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Isolated Miliary Tuberculosis of Brain in an Immuno-Competent Patient, Presenting as Cerebellar Ataxia

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Abstract:
We are reporting an unusual case of a 26-year-old immunocompetent patient of miliary tuberculosis of cerebellum with meningitis and lung involvement, presenting with ataxia without any evidence of systemic inflammation. Since, prognosis depends on correct diagnosis and timely treatment, recognition and prompt diagnosis are important for overall outcome.

Introduction:

26-year-old female, banker by profession, with no prior medical history, presented to outpatient services of Safdarjung hospital with complaint of progressively increasing unsteady gate for past 3 to 4 months. Onset was insidious and it gradually progressed to the extent that she was barely able to walk at the time of presentation. There was no history of fever, night sweats, weight loss, cough, expectoration or shortness of breath in preceding 3 months. There was no history of diplopia, personality changes or changes in mentation, or head trauma. There were no complaints of headache, seizure or any focal neurological deficit. She did not have any history of past tuberculosis or any contact with any such patient, diabetes, hypertension or any other significant past medical history. No history of any drug intake.

Examination revealed her to be well built, conscious, alert and fully orientated to time, place and person. Her vital signs were normal. There was no palpable lymphadenopathy. Fundus examination did not reveal papilledema or any other abnormality. Motor and sensory system examination was within normal limits. There was no cranial nerve involvement. Truncal ataxia was noted. Her gait was unsteady and she would sway on either side while walking, being unable to balance herself. Patient was not able to perform rapid repetitive motor task (dysdiadokinesia) properly. Co-ordination was impaired on both sides equally. She exhibited dysmetria in form of abnormal finger nose test on both sides. She was noticed to have intention tremors and past pointing, while performing finger nose test. However, she was able to perform heel shin test properly. There were no signs of meningeal irritation, like neck rigidity, kernigs or Brudzinski. Examining the respiratory system revealed presence of fine crepitation in the right infraclavicular area. There was no significant lymphadenopathy. Rest of the examination including cardiovascular and abdomen was within normal limits.

Patient was admitted with a provisional diagnosis of intracranial mass and subjected to relevant investigations. Her investigations revealed –Hb 9.2, TLC 8600, DLC 67% polymorphonuclear cells and 37% lymphocytes. ESR was 58mm in 1st hour. Serum electrolytes, LFT and KFT were within normal limits. HIV 1&2 serology, HBs antigen and anti-hepatitis C antibodies were negative. Thyroid function test and vitamin B12 levels were normal. X-ray chest showed non-homogenous opacity in right upper zone.

Contrast MRI Brain revealed multiple mixed signal intensity lesions of variable sizes in bilateral cerebral hemispheres and frontoparietal lobes. Few of these lesions showed ring enhancement while some others had homogenous enhancement on post contrast sequence. Lesions in cerebral hemispheres showed ring enhancement and appeared to coalesce at places. There were enhancing exudates along cerebellar foliae with surrounding T2/FLAIR hyperintensities. There was mild descending herniation of cerebellar tonsils with effacement of pre-pontine and retro-cerebellar cisterns with mild buckling of brainstem over clivus possibly secondary to cerebellar edema. Rest of the cerebral hemispheres, brain stem, basal ganglia, ventricular system and cervical cord were unremarkable. Intracranial internal carotid and its tributaries and vertebra-basilar arteries were normal. (fig. 1).

