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MULTI-DETECTOR CT FINDINGS IN ABDOMINAL TUBERCULOSIS

DR. AAMIR SHAUKAT
Assistant Professor of Medicine
PMC/ Allied Hospital, Faisalabad.

DR. ASIM SHAUKAT
MBBS, MCPS, FCPS (Radiology)
Assistant Professor of Radiology
PMC / Allied Hospital, Faisalabad

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ABSTRACT... Objective: To know the findings of MDCT in cases of Abdominal Tuberculosis. **Patients and Methods:** Fifty eight patients with suspicion of abdominal tuberculosis were scanned and the findings were evaluated. All the patients received IV and oral contrast. The patients were referred from the medical and surgical departments of Shalamar Hospital, Lahore. Toshiba 4 Slice Aquilion was used for scanning. The exclusion criterion was patients on Anti tuberculous drugs and urogenital tuberculosis. **Results** Following 6 findings were observed in 47 abnormal scans, Out of other 11 scans 9 had other diseases like diverticulitis, Appendicitis and Bowel Lymphoma. 2 were normal. Close medical and Surgical follow up was obtained in all cases. Ascites = 35, Omental / Mesenteric Thickening / Involving = 27, Small Bowel wall thickening = 07, Large bowel wall thickening including Caecal wall thickening = 06, Abdominal Lymphadenopathy= 26, Solid Organ Involvement, Liver=01, Spleen=02. **Conclusion:** Ascites was the most common finding in Patients with Abdominal Tuberculosis and Involvement of liver being the least common finding amongst the group.

Key words: Abdominal Tuberculosis, Ascites, Multidetector CT.

INTRODUCTION

Tuberculosis is a disease very common in our set up and in our daily practice we find very unusual cases as tuberculous. Abdominal tuberculosis has various manifestations and there are lots of studies present which deal with the findings of abdominal tuberculosis. In Pakistan, we have not found any significant study conducted as yet for the MDCT findings and the protocols for imaging of findings in Abdominal Tuberculosis.

Tuberculosis is a treatable disease when diagnosed early and the subtle manifestations of the disease pattern should be identified to reach the conclusive diagnosis. Peritoneal involvement and Ascites, Abdominal Lymphadenopathy , Bowel wall thickening are relatively common findings , the solid organ involvement apart form the urogenital tract is comparatively rare finding.

In our set up, due to poverty and cost constraints, Ultrasound is generally taken as the first investigation as far as imaging is concerned and still CT is not used frequently for the primary imaging. It is only reserved for the complications or when the diagnosis is in extreme doubt. The finding of peritoneal and bowel wall are not so exquisitely outlined on Ultrasound as are the findings on Computed Tomography. With the development of latest generations of CT scans it has become easier to see the abnormalities.

PATIENTS AND STUDY

This was a descriptive study undertaken in the Department of Radiology Shalamar Hospital, Lahore from June– December 2006. Fifty eight patients with clinical suspicion of Abdominal Tuberculosis were scanned on a Toshiba 4 slice scanner with IV contrast, Oral iodinated contrast was given as per requirement.

The 100 ml of non ionic iodinated IV contrast was given at 3 ml / sec flow rate. Scans were done from the dome of

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Correspondence Address:
Dr. Asim Shaukat
Assistant Professor of Radiology
PMC/Allied Hospital, Faisalabad.
drasimshaukat@yahoo.com

diaphragm till the pubic symphysis. The exclusion criterion was already diagnosed cases of Tuberculosis and patients with urogenital involvement.

RESULTS

Out of 58 scans, 9 showed findings diagnostic for diseases other than tuberculosis. 2 scans were normal. The 47 patients went to be diagnosed with tuberculosis and there findings are listed as below:

- Ascites = 35
- Omental / Mesenteric Thickening = 31
- Small Bowel wall thickening = 07
- Large bowel wall thickening including
- Caecal wall thickening = 06
- Abdominal Lymphadenopathy = 26
- Liver = 01
- Spleen = 02

DISCUSSION

Myocobacterium tuberculosis causes tuberculosis. Mycobacterium avium intracellulare more common in the immuno- compromised patients. Abdominal TB is usually caused by injestion of bacilli in infected sputum or contaminated food. The bacilli cause caseation necrosis in the gut, followed by spread to the mesenteric lymph nodes that may rupture into the peritoneum causing peritoniteal TB.

Peritoneal TB is the most common form of abdominal TB and involves alone or in combination the, mesentry and omentum. Three types of peritoneal TB are described. A wet type with ascites, a dry type with mesenteric thickening and lymph adenopathy; and a third type with mass formation due to omental thickening.

