Case Series

Extrapulmonary Tuberculosis in Adults with Varied Radiological Presentations — A Case Series

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Abstract

Background : Tuberculosis (TB) remains a serious Global public health concern and is responsible for the highest number of deaths from any infectious disease worldwide. Extrapulmonary Tuberculosis (EPTB) shows various clinical and radiological features depending on the organ it affects, which can often mimic other diseases. Here, we are reporting five cases of Extrapulmonary Tuberculosis with multisystem involvement as diagnosed in our institute over a period of three years. This case series includes patients with Extrapulmonary Tuberculosis affecting the brain, spine, and abdomen. Three individuals presented solely with extrapulmonary symptoms, while two exhibited both pulmonary and extrapulmonary manifestations. Certain radiological patterns of EPTB are characteristic and can help in early diagnosis, preventing unnecessary biopsies or surgeries. While definitive diagnosis relies on positive culture or histological analysis, recognizing specific imaging findings can greatly assist in timely detection and management.

Key words : Extrapulmonary Tuberculosis, Tuberculoma, Gastric Fistula, Tuberculosis.

Tuberculosis (TB) remains a serious global public health concern and is responsible for the highest number of deaths from any infectious disease Worldwide[1]. In 2024, Globally, 10.8 million people were diagnosed and reported to have a new episode of TB. Of these cases, 81% had pulmonary TB, and 19% had extrapulmonary TB. While TB predominantly affects the lung parenchyma in more than 80% of people, extrapulmonary TB is also commonly encountered. Extrapulmonary Tuberculosis (EPTB) refers to any bacteriologically confirmed or clinically diagnosed case of TB affecting organs other than the lungs[2]. EPTB shows various clinical and radiological features depending on the organ it affects, which can often mimic other diseases[3]. Therefore, early diagnosis and treatment are essential. This case series aims to explore the diverse radiological presentations of Extrapulmonary Tuberculosis in adults, emphasizing the role of imaging modalities in the diagnosis and management of this elusive form of TB. Here, we are reporting 5 cases of Extrapulmonary Tuberculosis with multisystem involvement as diagnosed in our institute over a period of 3 years.

Editor's Comment :

- Extrapulmonary tuberculosis can present with highly diverse and often deceptive clinical and radiological features, frequently mimicking malignancy or other inflammatory conditions.
- Recognising characteristic imaging patterns across different organ systems is crucial for timely diagnosis, particularly when routine investigations are inconclusive.
- Early identification and prompt initiation of antitubercular therapy can significantly improve patient outcomes, even in cases with complex multisystem involvement.

Case Presentation

Case 1 :

A 39-year-old female patient without any comorbidities with presenting complaints of fever, generalized tiredness for 2 weeks, with malena and anemia was evaluated. Contrast Enhanced Computed Tomography (CECT) of abdomen was done which showed defect with wall thickening in the lesser curvature of stomach in the posterior aspect with a tract extending to anteroinferior aspect of the body- tail region of the Pancreas with air pockets in the inferior aspect of pancreas with a small adjacent collection. Multiple prominent lymph nodes in the periportal, peri gastric and paraaortic region with thrombosis of portal vein and splenic vein (Fig 1). Features suggestive of gastric fistula with omental nodularity & thickening and we raised a possibility of Tuberculosis as etiology. Oesophago-gastro-duodenoscopy was performed which showed fistulous opening in the lesser curvature. Ultrasound guided omental biopsy was performed which showed no malignancy or granulation tissue. In view of development of bicytopenia with ongoing high grade fever episodes and lymphadenopathy in CECT, a diagnosis of lymphoma was suspected and Bone marrow biopsy was performed, which showed inconclusive reports. A diagnostic laparoscopy was performed on which showed findings suggestive of Tuberculosis and omental biopsy was taken whose results confirmed the diagnosis of abdominal Tuberculosis. Biopsy from omentum and falciform ligament showed

