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Extra Pulmonary Tuberculosis - A Case Series: Extra Pulmonary Tuberculosis - A Systematic Study of Case Series

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Abstract: ***Tuberculosis is an air-borne infection caused by the organism Mycobacterium Tuberculosis that can affect any organ though it commonly involves infection of the lungs. Extra pulmonary tuberculosis accounts for 15% of all cases. Extra pulmonary tuberculosis (EPTB) is defined as any bacteriologically confirmed or clinically diagnosed case of TB involving organs other than the lungs. The incidence of EPTB increases in immune compromised status nowadays. We share four cases of extra pulmonary tuberculosis with presentation as, rectal discharge, cellulitis, splenic abscess and scrotal discharge. Diagnosis may be delayed as a result of nonspecific clinical manifestations that progress slowly and the low sensitivity of acid-fast bacilli (AFB) smear on extrapulmonary specimens. Microbiologic proof is the key to diagnosis and treatment, and tissue biopsy is frequently required. Other supportive findings are granulomas and positive AFB stain on pathology, and chest x-ray findings. A review of literature including the epidemiology, pathogenesis, clinical presentation, diagnosis and treatment options are discussed.***

Keywords: tuberculosis, extra pulmonary tuberculosis, immune compromised, diagnosis, treatment options

1. Introduction

Extra pulmonary tuberculosis can be either primary (at the site of initial infection) or secondary (disseminated), which usually occurs due to hematogenous or lymphatic spread of bacteria from the primary organ, reactivation of latent TB infection (LTBI), ingestion of infected sputum, or spread locally from adjacent organs. The diagnosis and treatment of Extra pulmonary tuberculosis are challenging. Diagnosing Extra pulmonary tuberculosis remains challenging because clinical samples obtained from relatively inaccessible sites may be paucibacillary, thus decreasing the sensitivity of diagnostic tests. Symptoms and signs generally relate specifically to the affected organ system. A variety of nucleic acid amplification tests E.g., PCR have a potential role in the diagnosis of extra pulmonary TB. Although highly specific sensitivity of assays is not adequate for reliably in diagnosing TB in extra pulmonary samples. When available they should be used along with clinical findings and conventional tests, and best are used to confirm rather than rule out the diagnosis of extra pulmonary TB. Elevated levels of Adenosine Deaminase in plural fluid analysis are reasonably specific and sensitive for TB but other types of effusion with lymphocytic predominance also have an elevated Adenosine deaminase assay. Although the disease usually responds to standard anti-TB drug therapy, the ideal regimen and duration of treatment have not yet been established. A paradoxical response frequently occurs during anti-TB therapy. Surgery is required mainly to obtain valid diagnostic specimens and to manage complications.

Case 1:
A 35 year old male presented with complaints of swelling in right side scrotum for two weeks. Patient had no constitutional symptoms, on physical examination warmth and tenderness present over the right side of scrotum, with no purulent discharge and skin over the scrotum appeared normal. Ultra sonography shows altered echogenicity, with increased vascularity, epidimyoorchiditis-suggesting abscess. Emergency scrotal exploration done for abscess drainage; right side testis found to be unhealthy hence orchidectomy done. Specimen sent for Histopathological examination; pus culture sent. The specimen (pus) for AFB was positive. Histopathological examination shows focal aggregates of epithelioid and giant cells forming granuloma with caseating necrosis- suggestive of TB etiology. He was diagnosed as TB epididmyoorchiditis and started on Anti tubercular therapy. After completion of anti-tubercular regime, he was well and asymptomatic.

