ORIGINAL ARTICLE

ADMISSION WITH ACUTE ABDOMEN: PRESENTATION, CONDITIONS IDENTIFIED AND MANAGEMENT OUTCOMES

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Background: Acute abdomen is one of the few conditions that require immediate surgical intervention most of the time. However, not all cases of acute abdomen need surgery. The objective was to determine the various presentations of acute abdomen and their management outcome in patients presenting with acute abdomen to AIMS, Muzaffarabad, Azad Jammu and Kashmir, Pakistan. **Methods**: This prospective cohort study included individuals aged 18 and above who presented with abdominal pain lasting at least eight hours. Patients with trauma-induced abdominal pain were excluded. Consecutive non-probability sampling facilitated participant recruitment. **Results**: The majority (54%) were young, and males outnumbered females (62.61% and 37.39% respectively. Most patients presented within 8 hours of pain onset, diabetes and hypertension were the commonest comorbid. Mild pain was most common at presentation. In descending order, acute Appendicitis, acute cholecystitis, acute pancreatitis, intestinal obstruction, Peritonitis, UTIs, and gynaecological & obstetric conditions were the frequent reasons for abdominal pain. **Conclusion**: Recognizing the patterns of conditions that present as acute abdomen is essential for healthcare planners to develop effective treatment protocols, as incorrect management can lead to significant consequences.

Keywords: Acute abdomen; Acute Appendicitis; Pancreatitis; Acute pancreatitis; Acute cholecystitis

Citation: Sabir F, Hanif S, Gardezi F, Saeed M, Bibi R, Haider S. Admission with acute abdomen: Presentation, conditions identified and management outcomes. J Ayub Med Coll Abbottabad 2024;36(1):165–9.

DOI: 10.55519/JAMC-01-12997

INTRODUCTION

The acute abdomen, defined by sudden and severe abdominal pain, demands prompt medical evaluation and sometimes urgent surgical intervention.[1] Its diagnosis encompasses a broad spectrum of potential surgical conditions, necessitating precise identification of the underlying cause.[2] This diagnostic challenge is compounded by the variability in prevalent causes, which can differ significantly across geographic and demographic contexts.[2]

In Emergency Departments (EDs), abdominal pain represents a common yet complex emergency.[3] Practitioners are tasked with differentiating between benign and life-threatening causes. The origin of such pain often involves various systems, including gastrointestinal, urological, and gynaecological, complicating the diagnostic process.[3] While most cases in emergency departments are not severe, a significant minority up to 10% require surgical intervention or are life-threatening, a proportion that diminishes in outpatient settings.[3,4]

Acute abdominal pain is a common reason for emergency department (ED) visits, comprising 5-10% of all such cases.[5–7] This symptom's prevalence, coupled with its broad etiological spectrum – ranging from benign conditions to life-threatening illnesses – necessitates a meticulous diagnostic process. This is crucial to avoid the severe consequences of misdiagnosis, including significant legal repercussions.[8–10] Timely and accurate identification of the underlying cause is essential for delivering effective patient care and improving outcomes. The diagnostic process typically starts with an in-depth history and physical examination, which help direct physicians toward additional necessary investigations.[11]

This context underscores the relevance of the study conducted at Abbas Institute of Medical Sciences, Muzaffarabad, located in a semi-rural area. The distinct demographic and geographical characteristics of semi-rural populations can affect the aetiology and presentation of acute abdominal conditions. Limited access to healthcare and the prevalence of unique lifestyle and environmental factors differentiates these areas from urban settings. The study provides crucial insights into the diagnostic patterns and challenges in such regions. Its findings enrich the understanding of healthcare professionals regarding the specific needs and health profiles of these populations, contributing significantly to the field of emergency medicine. Improved diagnostic precision, more effective

treatment approaches, and potentially enhanced patient health outcomes in similar contexts are expected benefits. Furthermore, the study highlights the importance of tailoring medical practices and protocols to the distinctive features of each population, especially in diverse and resource-variable environments like semi-rural areas.

