

DISSEMINATED TUBERCULOSIS WITH MEDULLARY TUBERCULOMA, ABDOMINAL AND PULMONARY INVOLVEMENT: A RARE CASE REPORT

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ABSTRACT

We present the case of a 58-year-old diabetic and hypertensive male who presented with intractable hiccups lasting more than two weeks. Initial Abdominal imaging revealed ileocecal thickening. Neuroimaging revealed multiple caseating and non-caseating ring-enhancing lesions, including one in the medulla oblongata. Chest imaging revealed miliary tuberculosis with upper lobe cavitation. Sputum AFB smear and GeneXpert confirmed pulmonary tuberculosis. Anti-tubercular therapy led to resolution of symptoms. This case highlights the importance of considering central nervous system tuberculosis in patients with intractable hiccups.

KEYWORDS: Disseminated tuberculosis, hiccups, tuberculoma, medulla, MRI spectroscopy

INTRODUCTION

Tuberculosis (TB) continues to be a major public health challenge, particularly in developing countries. While pulmonary involvement remains the most common form, extrapulmonary and disseminated TB can occur in immunocompromised individuals and may affect nearly any organ system. Central nervous system (CNS) tuberculosis, although rare, is one of the most severe forms due to its high morbidity and mortality if not diagnosed early.

Among the many manifestations of CNS TB, tuberculomas—granulomatous lesions in the brain—can present with a wide range of neurological signs, depending on their location. Unusual presentations, such as persistent hiccups due to medullary involvement, are seldom/rarely reported. Hiccups that persist for more than 48 hours are classified as intractable and warrant investigation into possible central or peripheral causes. This case highlights an uncommon but clinically significant manifestation of CNS TB and emphasizes the importance of neuroimaging in patients with unexplained persistent hiccups.

Case Presentation

A 58-year-old man with a known history of diabetes mellitus and hypertension presented with intractable hiccups persisting for over two weeks. He also reported weight loss, reduced appetite, and generalized fatigue but denied fever, cough, or night sweats. On examination, he was afebrile, normotensive, and had a regular heart rate. Neurological examination was unremarkable. Auscultation revealed reduced breath sounds in the left upper zone, and mild tenderness was noted in the right iliac fossa.

Investigations:

- Sputum AFB: Positive (2+)
- GeneXpert MTB/RIF: MTB detected, rifampicin-sensitive

Blood Investigations:

- Hemoglobin: 8.7 g/dL
- MCV: 58.7 fL
- Serum Iron: 14 µg/dL
- Ferritin: 30.6 ng/mL
- TIBC: 437 µg/dL
- Albumin: 2.8 g/dL

CECT abdomen was done initially to look for any causes that might irritate diaphragm to explain the findings of hiccups but it showed circumferential wall thickening of the ascending colon, caecum, ileocecal junction, and terminal ileum with partial strictures. No intestinal obstruction or pericolic lymphadenopathy was observed, suggesting an infective etiology. The right kidney showed early pyelonephritis and a small abscess in the prostatic parenchyma again suggesting the possibility of infective etiology. CEMRI brain with MR spectroscopy was done to rule out any lesions, and it showed multiple ring-enhancing lesions in the posterior fossa, brainstem, and left parietal lobe. Lesions exhibited lipid-lactate peaks, consistent with caseating granulomas. A lesion in the left medulla showed a choline peak, likely from necrosis. Overall findings were indicative of CNS tuberculosis.

- Chest X-ray was done to look for infective patches which that revealed Left upper lobe infiltrates
- HRCT Chest confirmed Bilateral miliary nodules with left upper lobe cavitory lesion - Echocardiography was also done and it showed Concentric left ventricular hypertrophy with preserved ejection fraction (60%).

Thus the diagnosis of tuberculosis was confirmed and the patient was started on first-line anti-tubercular therapy (HRZE), leading to complete resolution of hiccups over the following weeks.

DISCUSSION

Disseminated tuberculosis (TB) is a potentially life-threatening condition caused by hematogenous spread of *Mycobacterium tuberculosis* from a primary focus to multiple organ systems. Though it accounts for a small proportion of TB cases, it is more prevalent in immunocompromised individuals such as those with diabetes, chronic renal failure, or HIV/AIDS. The clinical presentation can be highly variable and nonspecific, often leading to diagnostic delays.

In this case, the patient presented with intractable hiccups, a symptom rarely associated with TB, particularly as a primary presenting feature. Hiccups are mediated by a complex reflex arc involving afferent fibers from the phrenic and vagus nerves, a central component in the medulla oblongata, and efferent connections to the diaphragm and intercostal muscles. Any structural lesion irritating this pathway—such as tumors, vascular insults, or infectious granulomas—can lead to persistent hiccups.