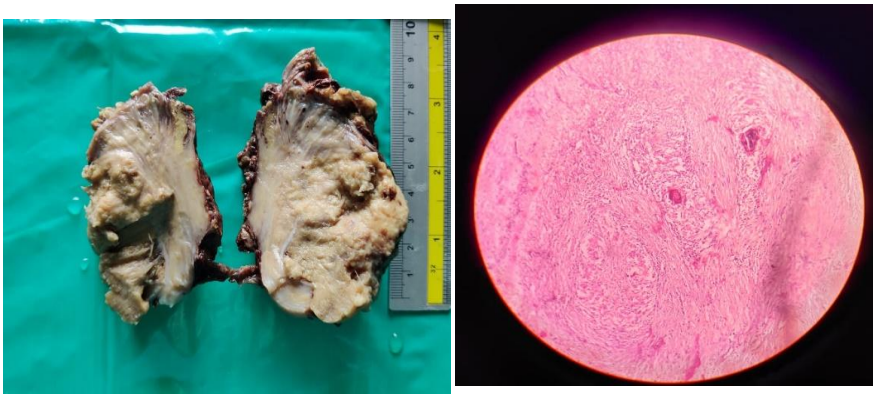
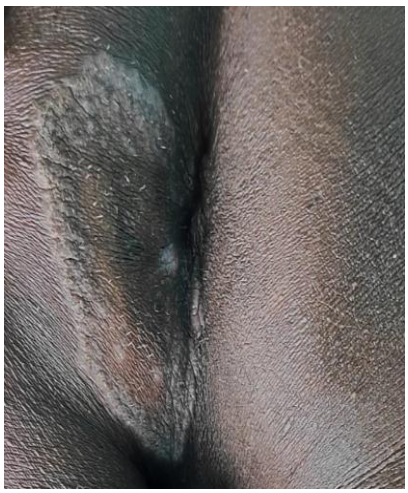


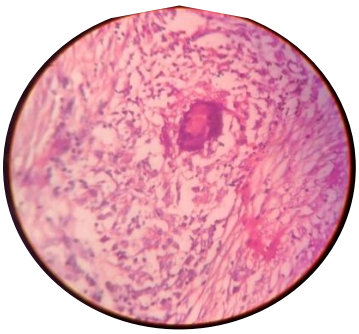
Figure 1: (A) Orchidectomy specimen (B) HPE- caeseating granulamatous necrosis

Case 2:

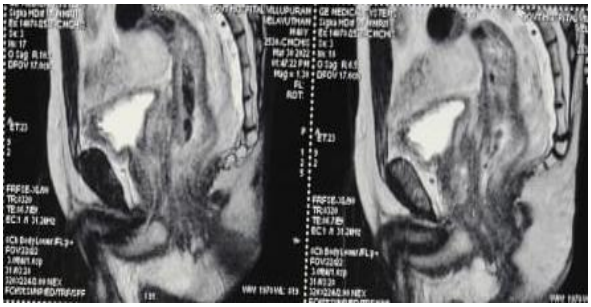
A 48 years old male presented with complaints of constipation for 3 months. He also had history of tenesmus, with mucus discharge per rectum, non-blood tinged, non-foul smelling in nature. On physical examination, an eczematous lesion over the perianal region. Digital rectal examination-growth present 7 cm from the anal verge. Colonoscopy confirmed the rectal growth, biopsy was taken. ESR -18 mm/hr. serology was negative. MRI shows heterogeneously enhancing irregular thickening of rectal wall -10mm, length of 6.4cm with mesorectal fat stranding. Tiny subcentimetric lymph nodes in paraaortic region. HPE- shows rectal rectal mucosa with submucosa, shows granuloma composed of langhan's giant cells and sheets of lymphocytes and epitheliod cells- indicative of tuberculous lesion involving rectum. sputum microscopy turned to be positive with trunaat detection, sensitive to rifampicin. Patient was diagnosed as rectal tuberculosis and started on Anti tubercular therapy. After completion of antitubercular treatment patient was well and asymptomatic, follow up colonoscopy reveals no lesion in rectum.



(a) perianal skin excorication



(b) Rectal biopsy shows epitheliod cells with granuloma and caeseating necrosis



(c) MRI- Rectal wall thickening with mesorectal fat stranding

Fig 2:

Case 3:

A 60 yearold male presented with complaints of fever and hiccups for twodays, after which patient developed abdominal pain, on examination warmth and tendeness over the left hypochondric region with no mass/ organomegaly.ultra sonography shows altered echotextute-splenic abscess; Contrast enhanced CT was taken spleen bulky measures 12*9 cm non enhancing splenic region with perisplenic fat stranding – ruptured splenic abscess. ESR-20mm/hr. serology was neagtive.

