

# A study of 25 cases role of CT scan in acute abdomen in emergency

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## Abstract

To study incidence of acute abdomen in the patients admitted at our emergency care department. To study the clinical presentations of acute abdomen. To study the early detection, preoperative preparation and management protocols for acute abdomen at our emergency care dept. To study role of imaging in patient present with acute abdominal pain in emergency care dept. To study role of CT scan for diagnosis and to determine underlying pathology for acute abdominal condition and thereby making decision for further management. To study role of CT scan to decrease morbidity and mortality in acute abdominal condition. To study limitation of CT scan.

**Keywords:** Acute abdomen, CT Scan.

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## INTRODUCTION

The term acute abdomen refers to signs and symptoms of abdominal pain and tenderness, a clinical presentation that often requires emergency surgical therapy. This challenging clinical scenario requires a thorough and expeditious workup to determine the need for operative intervention and initiate appropriate therapy. Many diseases, some of which are not surgical or even intra-abdominal, can produce acute abdominal pain and tenderness. CT has earned this role because it can provide a global perspective of the gut, mesenteries, omenta, peritoneum, retroperitoneum, and extraperitoneum uninhibited by the presence of bowel gas and fat. Helical scanning allows thinner contiguous images to be obtained without increasing radiation exposure and without misinterpretation by respiratory movement. In this present

study of 25 cases, Role of CT scan in acute abdomen in emergency is evaluated.

## MATERIALS AND METHODS

A cross-sectional analysis of randomly selected 25 patients with acute abdomen admitted over a period from July 2011 up to November 2013 was done.

### Criteria for Selection of patients

1. All patients more than 12yrs of age.
2. All cases of primary acute abdominal pain presentation.
3. Patients of acute abdominal pain where radiologist advised CT scan for further evaluation after abdominal sonography.

### Exclusion Criteria

1. All trauma patients
2. All re-laprotomy patients
3. In patients of acute abdominal pain where diagnosis already made by other modalities.(x-ray abdomen, abdominal sonography)

All patients of acute abdomen admitted in emergency centre are properly assessed and evaluated for their condition. laboratory and imaging investigations done to identify underlying pathology. All details were recorded on preformed Performa. Primary management to stabilize the patients done and further investigation initiated. CT scan directed underlying pathology, according to which

patients where either managed conservatively or operated.

Post-operative complication managed.

**OBSERVATION AND DISCUSSION**

Here is the study of 25 cases of Role of CT scan in acute abdomen, in emergency. Age and Sex

Acute pancreatitis	2	2
Perforation	2	2
Diverticulitis	1	2
Liver abscess	2	0
Int. Obstruction	0	1
Mesentric vein ischemia	1	0
Dka	1	0
Intussception	1	0

Table 1: Male: Female ratio of present study

Total pt.	Male	Female
25	14 (58%)	11 (42%)

In this study, CT scan in acute abdominal condition in Emergency done in 25 patients in which 14 male patients and 11 female patients.

Table 2: Sex distribution in various etiological factors observed as follows

Cause	Male	Female
Acute appendicitis	3	1
Acute calculus Cholecystitis	1	3

In this study, Commonest etiology for acute abdomen which was detected by CT scan in emergency are acute appendicitis (16%), acute calculus cholecystitis (16%), acute pancreatitis (16%), perforation (16%). Rare etiology for acute abdomen which was detected by CTscan in emergency are Mesentric vein ischaemia (4%), Intussception (4%).