MATERIAL AND METHODS

This study, a prospective descriptive analysis, was conducted in the Emergency Medicine Department of Abbas Institute of Medical Sciences, Muzaffarabad, Azad Jammu & Kashmir. Following approval from the Institutional Ethics Committee, the study took place from September 2022 to October 2023. It included individuals aged 18 and above who presented with abdominal pain lasting at least eight hours. Patients with trauma-induced abdominal pain were excluded. Consecutive non-probability sampling facilitated participant recruitment. Given the study's time-bound nature and a lack of local literature, no initial sample size was calculated.

Each patient underwent a detailed history-taking and clinical examination. Data regarding name, age, gender, co-morbidities, onset, duration, and nature of pain were systematically collected. Vital signs – body temperature, pulse, respiratory rate, and blood pressure – were meticulously recorded. Abdominal ultrasonography was performed for all, with additional radiological and laboratory investigations as needed.

Pain intensity was assessed using the Wong-Baker Faces Pain Rating Scale, which ranges from 'no pain' (score of zero) to 'extreme pain' (score of ten). Treatment, either oral or parenteral analgesics, was based on this assessment. Patient follow-up continued until discharge or admission to the hospital. Final diagnoses at discharge were recorded. Data analysis was executed using SPSS version 26.

RESULTS

The composition of our study cohort was 1917 individuals, all of whom presented with abdominal pain, representing the total study population during one year of study from September 2022 to October 2023. Analysis of age demographics showed that 54.62% were within the 18–36-year age bracket, 34.43% ranged from 36 to 54 years, and 10.93% were over 54 years of age. Regarding gender distribution, males constituted 62.65% and females 37.35% of the cohort. The duration of abdominal pain before medical consultation varied, with 72.25% experiencing pain for under 8 hours, and 27.75% enduring pain for 8–24 hours. Notably, comorbid conditions such as diabetes mellitus and hypertension were each present in 27.75% and 25.72% of the cohort, respectively. Ischemic heart disease was observed in 20.24%, while only 8.35% had a history of prior abdominal surgeries. There was a history of malignant disease in 2.82% of the study cohort and tuberculosis was present in 11.98% of the study cohort, as detailed in Table-1.

In this observational study, we meticulously documented and analyzed pain characteristics. Pain severity, assessed using the Wong-Baker Faces Score, varied across the cohort: 46.22% reported mild pain (scores 1–4), 36.98% moderate pain (scores 5–7), and 16.80% severe pain (scores 8–10). The onset of pain was sudden in 72.77% of patients, whereas 27.23% reported a gradual onset. Pain was primarily localized in the lower abdomen (60.51%), with the upper abdomen (28.59%) and generalized distribution (10.90%) following. The pain was most described as pricking or sharp by 52.06% of patients, with 23.53% reporting colicky pain, 17.27% dull pain, and 7.15% a burning sensation. Pain radiation was absent in 69.33% of patients, while others reported radiation to the back (10.90%), groin (14.71%), and shoulder (5.06%). Accompanying symptoms included nausea (68.07%), vomiting (41.88%), and urinary symptoms (12.21%). Other symptoms in our study cohort were, loss of appetite (15.96%), constipation (6.73%), diarrhoea (9.65%), abdominal distension (10.07%), and jaundice (2.71%). Some patients presented with multiple symptoms, as elaborated in Table-2.

In this study examining the aetiology of abdominal pain among 1917 patients, various diagnoses were identified. Acute appendicitis was the most common cause, accounting for 825 cases or 44% of the total. This was followed by acute cholecystitis with 281 cases (14.99%), and urinary tract infection, comprising 150 cases (8%). Acute pancreatitis was also a significant contributor, representing 179 cases (9.45%). Other notable diagnoses included peritonitis (137 cases, 7.31%), acute intestinal obstruction (94 cases, 5.01%), and ovarian cysts (75 cases, 4%). Less common causes of abdominal pain were abdominal tumours, intestinal tuberculosis, and obstructive jaundice, each constituting 38 cases (2.03%). Similarly, gastritis, viral hepatitis, and ectopic pregnancy were each responsible for 10 cases (0.53%). Ascites or non-specific causes were identified in 19 cases (1.01%), pelvic inflammatory disease in 9 cases (0.48%), and testicular torsion in 4 cases (0.21%) (Table-3).

