

Co-existing Fungal Infection in a Case of Temporal Lobe Tuberculoma

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Abstract

An unusual case of temporal lobe tuberculoma with co-existing fungal infection in a diabetic patient is reported. A 54-year-old male with uncontrolled Diabetes mellitus was treated with anti-tuberculosis drugs for six months for temporal lobe tuberculoma. Follow-up scans showed increase in the size of the lesion in spite of good drug compliance. After complete excision of the lesion, the pus encountered was sent for microbiological investigations, which showed acid-fast bacilli and multi-polar budding yeast cells. So, the patient was treated with anti-tuberculosis drugs and Itraconazole. Follow-up scans after six months showed good resolution. In conclusion, any tuberculoma, which does not respond to medical management alone, should be surgically excised and evaluated for any other co-existing infection.

Introduction

Tuberculoma is a common granulomatous lesion one sees in the brain in an endemic country like India. Fungal infections of the brain are also seen not uncommonly in immuno-compromised individuals with uncontrolled diabetes, prolonged steroids, chemotherapy regimens and HIV-related illnesses. Our patient had co-existing tuberculous and fungal infection. Hence we report an unusual case of granulomatous lesion in the brain showing both *Mycobacterium tuberculosis* and *Paracoccidiodes brasiliensis*.

Case Report

A 54-year-old left handed male, with poorly controlled diabetes mellitus and hypertension presented with an episode of generalized tonic-clonic convulsion six months prior to admission.

He had a CT scan, which showed a ring-enhancing

lesion in the right temporal lobe. On the presumptive diagnosis of temporal lobe tuberculoma he was put on anti-tuberculosis treatment viz. isoniazid, rifampicin, ethambutol and pyrazinamide. Follow up magnetic resonance imaging scans after six months with good drug compliance showed increase in the size of the lesion with conglomeration of two more ring-enhancing lesions (Fig. 1). He was well preserved neurologically.

His haematological and biochemical studies were normal. As the lesion had increased in spite of adequate anti-tubercular drugs it was decided to excise it.

After adequate control of diabetes and hypertension he was subjected to a right temporo-parietal craniotomy with complete excision of the lesion without rupturing it. Pus from the lesion showed acid-fast bacilli on Ziehl-Neelsen's stain and multi-polar budding yeast cells on KOH mount resembling *Paracoccidiodes brasiliensis*. Gomori's methenamine silver stain showed multi-polar budding yeast cells (Fig. 2). Culture of the pus for tuberculosis and fungus yielded no growth. Histopathology confirmed the diagnosis of tuberculoma. Postoperatively patient fared well and was discharged on four anti-tubercular drugs for six months and Itraconazole 200 mg once daily for eight weeks. Follow-up magnetic resonance imaging (MRI) showed resolving lesion after six months of treatment (Fig. 3).

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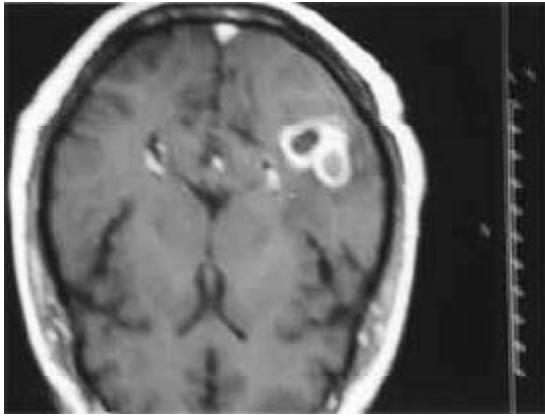


Fig. 1 : Axial magnetic resonance imaging with gadolinium enhancement showing right temporal ring enhancing lesions.



Fig. 2 : Gomori's methenamine silver stain showing multi-polar budding yeast cells.

Discussion

In diabetes mellitus, neutrophil, cellular and humoral dysfunction predisposes the patient to infection.⁷ Our patient was diagnosed to have a tuberculous granulomatous lesion on the basis of CT scan images. With this presumptive diagnosis he was started on anti-tubercular treatment, which was found to be ineffective. The lack of response would imply that either there was resistance to the drug treatment or the drugs did not reach a therapeutic level or it was not likely to be a tuberculoma alone. Occurrence of fungal infection in diabetes

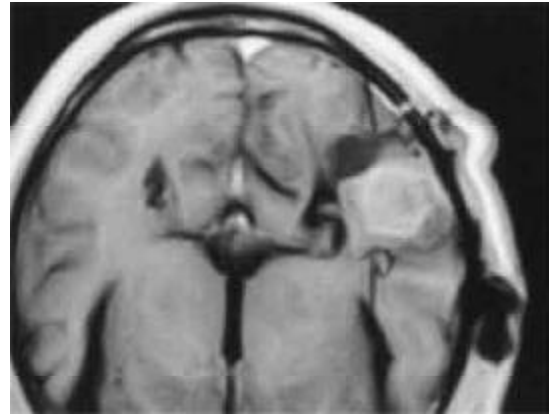


Fig. 3 : Postoperative axial magnetic resonance imaging with gadolinium enhancement showing resolving lesion.

mellitus is quite common. Though aspergillosis, candidiasis and mucormycosis are commonly associated with diabetes, here we found multi-polar budding yeast cells, which morphologically resembled *Paracoccidioides brasiliensis*.

Paracoccidioides brasiliensis spreads to the brain either by lymphatic or by haematogenous route. It may lead to intra-cranial abscess, intra-cranial granulomas or meningitis.² In two other studies,⁴ 9.99% of patients had meningeal involvement and 27.27% of patients had tumour-like lesions like abscess, granuloma, nodule or cyst respectively. Spinal cord paracoccidioidomycosis has been reported which was successfully treated with fluconazole.⁴ Paracoccidioidomycosis in countries other than South America have been reported due to worldwide travel, which has been termed "imported paracoccidioidomycosis".^{1,3}

In a PAP smear of a patient with no history of travel to Latin America *paracoccidioides brasiliensis* was detected.⁸ The culture of the specimen yielded no growth. In our case also there was no growth in culture as it is a very difficult organism to grow due to its slow

growth.⁵

Co-existence of paracoccidiomycosis and tuberculosis has been reported in oral lesions, gastrointestinal tract and other organs, but in the brain, it has not been reported so far to the best of our knowledge.^{6,9,10}

The lesion in our patient continued to increase in size in spite of anti-tubercular drugs possibly because of co-existence of fungal infection. Diabetes mellitus may have predisposed to the development of fungal infection.

The follow-up of the patient has shown that it is best to excise the lesion totally without rupturing it and subject the patient to appropriate drug therapy.

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