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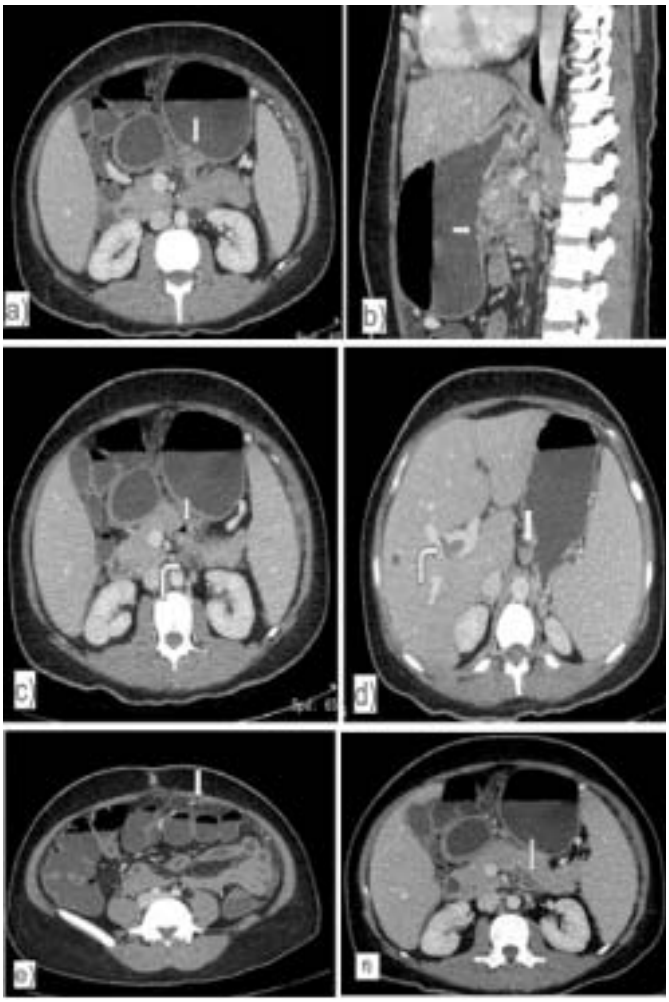

Fig 1 — (a) Defect with wall thickening in the stomach, (b) Air pockets in the inferior aspect of pancreas(straight arrow), (c) with a small adjacent collection (bent arrow), (d) Thrombosis of portal vein (bent arrow) and prominent perigastric lymph node (straight arrow), (e) Omental thickening with stranding and nodularity and (f) non-visulization of splenic vein (straight arrow).

caseating granulomatous inflammation, Patient was started on ATT and symptomatically improved over time.

Case 2 :

A 29-year-old female, with complaints of fever, which was high grade with chills since one month and non-projectile vomiting for 2 weeks, myalgia and generalized tiredness. Patient had a history of travel outside the country. Due to persisting headache the clinician advised for an MRI brain with contrast which revealed numerous small discrete nodular and ring enhancing lesions scattered in brain parenchyma on both sides with enhancing leptomeningeal thickening in left sylvian fissure with areas of restricted diffusion, adjacent insular and temporal lobe showing focal oedema and enhancement (Fig 2). We raised a possibility of multiple Tuberculomas with Meningitis and Cerebritis. CSF analysis picture favouring tuberculous picture. Bone marrow aspirate, culture & sensitivity and biopsy taken

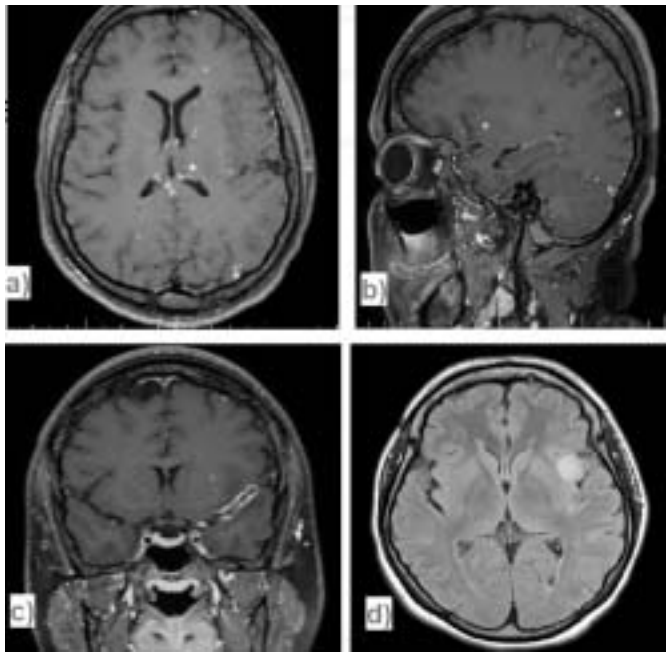

Fig 2 — Contrast enhanced MRI Brain (a) axial and (b) sagittal images showing multiple nodular enhancing lesions in both cerebral hemispheres. (c) Enhancing leptomeningeal thickening in left sylvian fissure. (d) T2 FLAIR hyperintensity in left insular region and temporal lobe.

which showed caseating granuloma with necrosis confirming Tuberculosis. She was started on anti-tubercular therapy & intravenous steroids and symptomatically better.