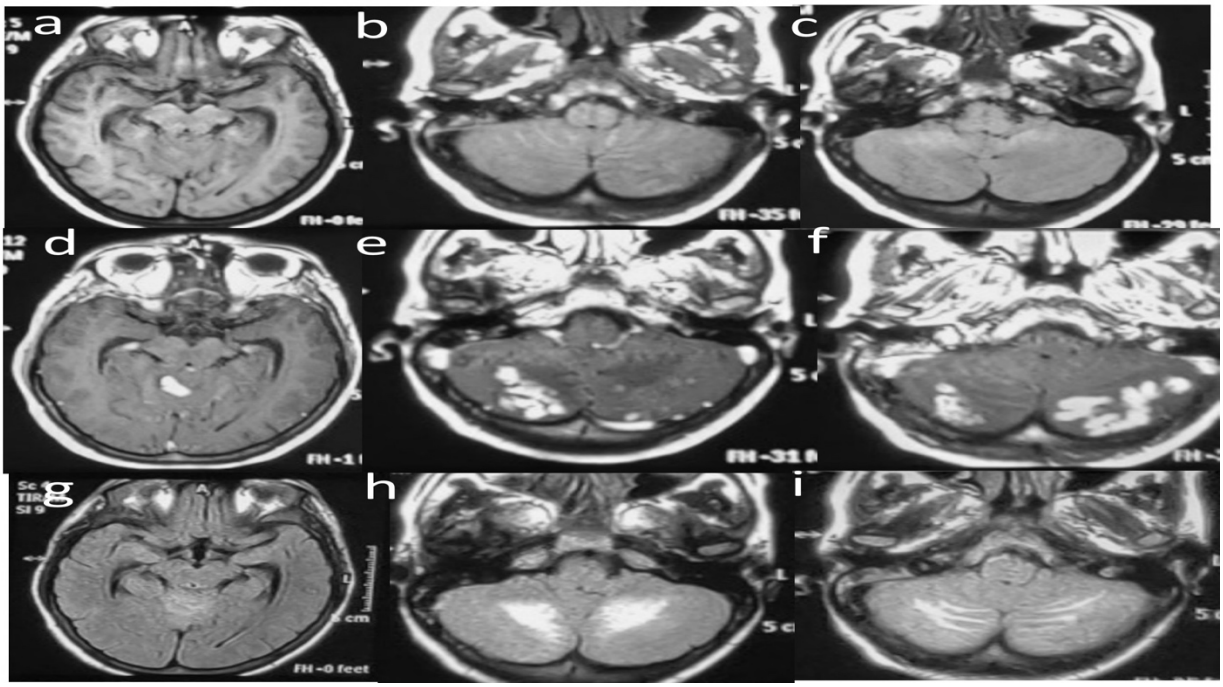

Fig.1-Axial MR images of the patient showing precontrast T1W (a-c), postcontrast T1W (d-f) and T2W FLAIR sequences (g-i). Multiple conglomerate ring enhancing lesions are seen in bilateral cerebellar hemisphere and vermis with surrounding T2W FLAIR hyperintensities suggestive of perilesional oedema.

In view MRI findings, which were suggestive of tubercular etiology, lumber puncture was done with extreme caution, after infusing i.v. mannitol, and using a narrow-gauge needle so as to prevent herniation. Opening pressure was normal. CSF was clear and no coagulum formed while standing. Microscopy revealed 50 cells which were predominantly mononuclear cells. CSF sugar was 58mg/dl, while corresponding blood sugar was 96 mg/dl. CSF protein was raised (103mg/dl). CSF

CBNAAT was positive for mycobacterium tuberculosis, sensitive to rifampicin.

Thus, the final diagnosis of cerebellar miliary tuberculosis with associated meningitis with pulmonary involvement was made. She was started on four drug regime, with dexamethasone, pyridoxine, Inj.mannitol, along with other routine supportive measures. She gradually improved and was discharged after 2 weeks of admission. On follow-up at three months, she recovered with complete resolution of her symptoms and neurological deficit.

Discussion

Tuberculosis of the central nervous system tuberculosis (CNS-TB) presents with a wide variety of neurological syndromes. The commonest presentation of CNS tuberculosis is chronic meningitis. Other manifestations include tuberculoma, tubercular abscess, and Pott's disease. Hydrocephalus is the most common complication of tubercular meningitis. Infarct in the brain parenchyma and ventriculitis are also frequently encountered [4].

Miliary TB of the brain is a very rare presentation of CNS-TB. It is usually seen in severely immunocompromised patients and is generally associated with miliary involvement of the lungs [5]. Almost all of them have been reported in association with severe immunosuppression and associated pulmonary or systemic involvement [1]. Isolated miliary TB of the brain in otherwise healthy adults without any other systemic involvement, is virtually unknown. Miliary TB is generally seen in very young children or old debilitated and in those with severely immune-compromised individuals. There has been only one reported case of isolated miliary TB in a healthy patient in the reported in medical literature [1]. In that case, the patient's neurological examination revealed wide-based ataxic gait and mental depression. In the that reported case, however, the patient's only complaint was headache with low-grade fever, with normal neurological examination. There have been no similar cases reported in the literature to the best of our knowledge. The case, presented here, was immune-competent and had isolated miliary involvement of brain. Though, pulmonary lesion was observed, but it was not miliary in nature.

Miliary tuberculomas are very small in size and therefore, they exert very little mass effect. They generally present with non-specific features like fever, cachexia, anorexia and weight loss etc. Miliary tuberculomas in brain usually present with headaches, seizures, meningeal signs, and even anxiety [2,3]. Clinical presentation is so vague that other differential diagnosis like neuroTB, neurosarcoidosis, metastases, lymphoid granulomatosis, Erdheim Chester disease, Lyme's disease, histoplasmosis, Bechet's disease, and Susac's syndrome should be considered and ruled out before arriving at this diagnosis. All these clinical entities can present as ring enhancing lesions on radiological examination[5].

Another unusual feature in present case was absence of fever, weight loss or any other constitutional symptom in absence of any immune deficiency state. This patient presented with focal and progressive neurological deficit mimicking intracranial space occupying mass lesion. This, again, is highly unusual.

Conclusion

Tuberculosis of the brain is a devastating infection with high rates of morbidity and mortality in India. It can present in variety of ways. Isolated miliary tuberculosis of the brain is extremely rare in immune-competent individuals and is always accompanied by miliary involvement of lungs and other organs. We report a case of an immunocompetent patient with miliary brain tuberculomas

without any systemic involvement. Our patient fully recovered on institution of rational anti-tubercular treatment. It is important to recognise unusual presentations of tuberculosis, as delayed diagnosis can cause permanent loss of function and loss of life of these patients.

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