CNS tuberculosis is a serious extrapulmonary manifestation of TB, often seen in the form of tuberculous meningitis, abscesses, or tuberculomas. Tuberculomas are granulomatous lesions that may be caseating (with central necrosis) or non-caseating. On MRI, caseating tuberculomas typically appear as T2 hypointense ring-enhancing lesions, while non-caseating granulomas may be isointense or mildly hyperintense on T2. The presence of lipid-lactate peaks on MR spectroscopy is a hallmark of caseating tuberculomas and helps differentiate them from neoplastic or pyogenic lesions.

In our patient, a ring-enhancing lesion in the medulla oblongata was detected—correlating anatomically with the hiccup reflex center. This finding is consistent with a limited number of reports linking medullary tuberculomas to intractable hiccups. Bhargava et al. (2005) previously reported a similar case, emphasizing the rare but notable neuroanatomical correlation.

Additionally, the presence of pulmonary cavitation and miliary nodules, ileocecal thickening, and renal-prostatic involvement suggested extensive hematogenous dissemination, confirming a diagnosis of disseminated TB. The combination of CNS, GI, and genitourinary findings highlights the multisystem nature of TB, often overlooked when presentation is dominated by a single unusual symptom.

Early recognition and initiation of first-line anti-tubercular therapy (ATT) is crucial, as CNS TB can lead to severe complications including raised intracranial pressure, hydrocephalus, and permanent neurological deficits. The complete resolution of the patient's hiccups after initiation of ATT strongly supports the pathophysiological link between the medullary lesion and symptomatology.

This case reiterates the importance of including neuroimaging in the diagnostic algorithm for persistent hiccups of unknown etiology—especially in TB-endemic regions. Timely diagnosis not only facilitates appropriate therapy but may also prevent life-threatening complications.

CONCLUSION

Intractable hiccups, though often dismissed as benign, can occasionally be the presenting symptom of serious underlying neurological conditions, including CNS tuberculosis. This case underscores the value of early neuroimaging in such presentations, particularly in TB-endemic areas. MRI combined with MR spectroscopy plays a pivotal role in detecting intracranial tuberculomas. Recognizing atypical presentations and initiating prompt anti-tubercular therapy can significantly improve patient outcomes and prevent long-term complications.

Figure Legends

Figure 1A. Coronal CECT showing ileocecal wall thickening with partial strictures but with no obstruction. (shown by red arrows).

Figure 1B. Coronal CECT image showing right renal hypodensity and prostatic abscess. (shown by red arrows).

Figure 2A–H. CEMRI brain and MRS images showing multiple ring-enhancing lesions (caseating and non caseating tuberculomas) in B/L cerebral hemispheres and brainstem with central T2 hypointensity and with lipid-lactate peaks on MRS. (shown by red arrows).

Figure 3A(a,b). Chest Xray and Axial HRCT thorax image showing left upper lobe cavity and miliary mottling. (shown by red arrows).

Figure 3B. Coronal HRCT thorax image showing bilateral randomly distributed miliary nodules (shown by red arrows).

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Appendix

APPENDIX

Appendix A: Expanded Imaging Descriptions

- Figure 1A: Coronal HRCT thorax image demonstrates diffuse, randomly distributed miliary nodules across both lungs. These are suggestive of hematogenous dissemination, commonly seen in miliary TB.
- Figure 1B: Axial HRCT thorax image reveals a thick-walled cavity in the left upper lobe along with bilateral miliary nodules. These findings are characteristic of active pulmonary TB.
- Figure 2A: Coronal CECT abdomen image shows hypodense areas in the right renal cortex and a peripherally enhancing lesion in the prostate, indicative of renal and prostatic TB.
- Figure 2B: CECT abdomen also highlights circumferential thickening of the terminal ileum and ileocecal junction without signs of obstruction—features consistent with gastrointestinal TB.
- Figure 3A–H: MR brain and MRS images demonstrate multiple ring-enhancing lesions with T2 hypointensity in the brainstem, posterior fossa, and parietal lobes. Spectroscopy revealed lipid-lactate peaks, confirming caseating tuberculomas.

Appendix B: Laboratory Results Summary

Appendix C: Abbreviations Used

- ATT – Anti-tubercular Therapy
- HRCT – High-Resolution Computed Tomography
- CECT – Contrast-Enhanced Computed Tomography
- MRI – Magnetic Resonance Imaging
- MRS – Magnetic Resonance Spectroscopy
- AFB – Acid-Fast Bacillus
- IC – Ileocecal
- TB – Tuberculosis