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(Original Article)

Diagnostic Value of High Resolution Sonography in the Cases of Abdominal Tuberculosis

Authors
Dr BS Salooja[1], Dr Sadhan Mukhi[2]
[1]Associate Professor, Department of Radiodiagnosis, Universal College of Medical Sciences and TH, Bhairahawa, Nepal
[2]Professor & Head, Department of Radiodiagnosis, Universal College of Medical Sciences and TH, Bhairahawa, Nepal
Email: *sadhanmukhi@gmail.com*
Corresponding Author
Dr BS Salooja
Associate Professor, Department of Radiodiagnosis,
Universal College of Medical Sciences and TH, Bhairahawa, Nepal
Email: *drbssalooja@gmail.com*

Abstract
Objective: *To evaluate the diagnostic value of USG in the cases of abdominal tuberculosis.*
Methods: *This was a retrospective diagnostic study design. The study was conducted among adults aged>18 years of either gender with clinical suspected ATB. The detailed demographic and clinical history was noted on pre-designed proforma. After obtaining the history, the patient was subjected to general physical and systematic examinations. The patients were then subjected to radiological evaluation that included chest X-ray, X-ray of abdomen and USG.*
Results: *A total of 55 clinically suspected adult cases of abdominal tuberculosis were enrolled in the study. Out of the 55 suspected cases, 45 (81.8%) were found to be abdominal tuberculosis on final diagnosis. The abdominal tuberculosis was found to be higher in the age groups 21-40 years (64.4%) and higher among female patients (62.2%). Abdominal pain (82.2%) was the most common clinical feature among the abdominal tuberculosis patients. USG dilated and bowel wall thickening was in 51.1% on USG findings. However, RIF mass was seen in 46.7% patients. Terminal ileum thickening dilatation was found in about one third of the patients (46.7%). Pulled up IC junction was observed in 28.9% patients.*
Conclusion: *Abdominal tuberculosis is a disease with an insidious course without disease-specific clinical and laboratory signs. Employing ultrasound sign, abdominal tuberculosis should be included in differential diagnoses in regions with a high incidence of tuberculosis.*
Keywords: *Abdominal tuberculosis, High resolution sonography, Diagnosis.*

INTRODUCTION

Abdominal tuberculosis is a most common type of extra-pulmonary tuberculosis, comprising of tuberculosis of gastrointestinal tract, peritoneum, omentum, mysentery and its lymph nodes and other abdominal organs such as liver, spleen and pancreas. The extrapulmonary tuberculosis involves 11-16% of all patients of tuberculosis out

of which 3 to 4% belong to abdominal tuberculosis (Sharma SK, Mohan, 2004).

Extrapulmonary tuberculosis is common amongst HIV-infected patients (Sharma et al, 2005; WHO., 2006). This co-existence of TB and HIV/AIDS has led to the resurgence of extrapulmonary tuberculosis (EPTB) in the developing and under-developed countries (Sharma et al, 2005).

The diagnosis of abdominal tuberculosis can often be difficult, in view of its protean manifestations and mimickery of other diseases. The clinical features of abdominal tuberculosis are vague. The investigations involved in its diagnosis are expensive and time consuming like CT scan of abdomen, aparotomy and others. However, ultrasonography (USG) is an affordable, non invasive and widely available modality which can be of help in diagnosis of abdominal tuberculosis (Agarwal et al, 2010).

With the introduction of high-frequency, high-resolution probes, detailed examination and recognition of different layers of the abdominal wall is now possible on USG examinations. A high-resolution examination is capable of deciding whether an abnormality is in the abdominal wall or inside the abdominal cavity. Physical findings in abdominal wall pathologies have low specificity and often a clinically suspected intra-abdominal lump proves to be in the abdominal wall. Typically when Carnett's sign is positive, a USG examination of the abdominal wall is advised (Gokhale, 2007).

The present study was aimed to evaluate the diagnostic value of USG in the cases of abdominal tuberculosis.

MATERIAL AND METHODS

The present study was a retrospective diagnostic study design. The study was conducted among adults aged>18 years of either gender with clinical suspected ATB. The inclusion criteria was: histological demonstration of caseating granuloma or acid-fast bacilli in the lesion or ascetic fluid; growth of *Mycobacterium tuberculosis* on culture of tissue or ascetic fluid; satisfactory therapeutic response to chemotherapy in patients with clinical/laboratory/radiological and operative evidence of ATB, combination of strong clinical suspicion and positive clinical/laboratory/ histological/radiological features at extra-abdominal sites. The pregnant women, cases diagnosed for genitourinary tuberculosis and critically ill patients were excluded from the study. The consent was taken from each patient before enrolling in the study.

