E. Abdominal Pain Mimics. Emerg Med Clin North Am 2016; 34:409-423.
9. Cervellin G, Lippi G. Abdominal migraine in the differential diagnosis of acute abdominal pain. Am J Emerg Med 2015; 33:864.e3-5.
10. Tayal VS, Bullard M, Swanson DR, Schulz CJ, Bacalis KN, Bliss SA, Norton HJ. ED endovaginal pelvic ultrasound in nonpregnant women with right lower quadrant pain. Am J Emerg Med 2008; 26:81-85.

11. Cervellin G, Comelli I, Sartori E, Lippi G. A four-year survey on unexpected pregnancy diagnoses in a large urban emergency department in Parma, Italy. Int J Gyn&Obst 2014; 127:51-54.
12. Kaplan BC, Dart RG, Moskos M, Kuligowska E, Chun B, Hamid MA, Northern K, Schmidt J, Kharwadkar A. Ectopic pregnancy: prospective study with improved diagnostic accuracy. Ann Emerg Med 1996; 28:10-17.
13. Testa A, Lauritano EC, Giannuzzi R, Pignataro G, Casagranda I, Gentiloni Silveri N. The role of emergency ultrasound in the diagnosis of acute non-traumatic epigastric pain. Intern Emerg Med 2010; 5:401-409.
14. Ibrahim NA, Oludara MA, Ajani A, Mustafa I, Balogun R, Idowu O, Osuoji R, Omodele FO, Aderounmu AO, Solagberu BA. Non-trauma surgical emergencies in adults: Spectrum, challenges and outcome of care. Ann Med Surg 2015; 4:325-330.
15. Cartwright SL, Knudson MP. Evaluation of acute abdominal pain in adults. Am Fam Physician 2008; 77:971-978.
16. Mjema KM, Sawe HR, Kulola I, Mohamed AS, Sylvanus E, Mfinanga JA, Weber EJ. Aetiologies and outcomes of patients with abdominal pain presenting to an emergency department of a tertiary hospital in Tanzania: a prospective cohort study. BMC Gastroenterol 2020; 20:173.
17. Agboola JO, Olatoke SA, Rahman GA. Pattern and presentation of acute abdomen in a Nigerian teaching hospital. Niger Med J 2014; 55:266-270.
18. Agarwal A, Bhagat T, Verma R, Goel A, Garg P. To study the epidemiology and clinical profile of adult patients with acute abdominal pain attending tertiary care hospital. Santosh University Journal of Health Sciences 2020:105-108.
19. Awori MN, Jani PG. Surgical implications of abdominal pain in patients presenting to the Kenyatta National Hospital casualty department with abdominal pain. East Afr Med J 2005; 82:307-310.
20. Caterino S, Cavallini M, Meli C, Murante G, Schiffino L, Lotito S, Toncher F. Acute abdominal pain in emergency surgery. Clinical epidemiologic study of 450 patients. Annali Italiani di Chirurgia 1997; 68:807-817.
21. Samal AM, Rawal M, Shrestha A. Pattern of Acute Abdominal Pain Presenting to Emergency Department of Karnali Academy of Health Sciences: Hospital Based Cross

Sectional Study. Journal of Karnali Academy of Health Sciences. 2021;4.

22. Irvin TT. Abdominal pain: a surgical audit of 1190 emergency admissions. Br J Surg 1989; 76:1121-1125.
23. Cervellin G, Mora R, Ticinesi A, Meschi T, Comelli I, Catena F, Lippi G. Epidemiology and outcomes of acute abdominal pain in a large urban Emergency Department: retrospective analysis of 5340 cases. Ann Transl Med 2016; 4:362.
24. Laurell H, Hansson LE, Gunnarsson U. Acute abdominal pain among elderly patients. Gerontology 2006; 52:339-344.
25. Shiryazdi SM, Azhdari A, Fallahzadeh H. Frequency distribution of acute abdominal pain causes in patients referred to Shahid Sadoughi hospital, Yazd, Iran. Medicinski časopis 2019; 53:1.