In our study, the mesenteric involvement group was the largest, with adenopathy or without 31 patients showed peritoneal tuberculosis. The wet type included 26 patients and 4 were dry and 1 had Omental mass formation. Isolated Omental or mesenteric involvement was seen in 4 patients. Interestingly 9 patients only had ascites or fluid pockets, all of them were aspirated under ultrasound guidance and the diagnosis of tuberculosis was made. Ascites in abdominal TB can be due to an earlier transudate stage of immune reaction or due to late cell mediated immunity when the fluid is complex with

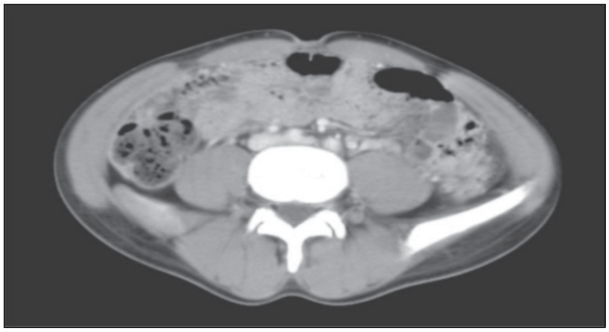

Fig-1. Omental involvememt and some ascites

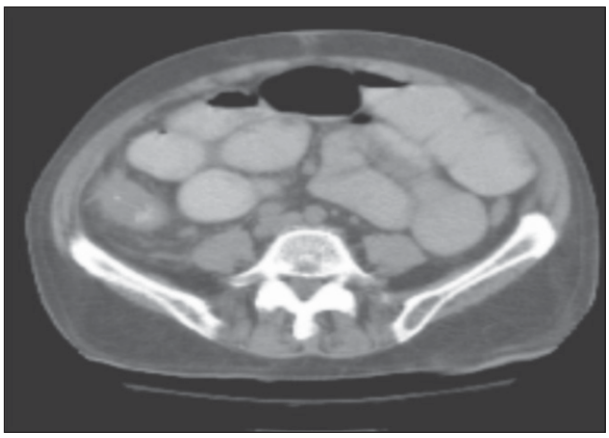

Fig-1. Cenal wall thickening and small bowel dilation

strands, septation and debris.

Mesenteric disease is an important and common manifestation of early stage abdominal TB . The mesentery is initially thickened with a few discrete lymph nodes interspersed within it and, the later stage mesenteric disease represents irregular inflammatory masses of caseating lymph nodes. CT offers the distinct advantage of demonstrating these features.

Abdominal lymph adenopathy commonly involves mesenteric, portal and peripancreatic sites reflecting the lymphatic drainage of the small bowel. The retroperitoneal lymph nodes are relatively spared and their involvement rarely occurs in isolation. In disseminated TB however diffuse lymphadenopathy without prelidiction to any site may be seen, though the

retroperitoneal node's size is out of proportion to the lymph adenopathy elsewhere in the abdomen. The nodes are usually matted together with hypodence centers which probably is due to caseation and many occasionally contain calcification. Lymphnode enlargement is non specific and occurs in metastatic disease, lymphoma Whipple's disease and pyogenic infection. In our series 44% of patients had a lympadenopathy pattern similar to that reported by others. Central necrosis with rim enhancement, though not pathognomonic, is a useful sign and readily seen in the current generation of CT scanners.

The commonest sites of gastro intestinal tract TB are terminal ileum and cecum Other sites in which the disease occurs are, in descending order of frequency, the ileum, cecum, ascending colon, jejunum, other parts of colon, rectum, duodenum and stomach .In later stages of the disease the ileocecal value and adjacent medial wall of the cecum are predominently and symmetrically thickened. These changes are however nonspecific and may also be seen in cecal carcinoma, Crohn's disease, lymphoma and amebiasis. In advanced ileocecal disease gross wall thickening, adherent small bowel loops, large regional lymphnodes and exophytic mesenteric thickening together from a complex mass of varied density, which is characteristic of CT appearance of TB and is reported to be seen in 45% of the cases .

Visceral TB is rarely seen in isolation and is more frequently part of multifocal or disseminated disease. Liver and spleen are the main organs involved and their involvement can occur in the form of micro abscesses in miliary TB, pattern represented by CT as diffuse low density focal lesions, or in the form of larger abscesses. There were 3 cases of visceral TB in our study and all of them had peritoneal disease and Lymphadenopathy associated with them.

CONCLUSION

MDCT has a certain advantage in abdominal tuberculosis, it can show the peritoneal, mesenteric and Omental involvement and small lymphnodes as well , which would be hard to image otherwise. In our study the Ascite , free or loculated was the commonest finding , 56 % and the peritoneal disease associated with ascites had the frequency of 83 % . i.e 83 % patients with peritoneal involvement had ascites.

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