



RADIOLOGICAL CORRELATION BETWEEN USG AND MDCT IN RIGHT ILLIAC FOSSA LESIONS.

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ABSTRACT

Methodology: This study was a prospective study of 100 patients including all the age groups presenting with the clinical diagnosis of Right iliac fossa lesions and referred for either USG or CT scan. USG was performed using real time Toshiba Nemio XG machine and CT scan was performed using Siemens Somatom sensation 64 slice multi detector CT machine.

Results: It was found that incidence of acute appendicitis is most common. CT scan is a useful test to diagnose acute appendicitis in patients with acute right lower quadrant pain.

Its sensitivity and specificity are better than USG. Second most common among right iliac fossa lesions is ileo-caecal tuberculosis. Other RIF lesions include appendicular lump, carcinoma caecum, mesenteric adenitis, enterocolitis and lymphoma with their specific USG and CT findings.

Conclusion: Ultrasound is the imaging modality of choice in patients presenting with right iliac fossa pain and right iliac fossa lesion, however CT gives better characterization of the disease.

KEYWORDS: Right iliac fossa, acute appendicitis, ileo-caecal tuberculosis

INTRODUCTION:

Patients presenting with RIF lesions are a clinical diagnostic puzzle. Frequently these patients have a series of investigations which are often inconclusive.

Ever since the invention of high resolution ultrasound and multidetector CT all these patients with clinically palpable mass in RIF need not to undergo time consuming, uncomfortable and unpalatable barium study on first instance.

When RIF mass is palpable it should be demonstrable by ultrasound and CT and therefore it should be possible to access its organ of origin and give some idea of its nature.

AIMS AND OBJECTIVES

- To study radiological features and evaluate role of ultrasonography and CT findings in various RIF lesions.
- To determine the accuracy of ultrasound and CT in various right iliac fossa lesions.

In present study, we analysed the radiological, operative and histopathological findings of RIF lesions in order to evaluate the diagnostic value of ultrasound and CT and to define the correct tool of diagnosis.

MATERIALS AND METHODS

This study was a prospective study of 100 patients with no gender bias and including all the age groups presenting with the clinical diagnosis of Right iliac fossa lesions and referred for either USG or CT scan was carried out between January 2018 to June 2018.

Inclusion and exclusion criteria: All the patients referred to our department presenting with right iliac fossa pain or lesion who underwent both USG and CT scan are included.

The patients presenting with right iliac fossa pain due to lesions originating from organs lying outside right iliac fossa are excluded.

USG abdomen: Patient is nil per orally at least 12 hours prior to examination. The USG was performed using a real time Toshiba Nemio XG machine with 3-6 MHz curved array convex and 6-12 MHz linear array probes.

CT scan of abdomen: Patient should be nil per orally at least 12 hours prior to examination

The CT scan was performed using Siemens Somatom sensation 64 slice multi detector CT machine.

The CT scan was done using oral, rectal and intravenous contrast and plain and contrast enhanced images in arterial, portal and venous phases were studied.

RESULT:

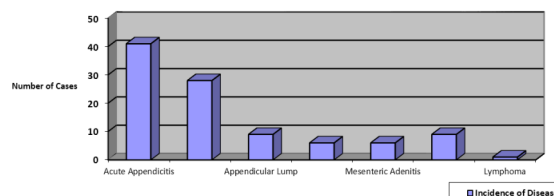


TABLE: Appearance of acute appendicitis on imaging (41 cases)

USG	No	CT	No
Blind ended, non-compressible, aperistaltic tubular structure	40	Circumferential homogeneously enhancing wall thickening	41
Diameter greater than 6 mm	39	Diameter greater than 6 mm	41
Inflamed peri-enteric fat	15	Peri-enteric fat stranding	17
Appendicolith	14	Appendicolith	14

TABLE: IC Tuberculosis (28 cases)

USG	No	CT	No
Pseudokidney lesion in subhepatic region	24	Circumferential wall thickening of terminal ileum, IC junction and caecum with pulled up IC junction	25
Dilated Bowel loops	3	Terminal ileal stricture with proximal dilatation	3
Lymphadenopathy	1	Lymphadenopathy	1

TABLE: Appendicular lump (9 cases)

USG	No	CT	No
Mixed echogenic lesion with adjacent enlarged lymphnodes	6	Mixed density mass lesion with adjacent fat stranding and enlarged lymphnodes	6
Hypoechoic lesion with internal echogenic debris	3	Fluid density lesion with internal air foci/periappendicular collection	3

TABLE :Carcinoma Caecum (6 cases)

USG	No	CT	No
Pseudokidney lesion with surrounding echogenic mesentery	5	Circumferential asymmetrical wall thickening with adjacent fat stranding	5
Hypochoic lesion with posterior abdominal wall involvement	1	Fluid density lesion infiltrating posterior abdominal wall	1

TABLE :Mesenteric Adenitis (6 cases)

USG	No	CT	No
Primary	2	Primary	2
Secondary to inflammatory bowel pathology	4	Secondary to inflammatory bowel pathology	4

TABLE :Lymphoma (1 case)

USG	No	CT	No
Homogeneously hypochoic mass lesion with associated abdominal and cervical lymphadenopathy	1	Homogeneously enhancing soft tissue density lesion with abdominal and cervical lymphadenopathy	1

TABLE :Enterocolitis(9 Cases)

