Journal of Pediatric Sciences

Tubercular meningitis with therapeutic paradox

Anil Kumar KH, Basavaraja GV, Govindraj M

Journal of Pediatric Sciences 2014;6:e205

How to cite this article:

Anil Kumar KH, Basavaraja GV, Govindraj M. Tubercular meningitis with therapeutic paradox. Journal of Pediatric Sciences. 2014;6:e205

CASE REPORT

Tubercular meningitis with therapeutic paradox

Anil Kumar KH, Basavaraja GV, Govindraj M

Indira Gandhi Institute of child health, Bangalore, India

Abstract:
Tubercular meningitis is not so uncommonly associated with clinical deterioration while on treatment, which is observed 2-3months after starting the treatment, sometimes up to 18 months. A 12 year old boy presented with fever and cough of 1 week duration, evaluated and diagnosed to have disseminated tuberculosis. Anti-tubercular therapy was started. While on treatment child was apparently normal for about 2 months and then developed signs of meningo-encephalitis. On evaluation with MRI imaging, found to have new onset multiple subcentimetric ring enhancing lesions in both cerebral hemispheres suggestive of tuberculomas.This is due to improved delayed type of hypersensitivity observed after starting treatment for active tubercular infection. This condition responds well to steroids and does not warrant change of drug regimen.

Keywords: *Tubercular meningitis, therapeutic paradox*
Corresponding author: *Anil Kumar KH, Indira Gandhi Institute of child health, Bangalore, India*
E-mail: dranil.paed@gmail.com

Introduction

Tubercular meningitis complicates about 0.3% of untreated tuberculosis infection in children. The paradoxical development of tuberculomas in patients with tuberculous meningitis who are receiving effective chemotherapy has been recognized [1,2]. The cause of tuberculomas is poorly understood, but they do not represent failure of drug treatment. Up to 10% patients with central nervous system TB report paradoxical response, and this number may be as high as 30% in HIV-infected patients [3,4]. The paradoxical response is a component of immune reconstitution inflammatory syndrome or immune restoration syndrome, which results from an exuberant inflammatory response toward incubating opportunistic pathogens [5]. This phenomenon should be considered whenever a child with tuberculous meningitis deteriorates or develops focal neurologic signs while on treatment.

Case report

12 year old boy presented with fever and cough of 1 week duration. On examination had left sided pleural effusion and hepatosplenomegaly.

On evaluation pleural fluid analysis showed 450 cells/mm3, all lymphocytes, protein 1.5 gm/dL and sugar 65mg/dL suggestive of Tubercular effusion, so a diagnosis of Disseminated tuberculosis was made and was started on INH, rifampicin, pyrazinamide and ethambutol. While on treatment with ensured compliance child was apparently normal for about 2 mon 15 days and later developed fever, headache, vomiting, photophobia which continued for about 15 days followed by convulsion. Examination revealed signs of meningeal irritation with neck stiffness and brisk deep tendon reflexes. CSF analysis showed 110 cells (lymphocytes 97%, neutrophils 3%), protein 208 mg/dL, and glucose 102 mg/dL against blood sugar of 154 mg/dL and CSF TB-PCR was positive.

MRImaging showed appearance of multiple subcentimetric ring enhancing lesions in both

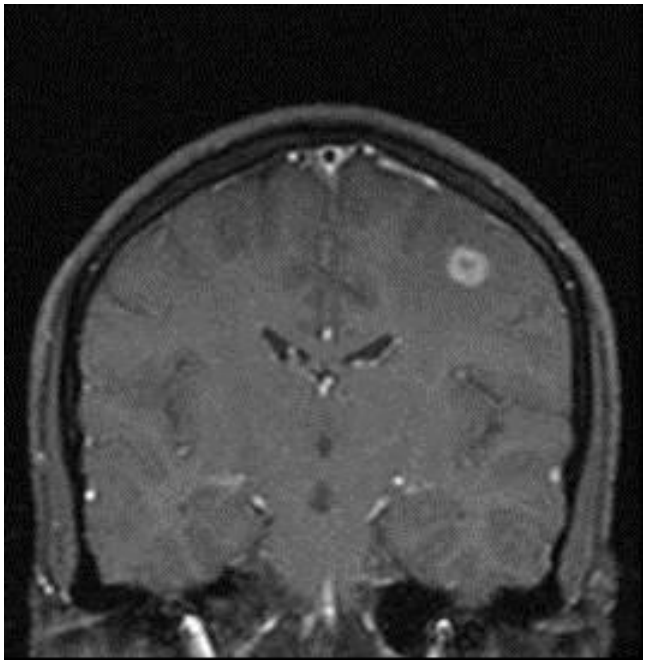

Figure 1. MRI Brain image showing tuberculoma lesion in left cerebral hemisphere

cerebral hemispheres and on right side with edema around lesions, with lipid lactate peak on MR Spectroscopy suggestive of tuberculoma (Figure 1).