Echocardiography was normal. Patient was hemodynamically unstable, emergency lapratomy proceeded with splenectomy, specimen sent for HPE. Patient was vaccinated. Microscopy shows extensive zone of caeseating epithelioid cell granuloma, giant cells, macrophages with necrosis- suggestive of tuberculous etiology. Sputum AFB was negative, Trunaat -MTb not detected. ZIEL- NEELSEN acid fast staining of biopsy specimen shows multiple straight/slightly curved rod shaped TB bacilli. Patient was started on antitubercular drugs.patient condition improved and he is doing well.

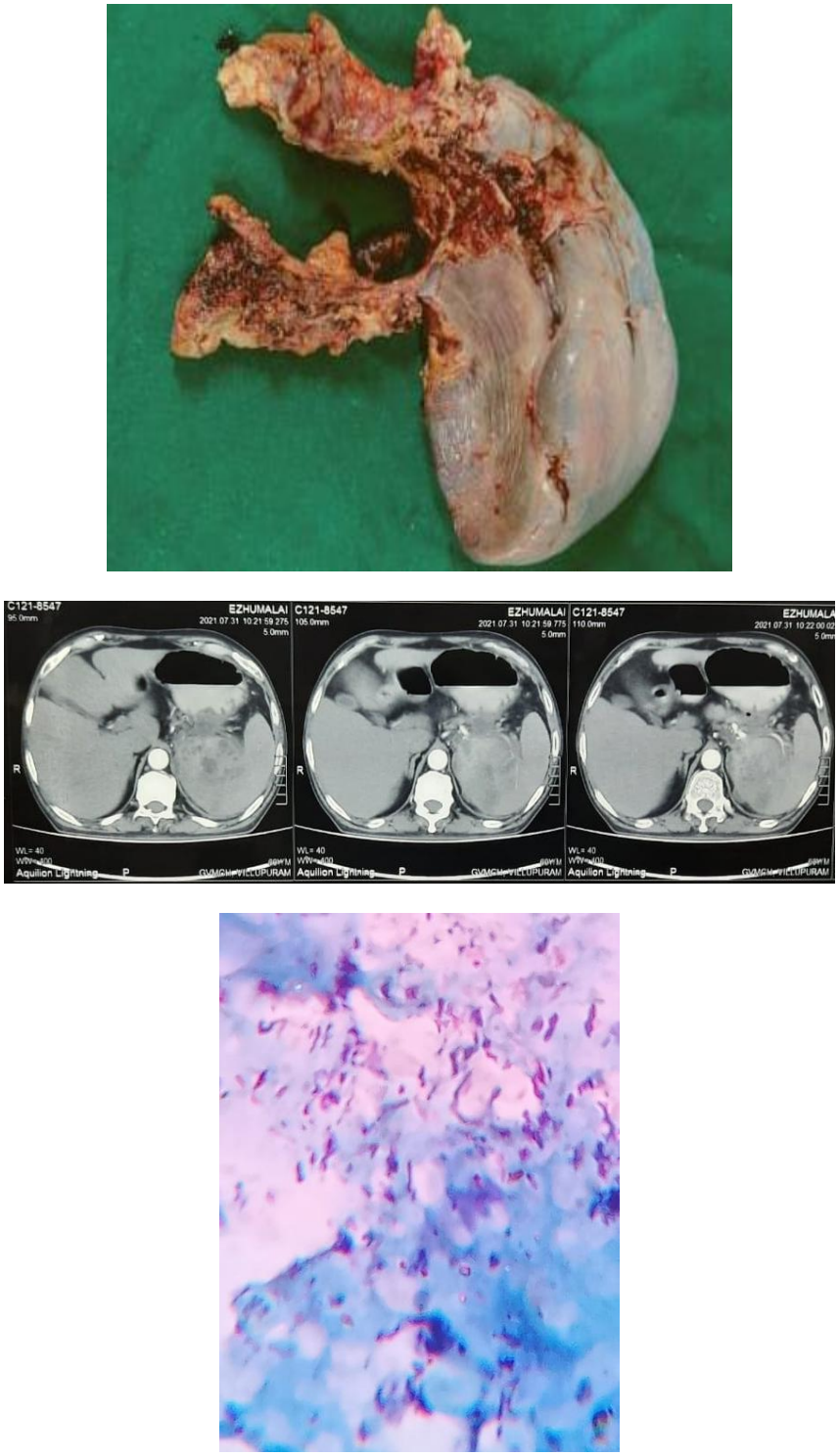


Figure 3: (A) Splenectomy specimen (B) CECT abdomen and pelvis – Ruptured splenic abscess (C) Acid fast staining in biopsy specimen showsstraight / slightly curved TB bacilli

Case 4:

A 45 year old male presented with complaints of ulcer and swelling over the leg for past two months. Patient had history of loss of weight. No other symptoms. On physical examination, Swelling present in the left foot upto the ankle with multiple ulcers and edema with blackish discoloration. No comorbidities, serology was negative, ESR- 16mm/hr. patient was treated with antibiotics and anti-edema measures. Pus culture from the wound site shows growth of mycobacterium tuberculosis. Sputum AFB turned to be positive. Patient was treated on antitubercular drugs and improved symptomatically.

Figure 4: Leg cellulitis

Case 5

16 years old male patient came with complaints of abdominal pain for four days he had history of constipation for four days. He had history of vomiting which is of bilious in nature Patient had history of poliomyelitis with lower limb paralysis. Patient was examined, abdomen showed guarding and rigidity. x ray abdomen showed multiple air fluid levels, chest x ray showed patchy consolidation. Cect abdomen and pelvis showed contrast filled dilated jejunal bowel loops with multiple air fluid levels with twisting of mesentry. Emergency lapratomy was taken which showed plastered abdomen with peritoneal nodules, omental nodules, and nodules in the intestine found with severe adhesion. Adhesions released, omental biopsy was taken. Patient did well and started orals on POD-4. Peritoneal fluid CBNAAT showed positive results. Sputum shows no culture. Histopathological examination shows caeseating granulomatous lesion of tuberculous origin.

Patient was diagnosed as disseminated tuberculosis and started on antitubercular therapy.

