

Radiological Assessment of Non-Traumatic Acute Abdomen

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Abstract

The acute abdomen refers to the presence of an acute attack of abdominal pain, which may occur suddenly or gradually over a period of several hours, induced by a wide variety of pathological conditions that may require medical or surgical intervention. Patients with acute abdomen are among the largest group presenting into emergency department. Conventional radiography is particularly effective in detecting bowel distention, free intraperitoneal air, abnormal calcification and air fluid levels. Ultrasound however has a valuable role in lesions involving hepatobiliary system, kidney, appendix and pelvis abnormal fluid collections like hemoperitoneum, peritonitis, abscess etc. Ultrasound has become firmly established as a useful, safe, non-invasive, portable means in evaluating patients with acute abdominal pain. CT scan is particularly useful in evaluation of patients with equivocal sonographic findings or for better evaluation of conditions already diagnosed by ultrasound. Now a day more number of patients presenting with acute abdomen are investigated radiologically for earlier and more detail preoperative diagnosis. surgery has become more safe and curative.

Keywords: Acute abdomen, ultrasound, CT scan.

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Introduction

In patients presenting with acute abdomen radiological diagnosis largely depends on knowledge of basic anatomy of peritoneum and its reflection together with understanding of spread of intraperitoneal infection into various peritoneal spaces, also the knowledge of abdominal organs, gastrointestinal tract and retroperitoneum with its contents. ABDOMINAL CAVITY is enclosed by abdominal wall and is completely filled by the abdominal viscera and divided into supra-mesocolic and infra-mesocolic compartment by transverse mesocolon, the root of small bowel mesentery divides the infracolic compartment into right infracolic space and larger left infracolic space. The pelvis is most dependent part of peritoneal cavity and is continuous with both paracolic gutters, on the right the gutter extends superiorly to the subhepatic space, where in extension deep to the liver is known as morrison's pouch. The pathologies leading to acute abdomen can be divided as follows.

Inflammatory Conditions

- Acute appendicitis
- Acute cholecystitis
- Acute pancreatitis
- Acute salpingitis
- Acute peritonitis

- Acute diverticulitis
- Acute ulcerative colitis
- Acute regional ileocolitis
- Intraperitoneal abscess
- Retroperitoneal abscess

Gastric:

- Volvulus
- Corrosive gastritis

TORSION OF PEDICLE:

- Twisted ovarian cyst, spleen

COLIC:

- Biliary
- Renal
- Ureteric
- Intestinal

PERFORATED VISCUS:

- Peptic ulcer perforation
- Enteric ulcer perforation
- Diverticular perforation
- Ulcerative colitis perforation

ACUTE INTESTINAL CAUSES:

- Annular pancreas
- Atresia
- Stenosis

Jejunal and ileal:

- Congenital stenosis
- Atresia
- Mid gut volvulus
- Meconium ileus

Colon:

- Meconium plug syndrome
- Colonic atresia
- Anorectal malformation.

Subjects and Methods

About 100 cases were studied in P.D. U medical college and civil hospital during November 2019 to April 2021. During study diagnosis was confirmed in each case either by relevant investigation like x-ray, ultrasound, CT SCAN.

Peak incidence of abdominal emergencies in present series is between 21-30 years, followed by between 11-20 years of age group. Out of studied 100 patients 61 were male and 39 patients were female.

Male: female ration being 1.56:1.

local visceral inflammation (41%) is the leading cause of acute abdomen, followed by intestinal obstruction (11%).

Results & Discussion

Table 1: Etiology

Conditions	No. of Patients	Percentage
Local visceral inflammation	41	41%
Intestinal obstruction	11	11%
Perforation	07	7%
Ruptured ectopic	06	6%
Gyneec pathology	02	2%
Miscellaneous	27	27%

Pain was the chief complaint in all the patients selected in stud . The site of pain was correlated with the underlying pathology. Vomiting was present in 55% ,constipation in 15%,abdominal distention in 13%,urinary complains in 9%and amenorrhoea in 8%60 Acute appendicitis and inflammatory conditions of appendix contributes 20% of acute abdomen, followed by acute cholecystitis contributing 11% of acute abdomen.

