Clinical picture

New onset seizures and CNS tuberculoma

A 22-year-old mentally challenged Asian immigrant presented to the emergency room with new onset seizures. He complained of worsening headache for several weeks. He had no cough, fever or weight loss. He immigrated to the USA 7 years ago and his tuberculin skin test was negative at intake. Physical examination revealed a lethargic orally intubated patient. He had stable vital signs.

Figure 1. Upper panel is CT scan of the patient’s head showing right frontal lobe ring-enhancing lesion with surrounding edema and midline shift. Lower panel is a hematoxylin and eosin stained biopsy showing multiple granulomas composed of epithelioid histiocytes and multinucleated giant cells. Ziehl–Neelsen staining of the biopsy showed acid-fast bacilli consistent with *M. tuberculosis*.
He had equal and reactive pupils. He did not have neck rigidity and the rest of his examination was within normal limits. His human immune deficiency virus (HIV) test was negative.

Head computed tomography (CT) scan showed right frontal lobe ring-enhancing lesion with surrounding edema and midline shift (Figure 1, upper panel). He underwent craniotomy and excisional biopsy. Surgical samples for culture and histopathological examination were obtained (Figure 1, lower panel). He was diagnosed with central nervous system (CNS) tuberculosis and started empirically on isoniazid (INH), rifampin (RIF), ethambutol and pyrazinamide. Biopsy culture confirmed the diagnosis and grew susceptible Mycobacterium tuberculosis (MTB). He finished 2 months of all four agents and a subsequent 10 months of INH and RIF. He tolerated the medications well with complete resolution of his symptoms.

CNS tuberculosis (TB) accounts for 1% of TB cases and is considered the most severe form of TB infection. CNS TB includes multiple entities, such as TB meningitis, which is the most common form of CNS TB, TB brain abscess and tuberculoma. CNS TB risk factors include younger age and HIV infection.

Tuberculoma is a granuloma consisting of giant cells, epithelioid cells and lymphocytes surrounding infected and necrotic macrophages. It might enlarge causing mass effect. It could liquefy forming an abscess that could rupture into the subarachnoid space causing secondary meningitis. Intracranial tuberculomas are usually solitary and they might coexist with pulmonary TB or other forms of CNS TB.

CNS tuberculosis patients complain of headache, altered level of consciousness, focal weakness and seizures. The differential diagnosis includes brain tumors, lymphoma, pyogenic abscess and toxoplasmosis. The diagnosis of CNS tuberculoma is challenging especially if the patients did not have coexisting TB meningitis or pulmonary TB. CT-guided stereotactic biopsy remains the gold standard for diagnosis. Magnetic resonance imaging might help in differentiating TB from the above enumerated look alike.

A 12-month course of anti-TB therapy is indicated with surgery reserved for cases where there is brain stem compression or elevated intracranial pressure or seizures that have failed medical therapy.

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