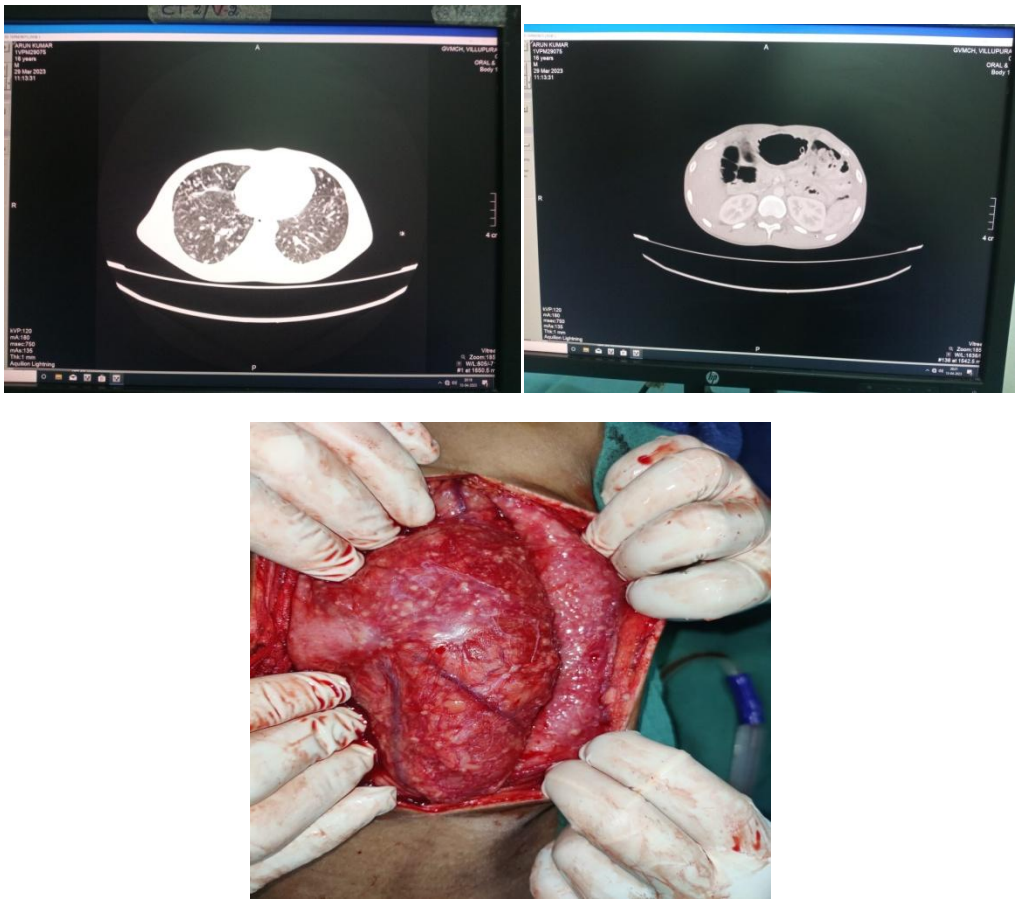


Figure: (A) CECT chest- focal consolidation (B) CECT abdomen and pelvis- intestinal obstruction adhesion (C) Intraoperatively nodules in bowel surface and in peritoneal surface.

2. Discussion

Although tuberculosis prevalent in developing countries, the frequency of extrapulmonary tuberculosis increases nowadays. EPTB are more common in immunosuppressed individuals, usage of steroids and infection increases the incidence gradually.

1) TB Epidimyoorchiditis:

In the first case, Tb epididmyoorchiditis can occur due to the secondary blood borne spread from a primary pulmonary lesion. This hematogenous spread results in genital lesions with or without any renal lesions. Disease may arise by antegrade infection from the kidneys or direct extension from neighbouring foci. The male genital TB is unique subset of TB involving the prostate, seminal vesicles, vas deferens, epididymis or penis. TB epididymo orchitis is a essential manifestation of urogenital TB. Isolated TB orchitis without epididymis involvement is an even more a rare entity. Diagnosis can be confirmed by pus culture and biopsy. Radiological imaging has a vital role in distinguishing testicular pathology. It is required to differentiate between intra testicular and extra testicular location of the disease. Further it can more evaluate internal

architecture determine whether cystic or solid or complex lesions are present, thus guiding clinical vs surgical management. Medical treatment is the standard therapy, surgical intervention needed in cases like atrophy, infarction, infertility and abscess, in our case, orchidectomy done due to not viable testis. Sometimes malignancy and TB can coexist.

2) TB Rectum

Tuberculosis can affect any part of the GIT from oesophagus to the anal canal. Tuberculosis of bowel distal to ileocecal junction is rare and is seldom considered as a differential diagnosis of rectal stricture. Ano rectal tuberculosis may present in six forms as fistula in Ano, ulcer with an undermined edge, short and annular strictures, multiple small mucosal ulcers, a lupoid form with sub mucosal nodule and a verrucous form with smooth wart like excrescences. In young patients, constipation and constitutional symptoms from an endemic area, there should be a high index of suspicion for Anorectal TB. Differential diagnoses of GI TB includes rectal prolapse, crohn's disease, amoebic colitis, pseudomembranous colitis, and malignancy. Definitive diagnosis made by colonoscopy guided biopsy. when diagnosed early GI TB responds well to anti tubercular treatment preventing unnecessary surgical interventions.

