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Case report

# Adrenal and skeletal lesions – A diagnostic dilemma

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ABSTRACT

Extensive skeletal involvement in any elderly is highly suspicious of malignancy. A simultaneous occurrence of lesions elsewhere strengthens the case for a detailed search of the primary cause. Despite the numerous advanced modalities at our disposal, differentiating between malignant, infectious, and inflammatory lesions often presents a diagnostic dilemma. Here, we report a case of an elderly gentleman who presented to us with multiple bony lesions. A further evaluation revealed a concomitant adrenal and liver involvement mimicking metastasis which later was found to be disseminated tuberculosis.



## 1. Introduction

The occurrence of multifocal adrenal and bony lesions presents as a diagnostic challenge for the treating physicians to find the primary cause. One of the main differentials to such lesions includes secondaries of certain malignancies. These include renal cell carcinoma, melanoma, lung cancer, colon cancer, and lymphoma. Adrenal and spine lesions can also be due to a hemorrhage or granuloma similar to tuberculosis (TB) or due to metastasis. If the patient is diagnosed early, it can potentially avoid delay in the treatment, thereby reducing multiple complications and preventing morbidity. We now present the case of a patient who presented with multiple lesions in the bones including the spine, adrenals, and liver, hence mimicking metastasis.

## 2. Case report

A 55-year-old male, known case of diabetes and known case of coronary artery disease, was admitted in our hospital with complaints of fever, insidious onset, high grade, continuous, associated with chills, and rigors since 1 month. He also developed severe backache in the lumbar region which was insidious in onset and progressively increased in intensity to an extent that he was unable to get up from bed by himself. There was also a history of decreased appetite and significant weight loss. He had lost approximately 10 kg in the last 2 months. There was no past history of similar complaints, including absence of TB, nor any exposure from other people suffering from the same disease.

On the day of admission, the patient was found to be conscious, oriented, afebrile (37.6 °C), and with normal blood pressure (120/70 mmHg), heart rate of 76 per minute, and respiratory rate of 32 per minute. There was mild pallor without cyanosis or jaundice. There was absence of peripheral lymphadenopathy and normal thyroid gland. All systemic examination was nonsignificant.

Blood results revealed the following:

| Blood parameters | Value | Normal range |
|---|---|---|
| Hemoglobin | 8.3 g/dL | 12.0–16.0 g/dL |
| White blood cell count | 8500/μL | 4000–9000/μL |
| Platelet count | 12.0 × $10^{-4}$/μL | 12.0–30.0 $10^{-4}$/μL |
| Erythrocyte Sedimentation Rate | 120 mm (1st hour) | 0–22 mm/hr |
| Serum sodium | 135 mEq/L | 138–146 mEq/L |
| Serum potassium | 3.9 mEq/L | 3.6–4.9 mEq/L |
| Aspartatee Aminotransferase | 17 IU/L | 13–33 mEq/L |
| Alanine Aminotransferase | 27 IU/L | 6–27 mEq/L |
| Serum Lactate Dehydrogenase | 148 IU/L | 119–229 IU/L |
| Plasma glucose | 217 mg/dL | 80–112 mg/dL |
| Blood Urea Nitrogen | 11.0 mg/dL | 8–22.0 mg/dL |
| Serum creatinine | 0.60 mg/L | 0.4–0.7 mg/dL |
| Serum Thyroid Stimulating Hormone | 2.80 uIU/ml | 0.4–4 uIU/ml |

Addison disease was ruled out because serum cortisol levels were normal. All serological tests for autoimmune diseases were found to be negative. Antibody tests for human immunodeficiency virus and cytomegalovirus (CMV) were also negative.

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A chest radiograph obtained at admission revealed no abnormalities. Ultrasound abdomen showed borderline hepatomegaly and grade 1 fatty infiltration of the liver. However, magnetic resonance imaging (MRI) of the lumbosacral spine revealed multiple well-defined osseous lesions in the spine, bilateral iliac bone, manubrium with doubtful lesions in the left proximal femur, and nodular lesions in the bilateral adrenal glands suggestive of osseous and adrenal metastatic lesions.

18 F-fluoro-2-deoxy-D-glucose positron emission tomography (FDG-PET)/computed tomography (CT) of whole body was performed which showed FDG-avid heterogeneously enhancing nodular lesions with mass formation involving the bilateral adrenal glands and FDG-avid lesions in the right lobe of the liver with FDG-avid intraosseous and osteolytic skeletal lesions, with associated FDG-avid soft-tissue components (Figs. 1 and 2).

CT-guided biopsy was collected from the right adrenal mass which was suggestive of TB. The diagnosis of extra pulmonary TB (EPTB) with skeletal and adrenal involvement was made.

The patient was started on 4-drug antitubercular treatment (ATT) (rifampicin, isoniazid, ethambutol, and pyrazinamide) in combination with vitamin B6 tablets.

The patient improved clinically over the time, and his bone pain and other symptoms also improved over the course of ATT.