Case 3 :

A 59-year-old male patient presented with complaints of urinary incontinence for 5 days, gradual onset of weakness of both upper and lower limbs and generalised tiredness since 3 days. Contrast enhanced Magnetic Resonance Imaging (MRI) of Spine was done. Evidence of reduced disc height with heterogenous signal intensity noted involving the C5-C6 intervertebral disc and vertebral body, with partial destruction of the C6 vertebral body. Anterior epidural, pre and para vertebral collection noted extending along the intervertebral disc region which is compressing the cervical spinal cord at C5 -6 level causing cord oedema (Fig 3). We raised the possibility of Tuberculous Spondylitis. On further work up patient had pulmonary findings favouring Tuberculosis and confirmed with sputum samples and diagnosed as pulmonary and extra Pulmonary Tuberculosis. Patient started antituberculosis therapy. Patient was also advised to started on IV steroids and symptomatic improvement noted. Patient was improved and symptomatically better after antituberculosis therapy.

Case 4 :

A 27-year-old male patient with no other comorbidities, came with history of vomiting and abdominal pain. Ultrasonography abdomen was done which revealed

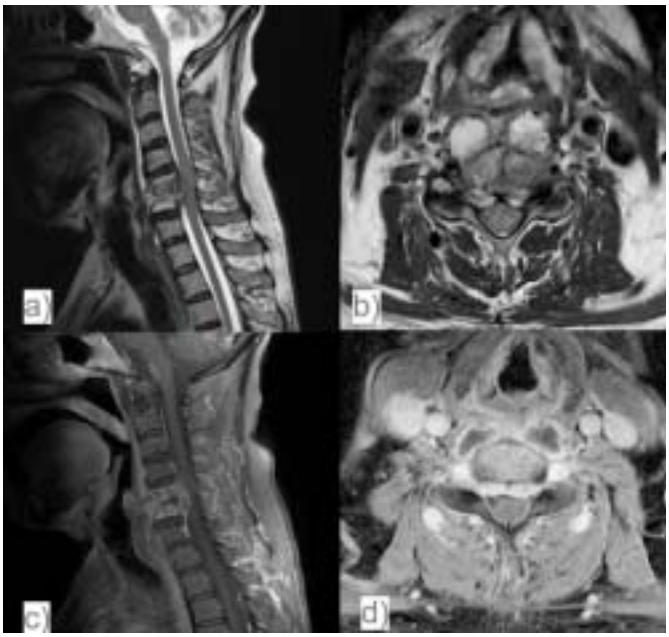

Fig 3 — (a,b) Evidence of reduced disc height with T2/STIR hyperintense area noted at the C5 – C6 intervertebral disc, similar areas with edema involving the C5 and C6 vertebral body with partial destruction of the C6 vertebral body in the superior aspect. (a) Spinal cord edema noted extending from C5 to C6 level. (c,d) Anterior epidural soft tissue with heterogenous peripherally enhancing collection noted from C5 to C6 level causing spinal canal narrowing and spinal cord compression at the same level.

moderate ascites, omental thickening and dilated bowel loops. CECT Abdomen was done which revealed grossly dilated small bowel loops with transition point in mid ileal loop suggestive of intestinal obstruction. Free fluid in peritoneal cavity with peritoneal thickening and enhancement along with extensive mesenteric and omental fat stranding. Covered part of the thorax shows necrotic nodal mass also noted in subcarinal region (Fig 4). The patient underwent surgery, obstruction was revealed and omental sampling shows caseating granulomas and confirmed with the diagnosis of Tuberculosis. Patient started ATT and symptomatically improved over time.

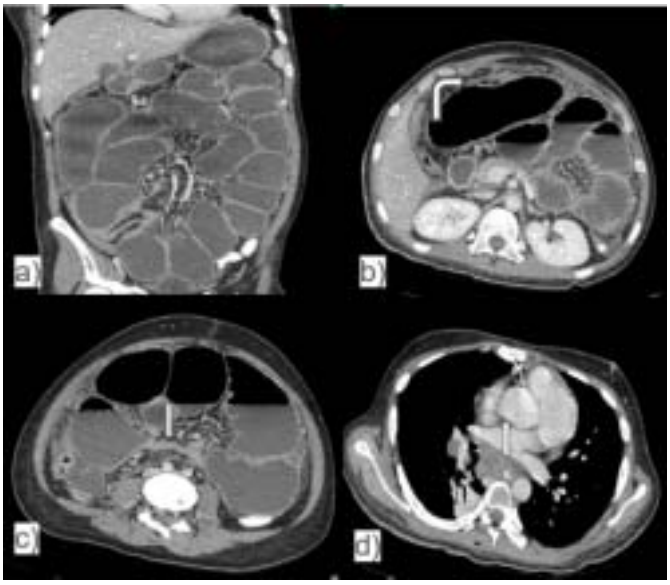

Fig 4 — (a) CECT Abdomen showing dilated small bowel loops, (b) Peritoneal thickening and enhancement with mesenteric and omental fat stranding (curved arrow), (c) Narrowing suggestive of transition point in mid ileum (arrow), (d) Necrotic nodal mass also in subcarinal region (arrow).

