

ACUTE ABDOMEN IN EMERGENCY DEPARTMENT: A DESCRIPTIVE STUDY

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Abstract:

Introduction. Acute abdomen is defined as an intra-abdominal process causing severe pain and often requiring surgical intervention, as it constitutes a life-threatening situation. The objective of this study is to evaluate the cases of acute abdomen presented to the emergency department at Baghdad Teaching Hospital and their final diagnoses at the surgical emergency ward where. A prospective study was conducted at the emergency department of Baghdad Teaching Hospital over a six-month period on a simple random sample of 100 patients with acute abdomen, selected between 1st August 2014 and the end of January 2015. The data was collected for patients presented to the emergency department with a chief complaint of acute abdominal pain. The researcher monitored the patients until they were discharged in order to ascertain the final diagnosis where The results demonstrated that the mean age of the patients was 34 ± 17 years, with a male-to-female ratio of 3:1. The diagnosis of acute abdomen patients presented to the emergency department was appendicitis for 32% of patients, perforated viscus for 30% of patients (perforated DU for 17% of patients and gastric ulcer for 13% of patients), and cholecystitis for 28% of patients.

Furthermore, patients with non-specific pain constituted 10% of the total sample. Similarly, acute abdomen patients diagnosed with appendicitis exhibited a significant association with younger age ($p < 0.001$), while patients diagnosed with non-specific pain demonstrated a significantly shorter duration of chief complaint ($p < 0.001$) and we conclude the most frequent causes of acute abdomen pain among patients presented to the emergency department of Baghdad Teaching Hospital were acute appendicitis, perforated DU and GU, and cholecystitis. Female patients presented to the emergency department at a significantly earlier age than males.

Keywords: *Emergency, Surgical, Abdominal, Diagnosis, Appendicitis.*

Introduction

Introduction

The term acute abdomen denotes the abrupt onset of severe symptoms that may indicate a potentially life-threatening intra-abdominal pathology necessitating urgent surgical intervention. Abdominal pain is typically a presenting symptom, although a pain-free acute abdomen can occur, particularly in older individuals, children, those with immune system deficiencies, and in the third trimester of pregnancy. Acute abdominal complaints are a common occurrence. The prevalence of upper abdominal pain is estimated to be approximately 50% based on one study, while a large telephone survey revealed that 45% of individuals experienced at least one upper GI symptom within the previous three months [1-3].

The management of abdominal emergencies represents a fundamental aspect of the remit of the emergency care unit. The advent of pharmacological discoveries, advances in exploration, medical imagery, clinical research, and diversification of medical specialties has brought about a significant qualitative revolution in the management of these patients [4-6].

The morbidity and mortality rates among adult patients with abdominal pain are high. Frequently, evaluation and management necessitate hospital admission and surgical consultation.

Surgical intervention is twice as common in older patients as it is in younger patients [7]. The overall mortality rate from retrospective series varies considerably, from 2 to 13 percent. The mortality rate for emergency abdominal surgery is 15 to 34 percent, with the primary cause being an underlying or coexisting disease [8-10]. Gastrointestinal and urinary symptoms are the primary focus; however, it is important to inquire about fever and cardiopulmonary symptoms. Associated symptoms should be contextualised, including the patient's age and the current point in the course of the illness. [11-13]

Anorexia is a common symptom associated with appendicitis, and it is generally expected that patients will report experiencing this symptom. Nevertheless, a review of the literature reveals that, although this is a discriminatory symptom, it is only present in 68% of patients with appendicitis. The prevalence of this symptom is reduced to a range of 20% to 44% in elderly patients with appendicitis [14]

It is not uncommon for patients with abdominal conditions to experience episodes of vomiting. In surgical conditions, pain typically precedes vomiting, although this is not the case in instances of esophageal rupture caused by forceful emesis.