Pathology	USG	No	CT	No
Amoebic Colitis	Thickened wall of terminal ileum,IC junction and caecum with liver abscess	4	Circumferential homogeneously enhancing wall thickening of terminal ileum,IC junction and caecum with liver abscess	4
Crohn's colitis	Bowel wall thickening having 'Bull's eye' appearance	3	Mural thickening with homogeneous enhancement,loss of haustration in proximal ascending colon	3
Infectious colitis other than amoebic	Bowel wall thickening with adjacent lymphadenopathy	2	Circumferential homogeneously enhancing wall thickening with per-enteric lymphadenopathy	2

TABLE : Correlation between USG and operative/ histopathological findings

Pathology	No of total cases	No of operated cases	No of patients with same USG findings	No of patients with same Histopathological findings	Accuracy
Acute appendicitis	41	41	38	41	92.7%
IC tuberculosis	28	20	19	20	95%
Carcinoma Caecum	6	6	6	6	100%

Overall accuracy of USG in detecting right iliac fossa lesions was 95.9%

TABLE : Correlation between CT and operative/ histopathological findings

Pathology	No of total cases	No of operated cases	No of patients with same CT findings	No of patients with same histopathological findings	Accuracy
Acute appendicitis	41	41	41	41	100%

IC tuberculosis	28	20	19	20	95
Carcinoma caecum	6	6	6	6	100

Overall accuracy of CT in detecting right iliac fossa lesions was 98.3%

DISCUSSION:

Right iliac fossa lesions include acute appendicitis, ileo-caecal tuberculosis, appendicular lump, carcinoma caecum, mesenteric adenitis, enterocolitis and lymphoma.

Among the right iliac fossa lesions, incidence of acute appendicitis is most common and second most common is ileo-caecal tuberculosis.

In our study there were 41 cases of acute appendicitis. If untreated appendicular mass or abscess develops on 3rd day or earlier after commencement of an attack of acute appendicitis.

On compression sonography inflamed appendix is identified as a blind ended, aperistaltic and noncompressible tubular structure arising from caecum and exceeding 6 mm in AP diameter. An appendicolith may be visible within its lumen. The presence of an appendicolith even without visualisation of an inflamed appendix suggests appendicitis.⁽³⁶⁾

In acute appendicitis, with high resolution (>5 MHz) compression sonography sensitivity and specificity are 78-96% and 85-98% respectively.

Colour Doppler sonography is most evident in case of equivocal grey scale sonography examination in which it is uncertain whether imaged appendix is inflamed or not. Presence of hyperemia in the appendiceal wall and adjacent meso-appendix is a sensitive indicator of inflammation.

On CT findings include an oedematous, thick walled appendix, inflammatory streaking of surrounding fat and presence of an appendicolith. Abscess formation, a small amount of free air in the right lower quadrant and peri-caecal phlegmon suggest a perforated appendix. Since CT has shown to yield precise information, it has increasingly become a screening tool for acute appendicitis in the emergency department. In well conducted clinical trials, CT has excellent sensitivity and specificity ranging from 87-100% and 91-97% respectively.

CT scan is an useful test to diagnose acute appendicitis in patients with acute right lower quadrant pain.

Second most common among right iliac fossa lesions is ileo-caecal tuberculosis.

Ileo-caecal region is most common region affected by tuberculosis in abdomen.

In our study there were 28 cases of ileo-caecal tuberculosis with palpable mass in about 80% of the patients. S K Bhansali et al had found 75% patients with well-defined, firm and palpable mass of hyperplastic ileo-caecal TB.

In our study there were 6 patients of carcinoma caecum and proximal ascending colon.

On USG the features were mural thickening of the bowel wall with highly reflective mucosa in the central part of the lesion giving a 'pseudokidney' appearance.

On CT there was short segmental asymmetrical circumferential heterogeneously enhancing wall thickening (>6mm) with surrounding fat stranding and enlarged lymphnodes.

In our study there were 6 patients of mesenteric adenitis(6%), According to Rao et al percentage of patients having mesenteric adenitis admitted for right iliac fossa pain was 7.7%.

3 or more enlarged lymphnodes with short axis diameter of at least 5 mm is considered diagnostic.

According to macari et al only 30-35% patients having mesenteric adenitis have no associated bowel inflammatory condition.

In our study there was single case of small bowel lymphoma involving terminal ileum which was diagnosed as non-Hodgkin's type histologically as compared to Balthazar EJ et al who had found that out of 42 patients 32 were having non-Hodgkin's variant. (78.6%) suggesting that non-Hodgkin's variant is the most common histological type of small bowel lymphoma.

According to F C Millard in patient with palpable right iliac fossa lesion, USG should be the primary investigation.

A characteristic sonographic pattern of 'pseudokidney' appearance suggests that bowel lesion is pathologically significant.

In our study diagnostic accuracy of USG for right iliac fossa lesion was 95.9%, while that of CT was 98.3 %. Valerie et al observed 78-96 % diagnostic accuracy of USG in detecting right iliac fossa lesions.

Steven L Lee et al observed 87-100 % diagnostic accuracy of CT in detecting right iliac fossa lesions.

Ultrasound is the imaging modality of choice in patients presenting with right iliac fossa pain and right iliac fossa lesion ,however CT gives better characterization of the disease.

SUMMARY AND CONCLUSION:

In our study 100 patients of right iliac fossa lesions were studied. Incidence of acute appendicitis was higher than any other condition (41%) and second most common among right iliac fossa lesions being IC tuberculosis (28%).

The 'pseudokidney' lesion suggestive of thickening of bowel wall is seen in conditions like IC tuberculosis, eneterocolitis and even in malignancy with better characterization on MDCT.

Small bowel lymphoma can present as generalised abdominal lymphadenopathy or a mass, terminal ileum being the commonest site.

Ultrasound is the imaging modality of choice in patients presenting with right iliac fossa pain and right iliac fossa lesion ,however CT gives better characterization of the disease.

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