Among the colic, Incidence of urinary colic is highest followed by biliary colic.

Among the gynaecological causes ruptured ectopic pregnancy was the common.

Plain x-ray was the initial modality of investigation along with ultrasound and CT SCAN done in patients with equivocal findings on USG.

Common findings in individual pathologies

Table 2: Radiological Findings in Acute Cholecystitis

Findings	
Thickened GB WALL(3-15mm)	98%
GB overdistended	85%
Cholelithiasis	79%
Sonography murphys sign positive	50%
Pericholecystic fluid	57.14%
CBD stone /cystic duct stone	7.1%
Plain xray positive findings	7.1%

Table 3: Radiological Findings in Acute Pancreatitis

Finding	
Increased size and hypoechoic parenchyma	69%
Pseudocyst formation	33.3%
Associated GB stone	19%

Table 4: Incidence of Colic

Sr. no.	Condition	No. of Cases
01	URETERIC(urinary)	09
02	RENAL(urinary)	02
03	BILIARY	09

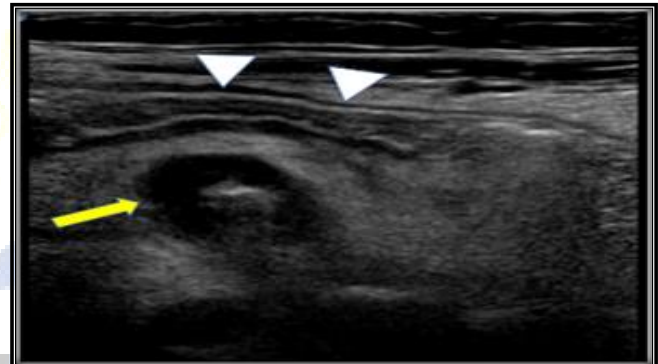


Figure 1: Markedly dilated thick walled appendix with appendicolith within



Figure 2: X-RAY abdomen showing multiple air fluid levels - INTESINAL OBSTRUCTION

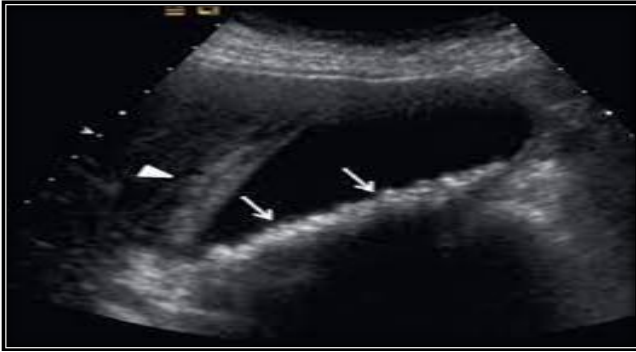


Figure 3: Gall bladder distended with multiple calculi and wall thickening -Acute calculus



Figure 4: Ectopic pregnancy with ring of fire sign



Figure 5: Ectopic pregnancy with ring of fire sign



Figure 6: Pancreas appears atrophied and shows calcification foci and pseudopancreatic cyst -chronic pancreatitis with pseudocyst formation

Conclusion

X-ray was useful for diagnosing intestinal obstruction, perforation and radio-opaque calculi. X-ray has limited role in inflammatory conditions like appendicitis, pancreatitis, cholecystitis etc. Ultrasound has a valuable role in common abdominal pathologies like appendicitis, biliary pathologies, urinary system, intestinal obstruction & perforation. Limitations of ultrasound was in retroperitoneal organs, gaseous abdomen so CT scan was more informative than USG in 12% of patients mainly of complicated pancreatitis, for looking site of obstruction and perforation. Among the aetiology inflammatory conditions were the most common in that appendicitis was most common with slight male predominance in age group of 21-30 years.

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