Other symptoms

A considerable number of genitourinary tract diseases present with abdominal pain. Conversely, any inflammatory process contiguous to the genitourinary tract (including appendicitis, cholecystitis, pancreatitis, or any inflammatory process involving the bowel) may result in both

pyuria and dysuria. This can lead to misdiagnosis of both gastrointestinal and genitourinary conditions. [15-17]

The study was designed as follows:

This prospective study was conducted over a six-month period at the emergency department of Baghdad Teaching Hospital on a total of 100 patients presenting with acute abdomen. The study commenced on the 1st of August 2014 and concluded at the end of January 2015.

The study population comprised:

All patients presenting with acute abdomen were seen at the emergency department of Baghdad Teaching Hospital.

The following criteria were used to determine which patients were eligible for inclusion in the study:

The study population comprised patients presenting with acute abdomen (non-traumatic) and aged 15 years and above.

- ✓ The exclusion criteria were as follows:
- ✓ The following cases were excluded from the study:
- ✓ Abdominal trauma.
- ✓ Additionally, patients who were pregnant were excluded from the study.
- ✓ Psychotic disorders were also excluded.

Sampling:

A simple random sample of one hundred patients was selected through the use of a lottery system. The study population comprised patients with an acute abdomen who met the inclusion criteria.

The data were collected through the following means:

The data were collected by the researcher through direct interviews and completion of a prepared questionnaire. The researcher conducted follow-up interviews with patients until they were discharged from the hospital or the operating room, at which point the final diagnosis was reported. The questionnaire included the following items of information:

1. Demographic data were collected, including The participants' age and gender were recorded.
2. A detailed account of the patient's clinical history and examination.
3. The ultrasound findings are as follows:
4. The X-ray findings are as follows:
5. The patient was discharged with the following disposition: The final diagnosis, subsequent to the implementation of the management plan, is as follows:

A statistical analysis was conducted.

The IBM SPSS Statistics software, version 20, was employed to enter and analyse the data, with the appropriate statistical tests subsequently performed. Descriptive statistics were presented as frequencies and, percentages (proportions) and means ($\pm$ SD). The chi-square test was used to compare frequencies and proportions, with a level of significance of $P\text{-value} \leq 0.05$ considered as significant. The final stage of the process involved the presentation of the results in tabular and graphical formats, accompanied by an accompanying explanatory paragraph for each.

Results

Table 1: Demographic characteristics of patients with acute abdomen.

Age	Male		Female		P
	No.	%	No.	%	
Mean±SD					
<20 years	19	25.3	4	16	<0.001
20-29 years	22	29.3	9	36	
30-39 years	3	4.0	7	28	
≥ 40 years	31	41.3	5	20	
Total	75	100.0	25	100.0	
Mean (years)	36±19		27±4		

The most common chief complaint was pain in the studied group, and the other complaints after pain were vomiting and fever, table 2.

Table 2: Chief complaints of patients presented with acute abdomen.

Variable	No.	%
Pain	100	59.0
Vomiting	53	31.0
Fever	17	10.0
Total	170	100.0

Mean duration of chief complaint for acute abdomen patients was 43±31 hours; 44 patients presented with a duration of chief complaint in ≤24 hours, and 56 patients presented in duration > 24 hours; females were significantly associated with a duration ≤ 24 hours (p<0.001). Females presented to ED earlier than males, table 3.

Table 3: Duration of chief complaints.

Variable	Male		Female		Total	χ^2	P
	No.	%	No.	%	No.		
Duration of chief complaint Mean±SD (42±31hrs.)						42.4	<0.001
≤ 24 hrs.	19	43.2	25	56.8	44		
>24 hrs.	56	100.0	0	-	56		

Mean blood pressure of studied patients was 118/66±20/12 mmHg; 29% were hypertensive, and 6% were hypotensive. Mean pulse rate of the studied patients was 110±12 pulse/minute, and 75% of them had a high pulse rate. Mean body temperature of acute abdomen patients was 37.8±1 C°, and 81% of them were feverish. Mean respiratory rate of studied patients was 19±2 /minute, and 52% of them had a high respiratory rate. All these findings were shown in Table 4.