Repeated imaging was done in view of altered sensorium, ptosis on left eye despite on anti-tubercular therapy and pulse methyl prednisolone,

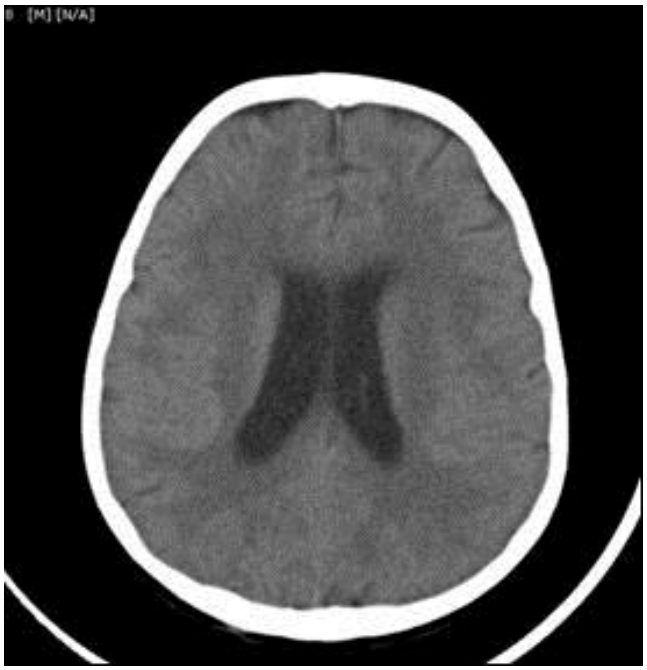

Figure 2. CT Brain image with section showing Hydrocephalus changes (ventricular dilatation)

which showed hydrocephalus changes (Figure 2) and basal exudates, infarction of midbrain, thalamus, caudate nucleus, medial temporal lobe with herniation of midbrain. Ventriculo-peritoneal shunt was placed. No much improvement of clinical condition was noticed and child deteriorated and expired while on anti-tubercular therapy, steroids, with functional ventriculo-peritoneal shunt in situ.

Discussion

The development of new tubercular lesions after few months of anti-tubercular therapy especially the tuberculomas inspite of satisfactory compliance is designated as therapeutic paradox. This is classically observed in the initial 2-3 months of therapy and coincides with the tapering of steroids [1]. Cases have been reported upto 18 months after starting anti-tubercular therapy [2]. The hypothesis for this is probably the interplay between the host's immune response and effect of mycobacterial products. Active tuberculosis can result in suppression of delayed type of hypersensitivity response (anergy). Once the active tuberculosis is under control and immunosuppression is resolved, enhanced delayed type of hypersensitivity can lead to activation and accumulation of lymphocytes and macrophages at the site of bacillary deposition or toxin production when the bacilli die. If the activation occurs at the site of microscopic foci in central nervous system, tuberculomas appear, if this occurs at the site of tuberculomas, they enlarge [6]. Usually this responds well to steroids, but due to very severe infarcts of midbrain, thalamus, caudate nuclei and medial temporal lobe and herniation of midbrain in our case, child further deteriorated and expired. There is no evidence that change in anti-tubercular therapy regimen is warranted. This phenomenon should be considered in a child with tubercular meningitis who deteriorates or develops focal lesions while on therapy.

References

1. Abduljabbar M, Paradoxical response to chemotherapy for intracranial tuberculoma: two case reports from Saudi Arabia. Journal of Tropical Medicine and Hygiene 1991, 94: 374-376.
2. Prakash Rao G, Rajendra Nadh B, Hemaratnam A et al. Paradoxical progression

of tuberculous lesions during chemotherapy of central nervous system tuberculosis. Journal of Neurology 1995, 83: 359-362.
3. Gupta M, Bajaj BK, Khawaja G. Paradoxical response in patients with CNS tuberculosis. J Assoc Physicians India 2003;51:257-260.
4. Breen RA, Smith CJ, Bettinson H, et al. Paradoxical reactions during tuberculosis treatment in patients with and without HIV co-infection. Thorax 2004;59:704-707.
5. Shelburne SA III, Hamill RJ. The immune reconstitution inflammatory syndrome. AIDS Rev 2003;5:67-79.
6. Afghani B and Lieberman JM. Paradoxical enlargement or development of intracranial tuberculmas during therapy: Case report and review. Clinical infectious diseases 1994, 19: 1092-1099