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Calvarial Tuberculosis in a Patient with Disseminated Multidrug-Resistant Tuberculosis and Advanced Human Immunodeficiency Virus Disease: A Rare Case Report

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I. BACKGROUND

In 2022, 1.3 million people died from Tuberculosis (TB), with multidrug-resistant tuberculosis (MDR-TB) posing a significant public health challenge; only 2 in 5 patients accessed treatment. Calvarial TB, a rare form characterized by skull lytic lesions, becomes even more complex with MDR-TB and Human immunodeficiency virus (HIV). This case report discusses a 41-year-old male with advanced HIV and disseminated MDR-TB, emphasizing the rarity and clinical significance of calvarial TB.

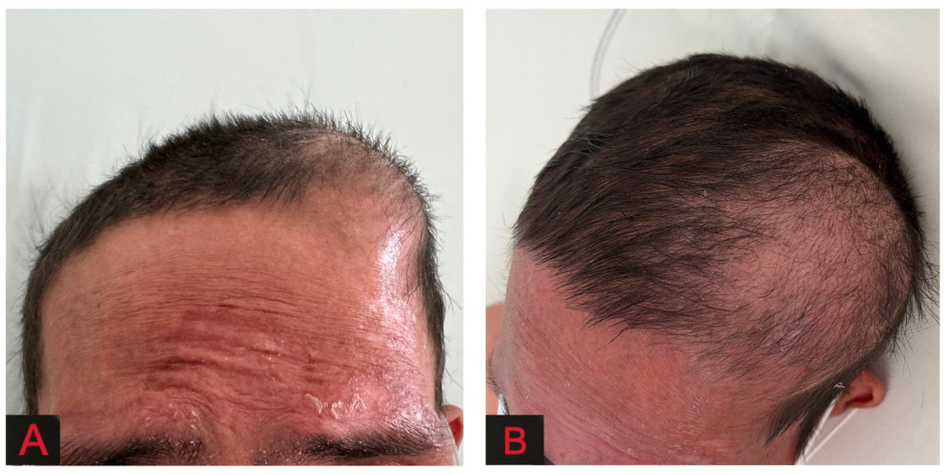

Fig. 1 (**A, B**) Image showing 5 x 5 x 2 cm soft, fluctuant, non-tender mass, frontal area slightly left from the midline.

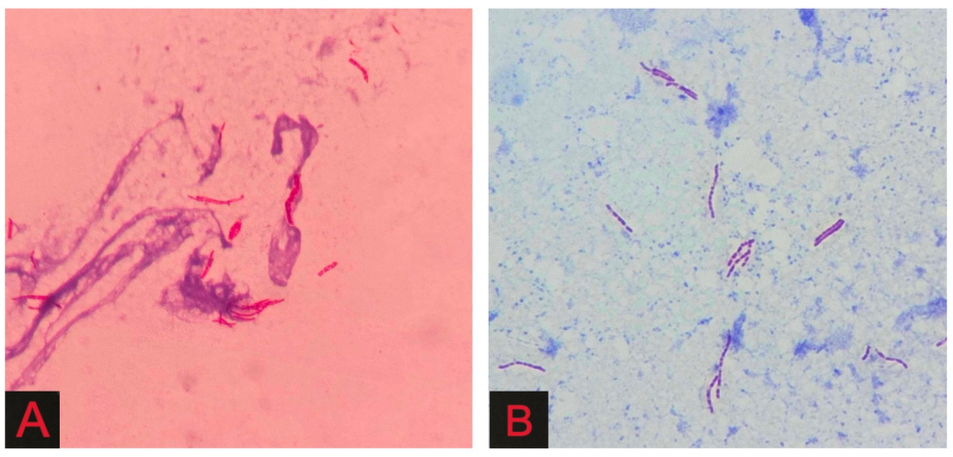

Fig 2. (**A, B**) Ziehl-Neelsen staining of the parietal mass aspirate showed positive for acid-fast bacilli.