Case 5 :

A 58-year-old female patient, who is a known case of Ankylosing Spondylitis on biologicals presented with complaints of abdominal distension for 2 weeks and loss of appetite and weight loss. No h/o cough or fever were present. Ascitic fluid analysis-showed low Serum-ascites Albumin Gradient (SAAG) high protein. CECT abdomen was taken which revealed diffuse omental and mesenteric fat stranding and nodularity with moderate ascites. Peritoneum showed diffuse thickening (Fig 5). The possible differential diagnosis is Tuberculosis and peritoneal Carcinomatosis. Omental biopsy was performed, and biopsy reports were suggestive of granulomatous inflammation (Tuberculosis) and antitubercular therapy was initiated. Patient become symptomatically better after completion of ATT and follow up imaging shows significant reduction in the abdominal imaging findings.

Discussion

This case series includes patients with Extrapulmonary Tuberculosis affecting the brain, spine and abdomen. Three individuals presented solely with extrapulmonary symptoms, while two exhibited both pulmonary and extrapulmonary manifestations.

Extrapulmonary Tuberculosis (EPTB) can affect various organs, most commonly the Lymph nodes (50%), Pleura (18%), Genitourinary system (13%), Bones and Joints

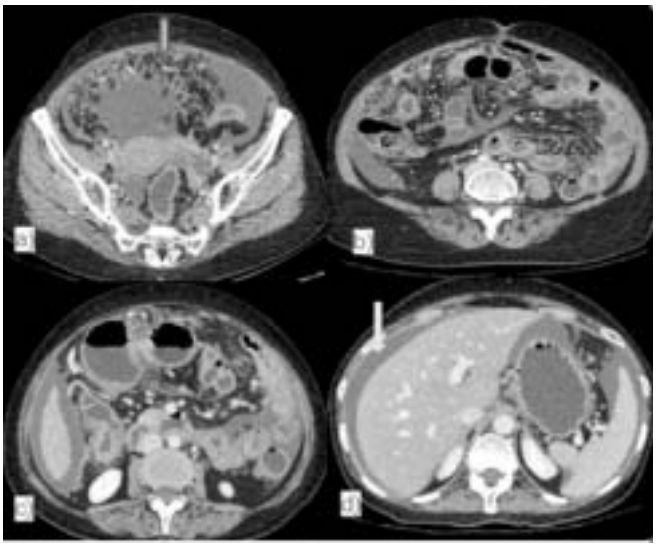

Fig 5 — (a,b,c) Diffuse omental & mesenteric fat stranding and nodularity, (a,b,d) Peritoneum shows diffuse thickening and ascites.

(6%), Gastrointestinal system (6%), Central Nervous System (CNS) (3%) and Spine (3%)[4]. Approximately half of all skeletal TB cases involve the spine, with spondylodiscitis — also known as Pott's disease — being the most prevalent form[5].

Central Nervous System (CNS) Tuberculosis is a severe manifestation, presenting in different forms such as parenchymal, meningeal, calvarial, spinal or combinations thereof. MRI is generally more effective than Computed Tomography in detecting CNS Tuberculosis. Parenchymal involvement most often appears as a tuberculoma, which may be solitary or multiple[6].

Abdominal Tuberculosis is the most frequent extrapulmonary form, accounting for about 5% of all TB cases Worldwide[7]. Tuberculous lymphadenitis, affecting 55-66% of abdominal TB cases, is the most common presentation[8]. Gastric involvement is rare, occurring in 0.4%-2% of cases, typically in the antrum and distal body. Symptoms range from vague epigastric discomfort to upper gastro intestinal bleeding, with antral narrowing potentially causing gastric outlet obstruction. The presence of sinus tract and fistula is rare but strongly suggestive of Tuberculosis. The most involved parts are the gastric antrum and distal body[9,10].

Certain radiological patterns of EPTB are characteristic and can help in early diagnosis, preventing unnecessary biopsies or surgeries. While definitive diagnosis relies on positive culture or histological analysis, recognizing specific imaging findings can greatly assist in timely detection and management.

Conclusion

Extrapulmonary Tuberculosis continues to pose a significant diagnostic challenge owing to its heterogeneous and often nonspecific clinical and radiological manifestations. This case series illustrates the wide spectrum of imaging appearances involving the central nervous system, spine, and abdomen, highlighting its potential to mimic malignancy and other inflammatory conditions. Awareness of characteristic radiological patterns, combined with appropriate clinical correlation, is essential for timely diagnosis and early initiation of antitubercular therapy, particularly in patients with multisystem disease. Radiological imaging remains central to guiding further evaluation, minimising diagnostic delays, and ultimately improving patient outcomes.

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Conflict of Interest : None.

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