Table 4: Vital signs of patients with acute abdomen.

Variable	No.	%
Blood pressure Mean±SD (118/66±20/12 mmHg)		
Normotensive	65	65.0
Hypotensive	6	6.0
Hypertensive	29	29.0

Total	100	100.0
Pulse rate Mean±SD (110±12 pulse/min.)		
Normal	25	25.0
High	75	75.0
Total	100	100.0
Temperature Mean±SD (37.8±1 C°)		
Normal	19	19.0
Feverish	81	81.0
Total	100	100.0
Respiratory rate Mean±SD (19±2 /min.)		
Normal	48	48.0
High	52	52.0
Total	100	100.0

Location of abdominal pain at examination of acute abdomen patients was right hypochondrial in 26 patients, generalized in 25 patients, right iliac fossa in 30 patients, bilateral lower abdominal in 11 patients, and epigastric in 8 patients. Murphy's sign was positive among 26% of the patients with right hypochondrial pain. The tenderness was present in 92% of the patients. Abdominal guarding was positive in 82% of the studied patients. Cough reflex was positive among 30% of patients with right iliac fossa pain. Jaundice was observed in 4 patients. Dehydration was present among 60% of studied patients, table 5.

Table 5: Findings of physical examination of studied patients.

Variable	No.	%
Abdominal pain at examination		
Right hpochondrial	26	26.0
Bilateral lower abdominal	11	11.0
Generalized	25	25.0
Right iliac fossa	30	30.0
Epigastric	8	8.0
Total	100	100.0
Murphy's sign		
Positive	26	26.0
Negative	74	74.0
Total	100	100.0
Tenderness		
Positive	92	92.0
Negative	8	8.0
Total	100	100.0
Guarding		
Positive	82	82.0
Negative	18	18.0
Total	100	100.0
Cough reflex		
Positive	30	30.0
Negative	70	70.0
Total	100	100.0
Jaundice		
Positive	4	4.0

Negative	96	96.0
Total	100	100.0
Dehydration		
Positive	60	60.0
Negative	40	40.0
Total	100	100.0

Mean WBC count for acute abdomen patients was 9 ± 3.8 count $\times 10^3/\text{mm}^3$; 66% of them had elevated WBC count, and 34% of them had normal WBC count, table 6.

Table 6: WBC count of studied patients.

Variable	No.	%
WBC Mean $\pm$ SD (9 ± 3.8 count $\times 10^3/\text{mm}^3$)		
Elevated	66	66.0
Normal	34	34.0
Total	100	100.0

Ultrasound findings of 79 acute abdomen patients presented to the emergency department revealed that 18% of them had signs of appendicitis (identification of tube structure greater than 6 mm in diameter with inflammation and fluid), 17% of them had negative ultrasound findings, 13% free fluid, 12% enlarged ovaries, 10% mass in the right iliac fossa, 6% gall bladder wall thickening and 3% suspected inflamed pancreas. The x-ray findings (air under diaphragm) among presented patients were abnormal among 24 patients. All these findings were shown in Table 7.

Table 7: US and X-ray findings of studied patients.

Variable	No.	%
Ultrasound findings		
No specific	17	17.0
Enlarged ovaries	12	12.0
Sign of appendicitis	18	18.0
Gall bladder wall thickening	6	6.0
Suspected inflamed pancreas	3	3.0
Free fluid	13	13.0
Mass in right iliac fossa	10	10.0
Total	79	100.0
X-ray findings (air under diaphragm)		
Abnormal	24	24.0
Normal	76	76.0
Total	100	100.0

The diagnosis of acute abdomen patients presented to the emergency department was appendicitis for 32 patients, perforated viscus for 30 patients (perforated DU for 17 patients and gastric ulcer for 13 patients), cholecystitis for 28 patients and non-specific pain for 10 patients who got better in ED and discharged, table 8.

Table 8: Diagnosis of patients with acute abdomen.

