Tuberculous meningitis

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DESCRIPTION

A 22-year-old Nepali man presented with intermittent confusion, fever, unsteadiness and a 10 kg weight loss over 1 month. His chest radiograph was as shown (figure 1). Lumbar puncture showed an opening pressure of 28 cmH_2O, white cell count 30×10^9/L; lymphocytes 20, neutrophils 10×10^9/L, protein 0.9 g/L. Gram stain showed scanty acid-fast bacilli, and he was started on antituberculosis (anti-TB) therapy (isoniazid, rifampicin, pyrazinamide and ethambutol). Retroviral tests were negative on two occasions, and there were no other signs of functional immunosuppression. Despite treatment, his confusion worsened, and he developed papilloedema. A head CT showed hydrocephalus; he was started on dexamethasone and transferred to the neurosurgical unit for ventriculoperitoneal shunting. He subsequently developed seizures and sudden weakness in all four limbs. MRIs of spine (figure 2) and head (figure 3) were as above, showing multiple ring-enhancing lesions, compatible with cerebral and meningeal TB (figure 4). Decompression of the craniocervical junction resulted in minimal neurological improvement. He remains stable neurologically, with a Glasgow Coma Scale of 10, and global limb weakness.

This is a striking example of disseminated TB. The radiographic findings of miliary TB should alert the physician to the strong potential for dissemination, the involvement of the central nervous system in particular. It results from the haematogenous spread of *Mycobacterium tuberculosis* from primary pulmonary infection, and the formation of small subpial and subependymal foci in the brain and spinal cord,[1] and occurs in 1% of patients with active TB. It should be noted that advanced diagnostic imaging, such as an MRI may not always be available in countries with a high burden of TB.

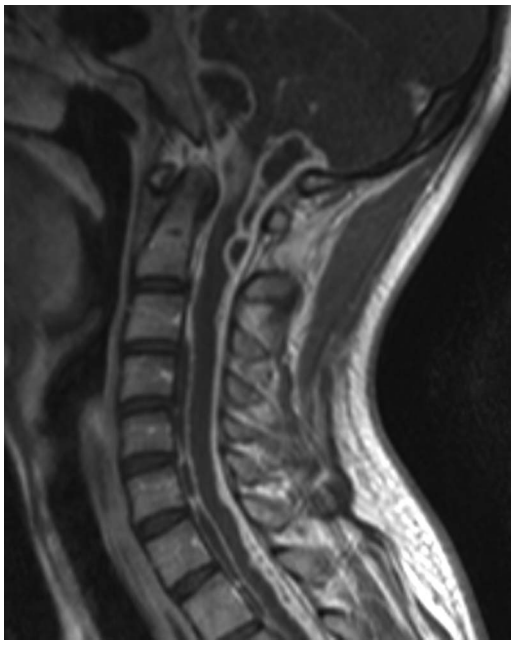

Figure 2 Sagittal T1-weighted postgadolinium MRI of the upper cervical spine, showing the enhancing loculated collections surrounding the spinal cord and the brainstem.

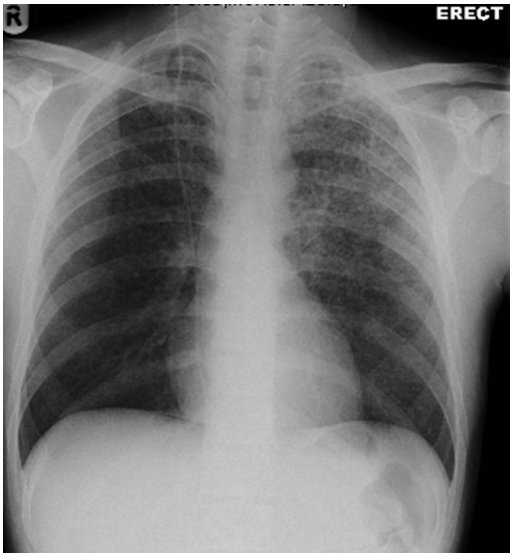

Figure 1 Chest radiograph showing extensive miliary opacification throughout both lungs, most marked in the left upper zone, in keeping with miliary tuberculosis.

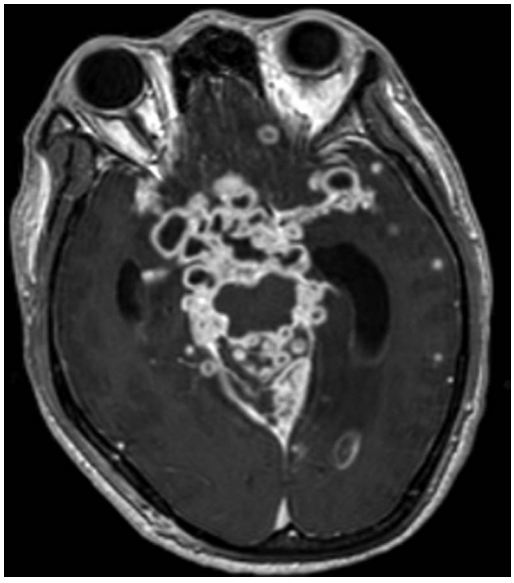

Figure 3 Axial T1-weighted postgadolinium MRI showing innumerable ring-enhancing lesions within the brain parenchyma.

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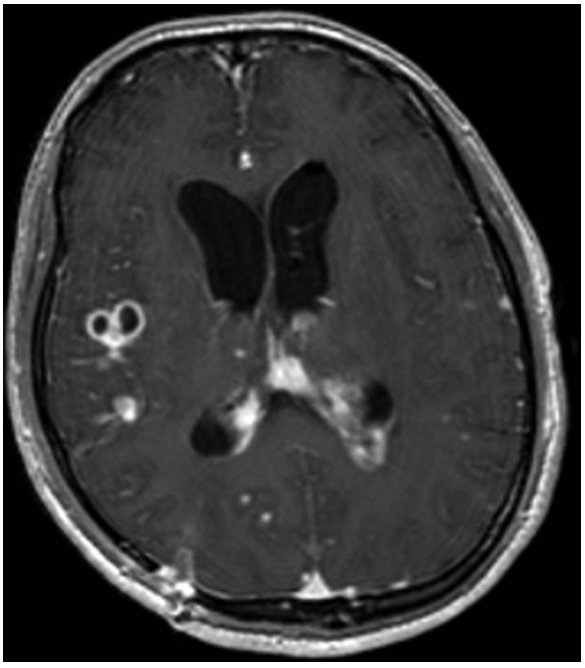

Figure 4 Further enhancing locules within the basal meninges.

Learning points

- Always consider central nervous system (CNS) infection in patients with miliary tuberculosis (TB).
- Approximately 10% of cases of TB meningitis have spinal cord involvement. All patients with suspected cerebral tuberculoma should be investigated with MRI of the spine, as it is critical to demonstrate whether surgery is indicated, and to follow response to treatment.[2]
- Treatment for all forms of CNS TB should consist of four drugs (isoniazid, rifampicin, pyrazinamide and ethambutol) for 2 months followed by two drugs (isoniazid, rifampicin) for at least 10 months. Adjunctive corticosteroids (either dexamethasone or prednisolone) should be given to all patients with TB meningitis, regardless of disease severity.[2]

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

1 Rich AR, McCordock HA. The pathogenesis of tuberculous meningitis. *Bull John Hopkins Hosp* 1933;52:5–37.
2 Thwaites G, Fisher M, Hemingway C, *et al*. British Infection Society guidelines for the diagnosis and treatment of tuberculosis of the central nervous system in adults and children. *J Infect* 2009;59:167–87.