Intracranial Tuberculoma in a Patient Presenting with Confusion and Hemiparesis

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Background

- CNS tuberculosis is a rare and severe extra-pulmonary manifestation of Mycobacterium Tuberculosis disease
- Manifestations: tuberculous meningitis, tuberculoma, tuberculous abscess, cerebral miliary tuberculosis, tuberculous encephalopathy
- 20% of all cases of extrapulmonary tuberculosis disease
- 5-30% of all intracranial space occupying lesions in developing countries
- Usually develops due to hematogenous dissemination
- Majority of cases occur in young children and immunocompromised patients

Clinical Manifestations:

- Common presenting symptoms include headache, seizures, and hemiparesis

Imaging:

- Radiological diagnosis of a brain tuberculoma is difficult as imaging presentation is varied and can be non-specific
- Typical findings of tuberculomas on imaging include solitary or multiple, round lesions often located in the frontal or parietal lobes
- Lesions have irregular walls and signs of ring enhancement or calcification
- “Target sign”: a ring enhancing lesion with a central area of enhancement or calcification has been described
- MRI findings vary according to the stage of the lesion

Diagnosis:

- Stereotactic biopsy with histopathological analysis can provide a definitive diagnosis but is only rarely recommended
- DDx: high grade gliomas, pyogenic abscesses, metastases, toxoplasmosis, cystercerosis, and lymphoma

Case Presentation

- 55 year old African American woman with ESRD on HD, anemia of chronic disease, COPD, and severe deconditioning and malnutrition
- Presented with acute onset of altered mental status and left sided hemiparesis
- Unknown date of last PPD
- On admission, she was febrile to 102° and tachycardic
- Cachectic and altered, but responsive to exam

Hospital Course

- On admission, our patient was started on dexamethasone and phenytoin for seizure prophylaxis
- Empiric antimicrobial coverage for brain abscess and tuberculosis was provided with vancomycin, cefazidime, and RIFE therapy
- After initial discharge, she had numerous hospitalizations for aspiration pneumonias and hypoglycemic episodes
- She expired secondary to hypercapnea and hypoxic respiratory failure leading to cardiac arrest within 2 months of diagnosis and presentation

Treatment

- Isoniazid is the only first line bactericidal agent that easily crosses the blood brain barrier and achieves concentrations similar to that in serum
- Standard medical care includes prolonged treatment (12-30 months) with rifampicin, isoniazid, pyrazinamide, and streptomycin or ethambutol
- New or expanding lesions have been documented as an immune-mediated paradoxical response to therapy
- In these cases, management should include adding systemic steroids as adjuvant therapy for 4-8 weeks

Conclusions

- Despite advancements in imaging and laboratory diagnostics, tuberculomas of the central nervous system remain a diagnostic challenge
- Early diagnosis is imperative as clinical outcomes are largely dependent on timely initiation of treatment
- Further studies are needed to develop new therapeutic drugs for the successful treatment of this deadly disease

References