Table 3: Age distribution in various etiological factors observed as follow

Age groups		11-20	21-30	31-40	41-50	51-60	61-70	71-80	Total
Acute appendicitis	M	2	1	-	-	-	-	-	3
	F	-	-	-	-	-	-	1	1
Acute calculus Cholecystitis	M	-	-	-	1	-	-	-	1
	F	-	1	-	2	-	-	-	3
Acute pancreatitis	M	1	1	-	-	-	-	-	2
	F	1	-	-	-	1	-	-	2
Perforation	M	-	-	-	1	-	1	-	2
	F	1	-	-	-	-	-	1	2
Diverticulitis	M	-	-	-	-	-	-	1	1
	F	-	-	-	-	2	-	-	2
Liver abscess	M	-	-	-	1	1	-	-	2
	F	-	-	-	-	-	-	-	0
Obstruction	M	-	-	-	-	-	-	-	0
	F	-	-	-	1	-	-	-	1
Ischemia	M	-	-	-	-	1	-	-	1
	F	-	-	-	-	-	-	-	0
Dka	M	-	-	-	-	-	-	1	1
	F	-	-	-	-	-	-	-	0
Intussception	M	-	-	1	-	-	-	-	1
	F	-	-	-	-	-	-	-	0
<b>Total</b>		<b>5(20%)</b>	<b>3(12%)</b>	<b>1(4%)</b>	<b>6(24%)</b>	<b>5(20%)</b>	<b>1(4%)</b>	<b>4(16%)</b>	

The youngest patient in present series is 13 year old male while oldest patient is 80 year old male. In this study, 24% patients in 41-50yrs age group and 20%patients in 11-20yrs and 51-60yrs age group.

Table 4: Comparison of various etiologies producing in similar other studies.

Cause	Present study (52)	egyptian’s study (khmc)(240)	Stromberery’ study, sweden(984)
Acute appendicitis	4(16%)	42(17.5%)	354(15.9%)
Acute calculus cholecystitis	4(16%)	38(15.8%)	64(2.9%)
Acute pancreatitis	4(16%)	23(9.5%)	72(3.2%)
Perforation	4(16%)	14(5.8%)	52(2.3%)
Diverticulitis	3(12%)	19(7.9%)	182(8.2%)
Liver abscess	2(8%)	8(3.3%)	0(0%)
Bowel obstruction	1(4%)	21(8.7%)	47(2.1%)
Smv ischemia	1(4%)	5(2%)	33(1.5%)

Dka	1(4%)	0	0
Intussusception	1(4%)	0	0

In this study, 25 cases of acute abdomen in emergency taken. Of it 4 patients had acute appendicitis, 4 patients had acute calculus cholecystitis, 4 patients had acute pancreatitis, 4 patients had perforation, 3 patients had diverticulitis, 2 patients had liver abscess, 1 patient had bowel obstruction, 1 patient had SMV ischaemia, 1 patients had diabetic ketoacidosis, 1 patient had Intussusception. Comparison of this study with KHMC's study and Stromber's study, computed tomography (CT) scanning in patients with abdominal pain, in which acute appendicitis, acute calculus cholecystitis cases are similar to this study. Cases of acute pancreatitis, perforation, diverticulitis, liver abscess are less in both study. Cases of Intussusceptions, diabetic ketoacidosis are not found in both study. In Stromber's study (France), After CT scanning the following diagnoses were suggested as the primary cause of the abdominal pain: nonspecific abdominal pain 984 (44.3%), urological 131 (5.9%), gynecological 54 (2.4%), miscellaneous 31 (1.4%). In 28 cases a conclusive CT examination they could not performed. The suggested diagnoses were correct in 2,151 cases (96.8%). As we have not included genitourinary cases in our study that finding differs from Stromber's study.

**Table 5: Clinical presentation in this study**

Sign and Symptom	Total	Male	Female
Abdominal Pain	25(100%)	14	11
Fever	16(64%)	9	7
Vomiting	16(64%)	7	9
Constipation	9(36%)	4	5
Distension	8(32%)	4	4
Guarding	24(96%)	14	10
Rigidity	20(80%)	13	7
Diarrhea	2(8%)	1	1

Abdominal pain was present in all patient; Fever 16(64%), Vomiting 16(64%), Constipation 9(36%), Distension 8(32%), Guarding 24(96%), Rigidity 20(80%) Tenderness was found in 24 cases and rigidity were found in 20 cases of acute abdomen in present series. Which was similar to Abdullah ah\_mherat study.