METHODS

The detailed demographic and clinical history was noted on pre-designed proforma. After obtaining the history, the patient was subjected to general physical and systematic examinations. reformation, maximum intensity projection and post-processing was done whenever required. USG was done using high-frequency, high resolution ultrasound scanning of the abdomen in a fasting patent with full bladder. High-frequency linear array transducers, exquisitely show the anatomy of the abdominal wall layers. Examination of the skin, however, requires very high-frequency probes or the use of some sort of stand-off device. All the patients were scanned with a scanner using high-frequency (6-12 mHz) linear transducers with depth analyzers. Extended or panoramic views were often recorded as and when required. Color Dopller sonography was done whenever required as an extended tool of investigation. USG guided fine needle aspirates and biopsy specimens were obtained whenever required.

The final diagnosis was made after considering the radiological findings with clinical and laboratory evaluations.

RESULTS

A total of 55 clinically suspected adult cases of abdominal tuberculosis were enrolled in the study. The analysis of data was being done retrospectively based on the final diagnosis made. Out of the 55 suspected cases, 45 (81.8%) were found to be abdominal tuberculosis on final diagnosis.

The abdominal tuberculosis was found to be higher in the age groups 21-40 years (64.4%) than ≤20 (22.2%) and >40 (13.3%) years. The abdominal tuberculosis was observed to be higher among female patients (62.2%) than males (37.8%) (Table-1).

Table-2 depicts the distribution of abdominal tuberculosis patients according to clinical features. Abdominal pain (82.2%) was the most common clinical feature among the abdominal tuberculosis patients. Weight loss (57.8%) was the second most common clinical feature among the abdominal tuberculosis patients. Loss of appetite and abdominal mass was found among 55.6% and 46.7% patients respectively.

USG dilated and bowel wall thickening was in 51.1% on USG findings. However, RIF mass was seen in 46.7% patients. Terminal ileum thickening dilatation was found in about one third of the patients (46.7%). Pulled up IC junction was observed in 28.9% patients (Table-3).

Table-1: Distribution of abdominal tuberculosis (AT) patients according to age and gender

Age and gender	No. (n=45)	%
Age in years		
≤20	10	22.2
21-40	29	64.4
>40	6	13.3
Gender		
Male	17	37.8
Female	28	62.2

Table-2: Distribution of abdominal tuberculosis (AT) patients according to clinical features

Clinical features*	No. (n=45)	%
Abdominal pain	37	82.2
Fever	20	44.4
Loss of appetite	25	55.6
Weight loss	26	57.8
Abdominal distension	16	35.6
Nausea and vomiting	14	31.1
Weakness	10	22.2
Contact history	7	15.6
Abdominal mass	21	46.7
Crepts in chest	6	13.3
Abdominal tenderness	18	40.0
Ascites	9	20.0
Hepatomegaly	7	15.6
Splenomegaly	6	13.3
Peritoneal signs	5	11.1

*Multiple response

Table-3: Distribution of abdominal tuberculosis (AT) patients according to USG findings

USG findings*	No. (n=45)	%
USG dilated bowel	23	51.1
Bowel wall thickening	23	51.1
Matting of small bowel	0	0.0
Terminal ileum thickening dilatation	15	33.3
Pulled up IC junction	13	28.9
Pulled up caecum	7	15.6
RIF mass	21	46.7
Presence of any of the above	32	71.1

*Multiple response

DISCUSSION

In the present study, the abdominal tuberculosis was found to be higher in the age groups 21-40 years (64.4%) than ≤20 (22.2%) and >40 (13.3%) years. Khan et al (2005) found most of the abdominal tuberculosis patients to be young adults in their productive years of life.

The abdominal tuberculosis was observed to be higher among female patients (62.2%) than males (37.8%) in the present study. Zissin et al (2001) reported a relatively balanced gender-wise distribution with 10 men and 9 women their study. Contrary to the findings of this study, Chalya et el (2013) reported 57.8% of the patients in their study to be males. Thus, the findings suggest that abdominal tuberculosis could affect either gender with no specific gender-wise discrimination.

In the present study, abdominal pain was found to be the most common clinical feature which was in 82.2% patients. Abdominal pain is a vague clinical feature that might have variable diagnostic implications and highlights the observation of Kapoor et al (1988) who expressed their reservations in the diagnosis of abdominal tuberculosis on the basis of clinical features alone in the wake of vagueness of clinical picture. In the present study, clinical finding of weight loss was also found to be in 57.8%, however, it had a limited or no practical utility and could only termed as a chance finding with no confirmatory diagnostic value as such.

On high resolution sonography in this study, only bowel wall thickening, Terminal ileum thickening dilatation and RIF mass were found to be

associated with the abdominal tuberculosis. Peritoneal thickening and dilated bowel have been reported to be one of the key features of USG for diagnosing the abdominal tuberculosis (Kedar et al, 1994; Jain et al, 1995; Suri et al, 1998).

CONCLUSION

Abdominal tuberculosis is a disease with an insidious course without disease-specific clinical and laboratory signs. Employing ultrasound sign, abdominal tuberculosis should be included in differential diagnoses in regions with a high incidence of tuberculosis.

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