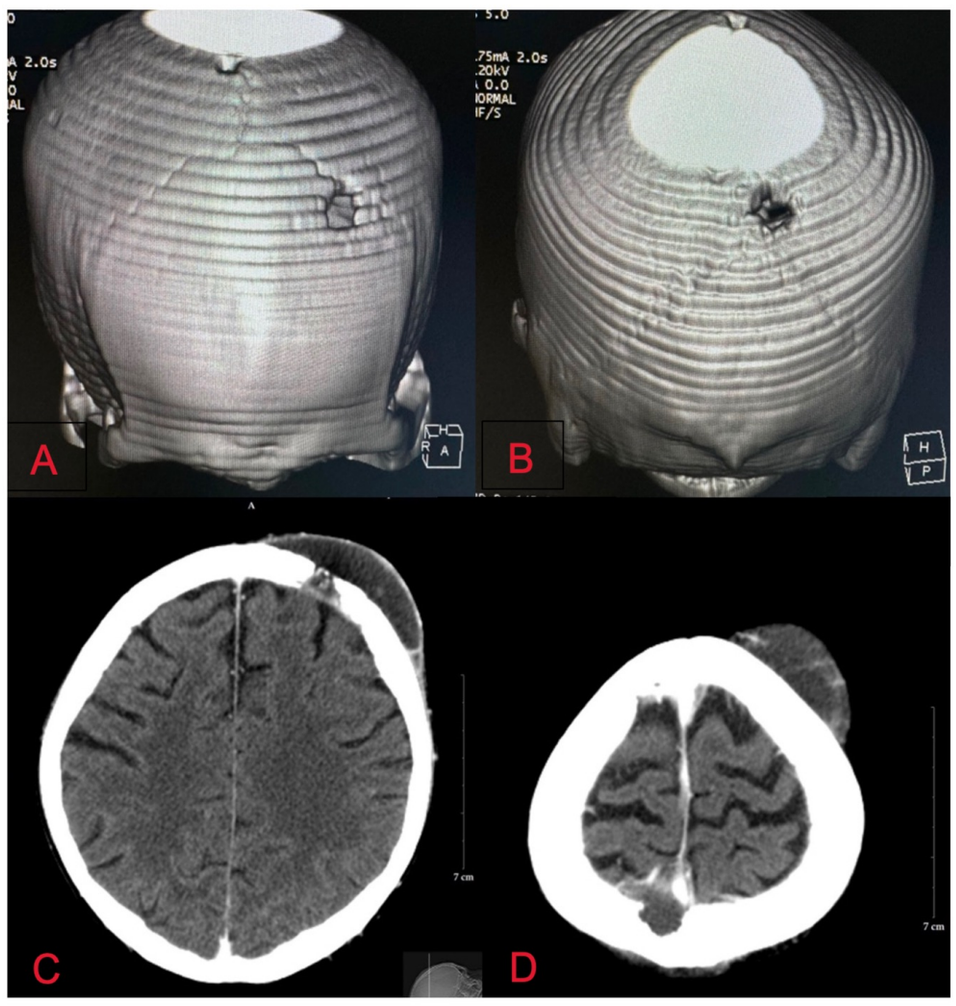

Fig. 3 (A, B) Cranial CT with reconstruction showing lytic lesions on the external board of the left frontal (A) and right high posterior parietal (B) region. **(C, D)** Contrast-enhanced axial cranial CT scan showing lytic lesions in the inner and outer tables of the left frontal and right high posterior parietal bones with subgaleal soft tissue swellings exhibiting subtle rim enhancement. The lesions measured approximately 6.97 x 2.07 cm (W x AP) in the left frontal region and 3.8 x 1.6 cm in the right high posterior parietal region

II. CASE

The patient, diagnosed with HIV in 2015, had been treated for a psoas abscess drug-susceptible TB but lost to follow-up after starting antiretroviral therapy. He presented with fever, cough, and dyspnea. Examination revealed incidental two soft, non-tender skull masses. A cranial computed tomography (CT) scan showed lytic lesions in the left frontal and right high posterior parietal bones. Sputum, Cerebrospinal fluid (CSF) and parietal mass aspirate revealed rifampicin-resistant Mycobacterium tuberculosis. Additional tests indicated resistance to first line TB drugs, confirming disseminated MDR-TB involving the calvaria, central nervous system (CNS), and lungs. He began an 18-month regimen with Levoloxacin, Bedaquiline, Linezolid, and Cycloserine, and was referred for surgical intervention.

III. DISCUSSION

Calvarial TB is extremely rare, occurring in less than 0.01% of mycobacterial infections, and is difficult to diagnose due to its rarity and non-specific symptoms. Advanced HIV can lead to widespread dissemination, causing bone destruction and granulation tissue formation in the skull. Trauma may also contribute though its role is likely coincidental rather than causal. Typical signs include painless scalp swellings and circumscribed lytic lesions as observed in this case. Radiography and CT scans shows soft tissue swelling and skull destruction. Treatment involves Fine-needle aspiration cytology (FNAC) or debridement and anti-TB therapy. Managing MDR-TB in HIV patients is complex, requiring multidisciplinary care and newer drugs like Fluoroquinolones, Bedaquiline, and Linezolid.

IV. CONCLUSION

This case emphasizes the rarity and clinical significance of calvarial TB in disseminated MDR-TB and advanced HIV. Early diagnosis and comprehensive management, including surgical and medical interventions, are crucial. Multidisciplinary care and individualized treatment regimens are essential for managing MDR-TB in immunocompromised patients.