Table-1: Characteristics of patients

Characteristics		Number	Percentage (%)
Total Number of Patients		1917	100
Age	18–36 years	1024	54.62
	36–54 years	660	34.43
	> 54 years	233	10.93
Sex	Male	1201	62.65
	Female	716	37.35
Pain Duration	8 hours	1385	72.25
	Between 8-24 hours	532	27.75
Comorbid	Diabetes Mellitus	532	27.75
	Hypertension	493	25.72
	Ischemic Heart Disease	388	20.24
	Past Abdominal Surgeries	160	8.35
	Malignancies	54	2.82
	Tuberculosis	230	11.98

Table-2: Pain characteristics

Characteristics		Number (total =1917)	Percentage (%)
Pain severity	Between 1 and 4	886	46.22
(Wong-Baker Faces Score)	Between 5 and 7	709	36.98
	Between 7 and 10	322	16.80
Pain Onset	Sudden	1395	72.77
	Gradual	522	27.23
Pain Localization	Upper Abdomen	548	28.59
	Lower abdomen	1160	60.51
	Generalized	209	10.90
Pain Type	Pricking / Sharp pain	998	52.06
	Colicky pain	451	23.53
	Dull pain	331	17.27
	Burning pain	137	7.15
Pain Radiation To	Back	209	10.90
	Groin	282	14.71
	Shoulder	97	5.06
	None	1329	69.33
Symptoms Associated With Pain (More than one symptom also reported in a patient)	Nausea	1305	68.07
	Vomiting	803	41.88
	Urinary Symptoms	234	12.21
	Loss of appetite	306	15.96
	Constipation	129	6.73
	Diarrhoea	185	9.65
	Abdominal distension	193	10.07
	Jaundice	52	2.71

Table-3: Aetiology of abdominal pain

Diagnosis	Number (n=1917)	Percentage (%)
Acute appendicitis	825	44
Peritonitis	137	7.31
Acute intestinal obstruction	94	5.01
Acute cholecystitis	281	14.99
Abdominal Tumours	38	2.03
Acute Pancreatitis	179	9.45
Gastritis	10	0.53
Intestinal Tuberculosis	38	2.03
Obstructive Jaundice	38	2.03
Viral Hepatitis	10	0.53
Ascites / Non specific	19	1.01
Testicular Torsion/Obstructed hernia	4	0.21
Urinary Tract Infection	150	8
Ectopic pregnancy	10	0.53
Pelvic Inflammatory Disease	9	0.48
Ovarian Cyst	75	4
Total	**1917**	**100%**

DISCUSSION

The acute abdomen, a frequent cause of emergency hospital admissions worldwide, encompasses a wide array of intra- and extra-abdominal conditions. This clinical scenario, accounting for a considerable proportion of emergency cases, originates from diverse sources such as infections, obstructions, malignancies, and vascular issues impacting abdominal organs. Proficient clinical judgment is paramount in managing these cases. An accurate diagnosis hinges on a detailed collection of the patient's history, specifically the onset of abdominal pain and related events, coupled with comprehensive clinical evaluations. To support the diagnostic process, laboratory tests and imaging studies are routinely utilized. In cases where a definitive diagnosis remains elusive, repeated in-patient evaluations are advised. Unlike other systemic conditions, the acute abdomen often demands surgical intervention, occasionally as the only measure to prevent grave outcomes, including death. Analysing acute abdomen patterns offers both epidemiological insights and clinical benefits, enhancing diagnostic precision for medical professionals. This knowledge not only guides the development of management protocols for acute abdomen cases and their timely referral to respective specialities but also assists in fostering public awareness. By educating the community about these potentially lethal conditions, early medical intervention can be sought, thereby decreasing the associated morbidity and mortality.