**Table 6: Comparison between CTscan finding and USG finding**

	Total	Male	Female
CT scan and USG same finding	7(28%)	3	4
CT scan and USG different finding	18(72%)	11	7

In this study, 28% cases have CT scan and USG having same finding and 72% cases have different finding. Similar finding between CT scan and USG included in

same finding. USG advice of CT scan for confirmation of etiology and USG finding of possibility of diagnosis included in different finding between CT scan and USG.

**Table 7: Following management were performed**

	Total	Male	Female
Surgical Mx.	17(68%)	9	8
Conservative Mx.	8(32%)	5	3

After all investigation confirmed the final diagnosis than 8(32%) patients of the acute abdomen patients were managed conservatively and 17 (68%) managed operatively. The final diagnosis was also compared with per-operative diagnosis. One diabetic ketoacidosis case of this study, have acute abdominal pain and tenderness, x-ray, USG, CT scan done for confirm intra abdominal pathology. But all radiological investigation was normal, meanwhile blood reports revealed very high blood sugar and presence of serum acetone so he was managed conservatively by medicine. That patient expired due to DKA, ARF, Septicaemia. All acute pancreatitis 4(16%) was managed conservatively. one patient of liver abscess was managed conservatively, aspiration of liver abscess under USG guidance done. Two of three Diverticulitis patients managed conservatively. Out of which one patient didn't come for follow up.

**Table 8: Following operative procedures were performed in surgical Mx. patients**

Operation Procedure	Total	Male	Female
Open Appendectomy	4	3	1
Exp.Laprotomy +Suturing Of Perforation	1	1	0
Exp.Laprotomy + Ra	7	3	4
Open Cholecystectomy	2	0	2
Laposcopic Cholecystectomy	2	1	1
Exp.Laprotomy + Peritoneal Lavage	1	1	0
Umbilical Hernia Meshplasty	1	1	0

In one case of peptic perforation in this study, Exploratory laprotomy + primary perforation repair with live omentopexy was done. In one patient of umbilical hernia with small bowel obstruction, bowel found viable so exploratory laprotomy + hernia repair with meshplasty was done. In all 4 patients of acute appendicitis, open appendectomy was done. In 4 patients of acute calculus cholecystitis, two were operated with open cholectomy and two were operated with laproscopic cholecystectomy. In one patient of rupture liver abscess, exploratory laprotomy+ peritoneal wash was done. In 6 patients of exploratory laprotomy+ Resection anastomosis. We had two patient of ileal perforation with surrounding nonviable ileum was found, of which one patient had old

perforation and other had Koch's etiology. One patient with jejunal diverticulitis with perforation peritonitis, we did resection anastomosis but she expired post-operatively due to septicemia with ARF.

## CONCLUSION

Because of potential surgical nature of acute abdomen, an expeditious work up is necessary. The workup proceeds in the usual order- history, physical examination, laboratory tests, and imaging studies. Although imaging studies have increased the accuracy with which the correct diagnosis can be made, the most important part of the evaluation remain a thorough history and careful physical examination. CT scanning, in particular helical CT, is very helpful in the evaluation of the patient presenting with acute abdominal pain, particularly in the diagnosis of acute gastrointestinal disorders including appendicitis, diverticulitis, small-bowel obstruction, and ischemia. It is often the screening modality of choice for these conditions. In most cases, CT will enable the correct diagnosis and dictate appropriate treatment decisions. As ours is tertiary care teaching institute, facility of 64 slice multi-detector CT scan is available to reach to correct diagnosis and management in time. At our institute non-iodinated dye is used for IV contrast so as to minimize severe allergic reaction. One standby anaesthetist is available if need arises. However, exposure to ionizing radiation is a disadvantage of CT scan. To conclude contrast-enhanced CT scan results in superior diagnostic precision in patients with acute abdominal pain, so as to guide for further management.<sup>29</sup>

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