

(central nervous system)

가 가 가 1 - 4 mm (Fig. 2A). (fluid attenuated inversion recovery, FLAIR) (Fig. 2B). MRI T1 (sagittal) 1 - 4 mm (Fig. 3). (; 8 - 43 mg/dL) 134.9 mg/dL 가 (; 40 - 70 mg/dL) 34 mg/dL (lactate dehydrogenase, LDH) (adenosine deaminase, ADA) (acid fast bacilli stain, AFB stain) (polymerase chain reaction, PCR) 60 가 2 2 (computed tomography, CT) (trans - bronchial lung biopsy, TBLB) (isoniazid, ethambutol, rifampicin) pyrazinamide (brain stem), CT 3 CT 가 가 (Fig. 1). (magnetic resonance image, MRI) T1 CT

(3). 2.4% Shen (5) MRI

(2). (encephalopathy), (vacu - Huang (6) MRI

(3). (3). MRI

(4). (Pott 's disease), , Yen (7) 2

(3). (arachnoiditis) 가 MRI

(3). 가 4 가 (granulation tissue)

(5 - 8). (caseous necrosis)

(Table 1).

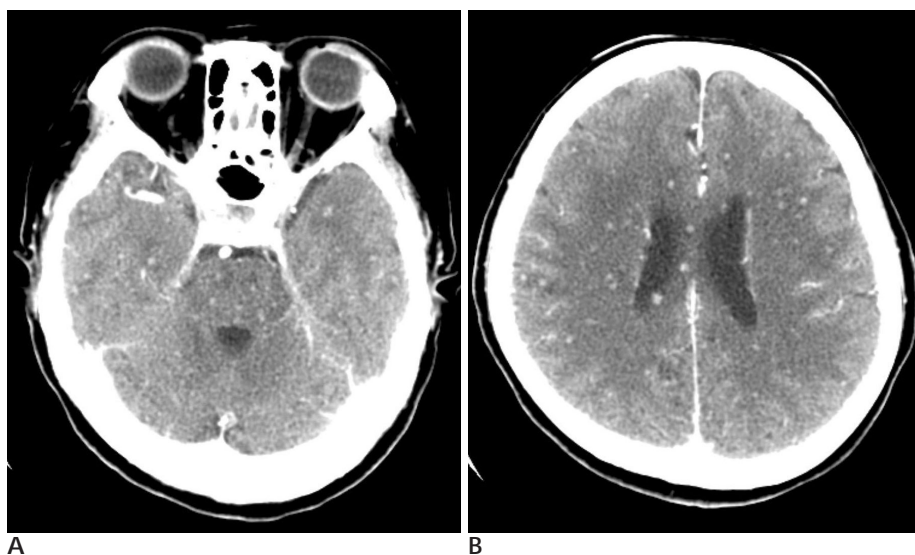


Fig. 1. Contrast enhanced axial brain CT scans show multiple tiny enhancing nodules in the brain stem and cerebral hemisphere.

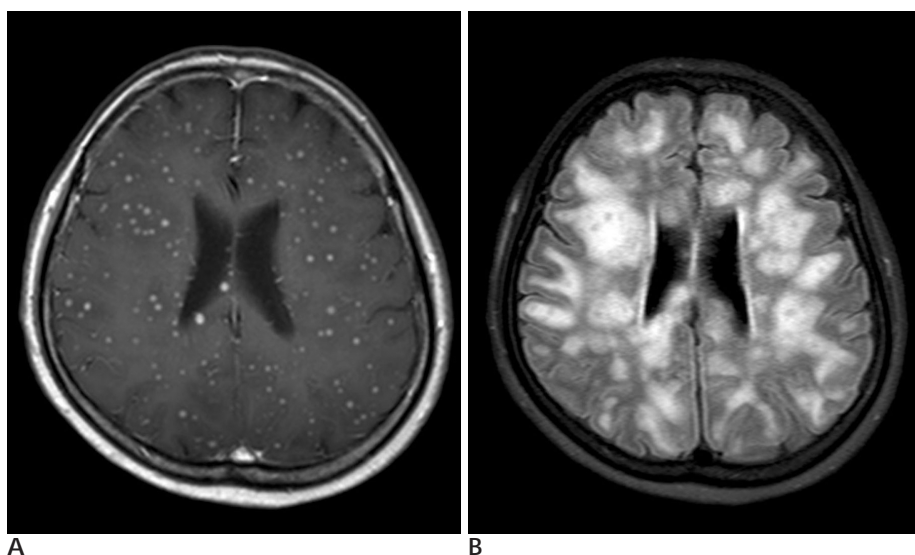


Fig. 2. Contrast enhanced axial T1-weighted (A) and axial FLAIR (fluid attenuated inversion recovery) (B) brain MR scans.

A. Contrast enhanced axial T1-weighted image shows about 4 mm or less sized multiple enhancing nodules with random distribution in the whole brain parenchyma.