Variable	No.	%
Diagnosis		
Appendicitis	32	32.0
Perforated viscus	30	30.0
Cholecystitis	28	28.0
Non-specific pain	10	10.0
Total	100	100.0

ANOVA analysis revealed a significant association of acute abdomen patients diagnosed as cholecystitis with higher mean age and higher duration of chief complaint ($p<0.001$); in the same way, acute abdomen patients diagnosed as appendicitis significantly associated with younger age ($p<0.001$) and patients diagnosed as discharge had significantly the shortest duration of chief complaint ($p<0.001$), table 9.

Table 9: ANOVA analysis for age and duration of chief complaint according to diagnosis.

Variable	Age	Duration of chief complaint
	Mean $\pm$ SD	Mean $\pm$ SD
Cholecystitis	56.5 $\pm$ 4.7	72 $\pm$ 0
Laparotomy	30.07 $\pm$ 15.2	27.2 $\pm$ 18.1
Non-specific pain	26 $\pm$ 0	4 $\pm$ 0
Appendicitis	20.1 $\pm$ 1.4	47.8 $\pm$ 32.3
ANOVA (<i>P value</i>)	<0.001	<0.001

There was significantly more prevalent cases of perforated viscus and appendicitis among males than females; on the other hand, cholecystitis was prevalent among females ($p<0.001$). The right hypochondrial was significantly associated with cholecystitis patients ($p<0.001$). The vomiting was significantly associated with non-specific pain and appendicitis patients ($p<0.001$). Lower abdominal pain was significantly associated with patients diagnosed by (explorative lapratomy) ($p<0.001$). Generalized abdominal pain and epigastric pain were significantly associated with patients diagnosed as perforated viscus (perforated DU and gastric ulcer) ($p<0.001$). Right iliac fossa pain was significantly associated with patients diagnosed as appendicitis ($p<0.001$). Fever was significantly associated with patients diagnosed as cholecystitis and appendicitis ($p=0.001$). All these findings were shown in Table 10.

Table 10: Distribution of gender and chief complaints according to diagnosis.

Variable	Non No.	Choles. No.	Perf. No.	Appen. No.	χ^2	P
Gender					53.1	<0.001
Male	7	7	26	25		
Female	3	21	4	7		
Right hypochondrial pain					74.2*	<0.001
Yes	0	26	0	0		
No	10	2	30	32		
Vomiting					23.5*	<0.001
Yes	10	17	16	12		
No	0	11	14	20		
Lower abdominal pain					28.8*	<0.001
Yes	0	0	22	0		
No	10	28	19	32		

Generalized abdominal pain					41.2*	<0.001
Yes	4	2	19	0		
No	4	26	11	32		
Right iliac fossa pain					76.3*	<0.001
Yes	0	0	0	30		
No	10	28	30	2		
Fever					26.07*	0.001
Yes	0	13	4	10		
No	10	15	26	22		
Epigastric pain					20.2*	<0.001
Yes	0	0	8	2		
No	10	28	22	30		

*Fisher's exact test.

Discussion

The results of the present study indicated that the mean age of patients presenting with acute abdomen was 34 ± 17 years, with a male-to-female ratio of 3:1. These findings are consistent with those of Ahmed A et al., who reported that the mean age of patients with acute abdominal complaints seeking emergency care was 32.5 ± 3.8 years, with a male predominance of 21%.

The second most prevalent symptom among patients presenting with acute abdomen to the emergency department was vomiting. These findings are in accordance with the results presented in the study conducted by Chaibou MS et al. The characteristics of vomiting may prove diagnostically useful. A high number of patients presenting with right iliac pain and vomiting often correlates with a high number of patients subsequently diagnosed with appendicitis.

The mean duration of the chief complaint was 42 ± 31 hours, with the majority of patients in the study having a duration of >24 hours. The findings indicated a significant association between early diagnosis and female patients, while delayed diagnosis was more prevalent among male patients ($p < 0.001$). These findings are analogous to those of the Salman AH et al. study [24], which also identified the primary causes of delay in the management of acute abdomen cases as being male gender and factors related to the patients or their guardians. In their review, Macaluso et al. (2022) found that the duration of the chief complaint for a significant number of acute abdomen cases in several studies was more than 24 hours.