Acute abdomen, typically defined as a sudden and severe pain in the abdominal cavity necessitating immediate evaluation and potentially surgical intervention, presents a complex diagnostic challenge.[15] Not every case of abdominal pain warrants extensive diagnostic measures. In our study, approximately 46.22% of patients rated their pain between 1–4 on the WBS scale, a well-established measure for pain severity that has been validated in the regional population by Bashir *et al*.[16] The onset of pain varied among the participants; a significant number reported experiencing sudden pain, whereas others experienced a more gradual onset. Notably, 14.71% of patients reported pain radiating to the groin area. Although various symptoms were observed, their diagnostic importance was often ambiguous. This observation is consistent with existing literature, highlighting the non-specific nature of symptoms and the frequency of atypical presentations in acute abdominal cases.[17,18] Acute abdominal pain can result from a diverse array of medical and surgical conditions.[18] Studies in different geographical contexts reveal varying predominant causes. For instance, research by Tariq et al. in Pakistan identified acute appendicitis as the most common cause of acute abdomen, followed by acute pancreatitis and duodenal ulcers.[19] Conversely, a study in Ghana, Africa, also noted acute appendicitis as the primary cause, with typhoid fever leading to ileal perforation and acute intestinal obstruction being notably prevalent.[20]

Abdominal discomfort is frequently cited in numerous legal claims against both general and paediatric Emergency Medicine (EM) practitioners.[21,22] Today's medical professionals should consider the fact that the error rate in diagnosing the most prevalent surgical emergency, acute appendicitis, remains relatively unchanged despite advancements in diagnostics and treatments such as CT scans, ultrasonography, and laparoscopy.[23] At the AIMS emergency department in Muzaffarabad, the acute abdomen was diagnosed and admitted in the surgical department in 18% of all patients presenting to the ER. Surgical intervention was necessary in most of these cases, followed by issues related to the medical, urinary tract, and obstetric and gynaecological concerns. The predominant cause of acute abdomen identified in this study was appendicitis, affecting 825 patients (44%), with a male-to-female ratio (M:F) of 3.7:1. This finding indicates a more pronounced male predominance compared to Ajao's report in Ibadan.[4] Contrarily, it differs from Mbah *et al*.'s report in Sokoto,[8] which identified intestinal obstruction as the leading cause but aligns with Gajjar and team's findings in India[4]. In our study, appendicitis was notably more frequent in individuals under 36 years (71.2% of cases), with no cases reported in patients over 48 years. The majority (72.27%) of patients sought medical attention within 8 hours of experiencing pain, and these patients tended to have higher scores on the WBF scale compared to those who sought care after 8 hours; however, the correlation was not statistically significant (p>0.05). In our cohort, acute cholecystitis was the second most frequent acute abdomen cause (n=36; 15.13%), succeeded by acute pancreatitis, urinary tract infections, peritonitis, ovarian cyst-related pain, pelvic inflammatory disease, among other causes (refer to Table-3). Patients who presented with abdominal pain were followed up from their provisional diagnoses till final diagnosis and their final diagnoses were recorded for this study. Abdominal pain is associated with a diverse range of problems and may be life-threatening depending on the cause. Surgeons attending patients with abdominal pain must be considerate of these diverse conditions for timely management and referral if needed to respective specialties. Based on the data, it is clear that various factors contribute to the prevalence of acute abdomen, which varies across different demographics. Existing literature suggests that such variations are often linked to distinct dietary and socioeconomic elements.[24] In our investigation, the patterns of conditions presenting as acute abdomen diverged from those reported in prior studies, yet no specific cause for this disparity was identified.

Study Limitations:

The research was confined to a single centre and employed a descriptive cross-sectional design. Conducting the study in a general hospital could have yielded different results.

Additionally, a larger sample size might have facilitated more widespread applicability of the findings.

CONCLUSION

Upon concluding the study, we gained an enhanced understanding of the range of conditions that manifest as acute abdomen in the surveyed population along with their fate of management and referral to respective departments of Gynaecology, medicine or urology to dispose of them from the surgical department after establishing the diagnosis. This highlights the need for further research in this area to deepen our comprehension of this significant medical condition. This study could serve as a foundation for future research. Notably, a substantial number of patients were from the young, economically active demographic, indicating that the disease imposes a considerable economic burden. Recognizing the patterns of conditions that present as acute abdomen is essential for healthcare planners to develop effective treatment protocols, as incorrect management can lead to significant consequences.

AUTHORS' CONTRIBUTION

FS: Literature review, the conceptualization of the study design, data collection, data analysis, and write-up. SH: Literature review, write-up. FG: Literature review. MS, RB: Data collection. SH: Literature review, data collection.

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Submitted: February 24, 2024	*Revised: March 24, 2024*	*Accepted: March 30, 2024*

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