## 3. Discussion

Incidence of EPTB is increasing. EPTB has a multitude of clinical manifestations. Skeletal TB constitutes around 5% of all cases among which spinal TB is the most common one.[1] Spinal TB commonly presents as involvement of two or more adjacent vertebrae due to the fact that infection spreads due to hematogenous spread through the vertebral artery which supplies two adjacent vertebrae.[2] Unusual presentations of TB still evade clinicians even in this advance medical era. EPTB presenting with primary involvement of the adrenals and spine without pulmonary involvement has been rarely reported.

Adrenal TB usually occurs concomitantly with the extraadrenal TB, and in present scenario, it was found that the lumbar spine was involved.[3] Spinal TB is associated with higher incidences of mortality. It can cause bone destruction, leading to deformities and neurological complications, despite availability of advanced diagnostic and treatment modalities.[4]

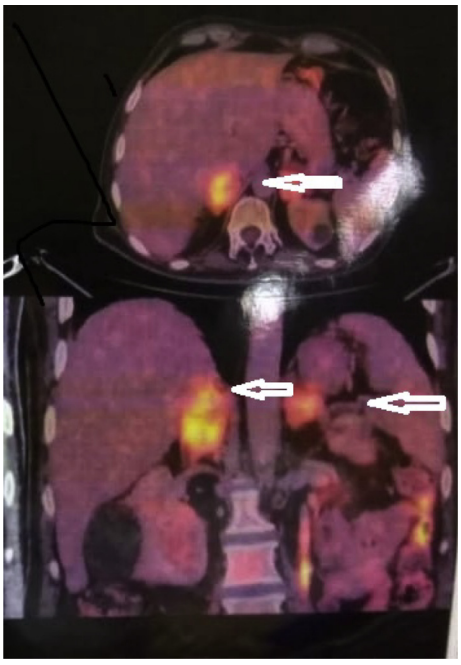

**Fig. 1.** Arrows in PET CT showing FDG-avid uptake in the adrenals and liver. PET CT, positron emission tomography computed tomography.

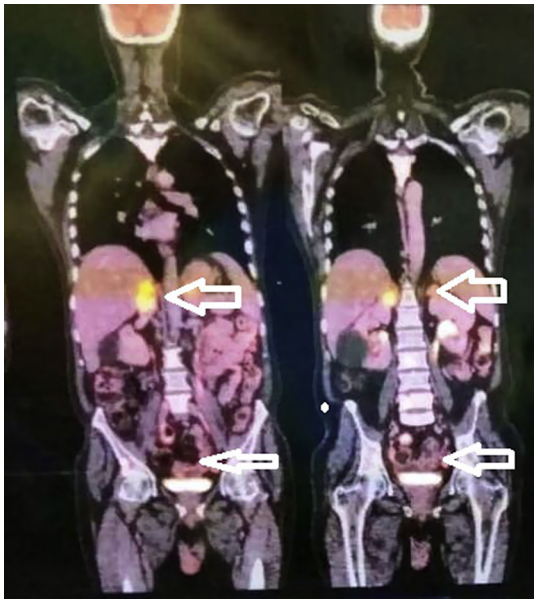

**Fig. 2.** Arrows in PET CT indicating FDG-avid uptake in the liver, adrenals, and spine. PET CT, positron emission tomography computed tomography.

Sensitivity of imaging modalities is low for differentiating musculoskeletal TB from multiple bone metastases. Musculoskeletal TB can be diagnosed by MRI because of its high sensitivity. But in case the tubercular lesions involve multiple, noncontiguous vertebrae, it can be misinterpreted as a metastatic malignancy.[5]

FDG-PET is an essential tool in differentiating between benign and malignant tumors. FDG tracer also accrues in infection and inflammation sites along with tumor sites. Therefore, cases of spinal TB can be misdiagnosed for malignancy where active tubercular lesions also show increased glucose metabolism similar to tumor tissue.[6] It has been reported that FDG-PET can help in identification of adrenal TB, but it is unable to differentiate TB from malignancy.[7]

FDG-PET remains nonspecific for tumors, so histopathological and microbiological examinations are required to decrease the possibility of misdiagnosis. But only 50% of bone and tissue biopsy shows the presence of *Mycobacterium* because of low bacterial colony count in case of musculoskeletal TB.[8]

Imaging features of uncommon adrenal masses such as TB are nonspecific; hence, for definite diagnosis, they need to be histologically examined. Aspiration of samples from the adrenal gland is in itself a difficult procedure, and furthermore owing to the cytological definition of malignant disease, it is difficult to confirm the diagnosis from the aspirate.

In spite of chronic primary adrenal insufficiency being most dominant due to adrenal TB, especially in developing countries, presentation of Addison disease can be delayed until more than 90% of adrenal tissue has been destroyed.[9] In our patient, however, there were no features of Addison disease. Physicians should always test for adrenal function in suspected cases of adrenal TB.

## 4. Conclusion

Adrenal TB is an uncommon disease that must be promptly identified and treated promptly and aggressively. Clinicians of this current era need to be acquaint themselves of the varied manifestations of EPTB which can lead to adrenal insufficiency.

## Conflict of interest

None.

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