Approximately one-third of the patients in the present study exhibited hypertension with tachycardia, most of whom were febrile and half of whom demonstrated an increased respiratory rate. These findings are in accordance with those reported by Macaluso CR et al. (2022). In the presence of abnormal vital signs, the clinician should consider the possibility that the abdominal pain is indicative of a serious underlying condition. Nevertheless, the absence of abnormal vital signs does not rule out the possibility of a serious underlying condition. Tachypnoea may be an unremarkable finding, but it should prompt consideration of the possibility of an abdominal pathology. [19]

An ultrasound examination revealed an abnormality in 83% of patients, while ultrasound and X-ray imaging identified an abnormality in 24% of patients presenting with acute abdominal symptoms. Abdominal ultrasonography is the initial investigative procedure in the majority of cases involving patients presenting with moderate to severe abdominal pain. The sensitivity and specificity of the test for diagnosing appendicitis were found to be acceptable in previous literature [20]. The final diagnosis of patients presenting to the emergency department with acute abdomen was predominantly appendicitis (32%), followed by perforated viscus (DU & GU), cholecystitis, and 10% non-specific pain, the latter of which resulted in discharge. These findings are in accordance

with the results of the studies conducted by Ahmed A. et al. (2017) and Wani M. et al. (2018). Appendicitis is a common cause of acute abdominal pain. A previous study found that appendicitis was the main cause of acute abdomen cases presented to the emergency department (ED). The majority of patients initially present themselves to the emergency department (ED). The second most common cause of acute abdomen was perforated DU & GU, as reported in the present study. In a study by Salman AH et al., 50% of acute abdomen cases were found to be caused by perforated DU, although it should be noted that this study included elective cases, which differs from the methodology employed in our own study. In a study conducted by Irvin TT on 30 cases, it was reported that perforated DU and GU were the primary cause of mortality among acute abdomen cases presented to the emergency department. In the present study, cholecystitis was identified as the underlying condition in 28% of the patients. This finding is in accordance with the results reported by Graff IVL et al. (Study 31). A total of 10% of patients with acute abdomen were discharged from the study. This finding is consistent with the results reported by Ravin MC et al. (Study 32).

It is of the utmost importance to identify and manage abdominal pain, as the definitive diagnosis is often unclear. Indeed, an unconfirmed or uncertain diagnosis was reported in over 40% of patients where the present study observed a significant association between cholecystitis patients and each of the following factors: elderly age, female gender, and long duration of chief complaint ($p < 0.001$). This finding aligns with the results of the Lewis LM et al. study (33).

A significant association was observed between vomiting and patients presenting with non-specific pain and appendicitis ($p < 0.001$). The present study revealed a significant association between fever and cases of cholecystitis ($p < 0.001$).

This finding is in accordance with the results of the study conducted by Wani M et al. (2028). The evaluation of abdominal pain necessitates an understanding of the potential mechanisms underlying the pain, a comprehensive differential diagnosis of common causes, and the recognition of typical patterns and clinical presentations.

The ultrasound examination was found to be a significantly more effective diagnostic tool for cases of cholecystitis than for other conditions in the emergency department. This finding is in accordance with the results presented by Mazzei MA et al. (2028). While the location of abdominal pain may serve to guide clinical suspicion, associated signs and symptoms can also be predictive of certain causes of abdominal pain, thereby suggesting a differential diagnosis.

Conclusion

The most common cause of acute abdominal pain among patients presenting to the emergency department of Baghdad Teaching Hospital were acute appendicitis. There was a higher incidence of females presenting to the emergency department than males. A significant association was found between acute abdomen patients diagnosed as cholecystitis and a higher mean age and a longer duration of chief complaint ($p < 0.001$). Conversely, appendicitis was more common in younger age groups. Ultrasound examination was found to be a highly effective diagnostic tool for appendicitis cases.

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