3) TB Spleen

Splenic abscess presenting as fever of unknown origin is well known. Most of the cases of TB spleen present as fever, vague ache in left hypochondrium or weight loss. Although splenic tuberculosis is more common in immunosuppressed individuals. Differential diagnosis includes, haemangiomas, splenic infarction, septic embolism, chronic infection, lymphomas and metastasis. In time management of tubercular abscess is very crucialas without treatment patients can have complicated clinical course. Splenic abscess can rarely rupture or lead to fistulous communication with adjacent organs. Spontaneous rupture during anti tubercular treatment leading to splenectomy was also reported. FNAC has become the procedure of choice for diagnosis. In modern era splenectomy may be offered only to resistant cases otherwise ATT is the therapy of choice.

4) TB Scrofuloderma:

Scrofuloderma refers to a condition characterized by a bluish-red nodule overlying an infected lymph gland, bone or joint that breaks down form an undermined ulcer with a granulating tissue at the base progression of the disease leads to irregular adhereren tmasses, densely fibrous at some spots mostly on the head and neck, axillary and inguinal areas, rare in extremities. The initial lesion was asubcutaneous no due that ruptured and formed ulcers. in developing countries, the diagnosis of scrofuloderma is mostly confirmed by histpathological finding of tissue biopsy. who recommendation for cutaneous tuberculosis ia anti tuberculosis regimen.in severe cases surgical approach like electrosurgery, cryosurgery and curettage by electrodication may sometimes be needed. However, the patient's insufficient knowledge of the condition led to lack of treatment at a proper medical facility. However, the causes of this type of tb infection are still need of further study, with a focus on the patients living environment, the presence of malnutrition and immunodeficiency status.

5) TB Abdomen:

Abdominal tuberculosis is defined as infection of the gastrointestinal tract, peritoneum, abdominal solid organs or abdominal lymphatics with mycobacterium tuberculosis. Diagnosis of abdominal TB is often overlooked and delayed due to the lack of specific symptoms and no specific diagnostic test. A high inex of suspicion is necessary for early diagnosis of abdominal tb, however it remains a considerable diagnostic dilemma and can mimic many other diseases such as crohns disease, abdominal lymphoma and malignancy of the abdominal organs. Abdominal TB usually classified into four forms. luminal, peritoneal, nodal and visceral involving the intra- abdominal solid organs. The most common forms are luminal (ileoceacal area and peritoneal. The modes of infection of abdominal tb include swallowing infected sputum, ingestion of bacilli from infected milk products or meat, hematogenous spread, lymphatic spread, contiguous spread from adjacent organs. Presentation of abdominal tb like abdominal pain, obstruction, fever and weight loss. Colonoscopy is useful in intestinal tb while lapracopybiopsy are more useful in peritoneal tb. Surgical treatment is the cornerstone of the management of mechanical bowel obstruction. The laprasopic approach has proven to be safe and feasible especially when it is a single band and the bowel is not very distended. Conversion to lapratomy is indicated in the following cases non- viable bowel identified by laprascopy. And in case of inability to identify the site of obstruction. Treatment consists of clearing the adhesions and if necessary, resection of the small necrotic loop. Surgical treatment is associated with antibacillary treatment for complete cure.

3. Conclusion

Extra pulmonary TB remains a challenge to diagnose. Knowledge of the pathophysiology of TB in each organ and its imaging features can increase the detection rate in high-risk populations. The presence of necrotic lymph nodes and other organ-specific imaging features increases the diagnostic probability of extrapulmonary infection, extra pulmonary TB can occur regardless of a patient's immune status. Surgery is often required in EPTB patients, as a therapeutic option under certain circumstances to deal with complications of sequelae arising from the disease.

S. No	Diagnosis	Presentation	Treatment
1.	TB Epididmyoorchiditis	Rightscrotal Abscess	Right Side Orchidectomy Plus Antitubercular Therapy
2.	TB Rectum	Mucus Discharge & Constipation	Antitubercular Therapy
3.	TB Spleen	Fever And Abdominal Pain	Splenectomy And Antitubercular Therapy
4.	TB Scrofuloderma	Leg Cellulitis	Anti Tubercular Therapy
5.	TB Abdomen	Intestinal Obstruction	Laprotomy with Adhesiolyis and Antitubercular Therapy