B. Axial FLAIR image shows severe surrounding edema in the whole brain parenchyma.

Table 1. The Summary of the Four Previously Reported Cases and the Present Case

Source	Sex/Age	Pulmonary Tuberculosis	Distribution		Diagnostic Confirmation	
			Brain	Spine	PCR	Histopathologic Finding
Shen 1993	M/30	+	Parenchyma	IM	-	ND
Huang 1999	M/38	-	Subarachnoid space	IM and EM	+	ND
Yen 2003	M/67	+	Parenchyma	IM	+	Granuloma without caseating necrosis
Muthukumar 2007	M/21	-	Parenchyma	EM	ND	Granuloma with caseating necrosis
The present case 2008	F/60	+	Parenchyma	IM	-	ND

PCR : polymerase chain reaction, CSF : cerebrospinal fluid,
IM : intramedullary, EM : intradural extramedullary, ND : not done

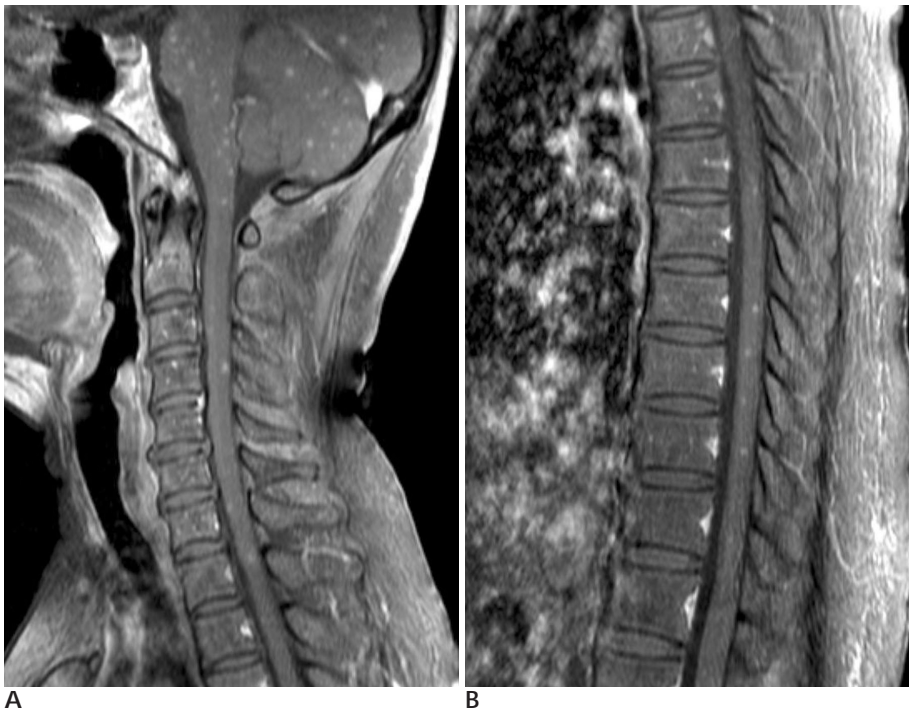


Fig. 3. Contrast enhanced sagittal T1-weighted spine MR scans show about 4 mm or less sized multiple enhancing nodules in the cervical (A) and thoracic spinal cord (B).

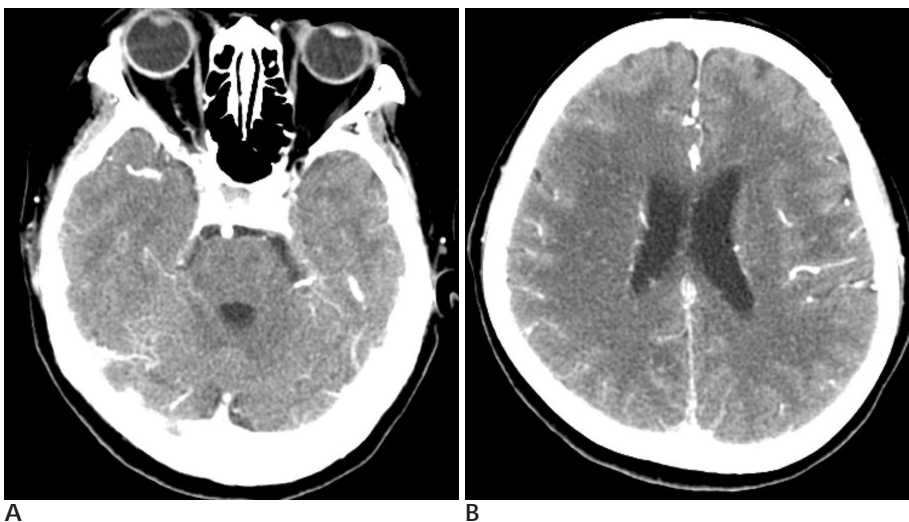


Fig. 4. Follow up contrast-enhanced axial brain CT scans show decreased size and number of multiple enhancing nodules.

Muthukumar (8)

6

(10).

MRI

MRI

MRI

(disseminated)

MRI

2 mm

(tuberculoma) 가 1 - 4 mm

4 mm

가

MRI

T1

(ring)

(2).

T2

가

(9).

(10).

(7, 8).

isoniazid, pyrazinamide, rifampicin,

ethambutol 18

24

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Miliary Tuberculosis with Concurrent Brain and Spinal Cord Involvement: A Case Report¹

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Central nervous system involvement by tuberculosis is rare, and intramedullary involvement is even more rare. A patient that developed intermittent amnesia during anti-tuberculous therapy underwent brain CT and MRI and spine MRI. The latter showed multiple small enhancing nodules in the brain and spinal cord. The patient was treated with anti-tuberculous medication and steroids under the suspected diagnosis of miliary tuberculosis. Follow-up CT showed decreased nodule size and number. We report a case of miliary tuberculosis in the brain and spinal cord and present a review of the literature related to similar cases.

Index words : Tuberculosis, central nervous system

Brain diseases

Spinal cord diseases

Magnetic resonance (MR)

Tuberculosis, miliary

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