

# Natural Course and Radiographic Findings of Syringomyelia after Tuberculosis Meningitis: CASE SERIES

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## Backgrounds

- **Syringomyelia** is a rare complication of **tuberculosis (TB) meningitis**, which causes chronic interstitial edema of spinal cord and obstruction of cerebrospinal fluid (CSF) **even after the resolution of active TB infection**.
- Here, we present three cases of syringomyelia after TB meningitis, with natural history and radiographic findings.

## Case Presentation

- **CASE1** A 28-year-old female was admitted to the department of neurology with **paraplegia and both lower extremity hypesthesia** (table 1). She was diagnosed as **TB arachnoiditis** (figure 1-A-(i)) and treated with anti-TB medication and steroids. **After 6 years**, she visited our clinic with **progressive quadriparesis**. Spine magnetic resonance imaging (MRI) shows **diffuse syringomyelia from C4 level to conus medullaris** (figure 1-A-(ii), (iii)). She underwent 3 times of **syringoperitoneal (S-P) shunt** insertion, but her lower extremity weakness, right finger weakness and syringomyelia observed in spine MRI were **progressively aggravated for 8 years**.
- **CASE2** A 34-year-old female who was previously diagnosed with **tuberculous meningoencephalitis** and underwent laminectomy and anti-TB medication, was admitted to the department of infectious disease (table 1, figure 1-B-(i)). Even **after 6 months** of previous treatment, her **lower extremity weakness and voiding difficulty continued to progress**, and spine MRI showed newly developed **multiple syringomyelia in T1-3 level** (figure 1-B-(ii), (iii)). After admission, she was treated with additional **anti-TB medication, levofloxacin and dexamethasone**. She also received **intravenous administration of methylprednisolone** after a year. However, syringomyelia in T1-3 level demonstrated in spine MRI was not regressed until the last follow-up.
- **CASE3** A 42-year-old male was admitted to department of neurosurgery with **previously diagnosed TB meningitis** which involved spinal cord (table 1, Figure 1-C-(i)). He underwent **T4-5-6 laminectomy and granuloma excision**, then discharged after partial recovery. **After 6 years**, he complaint of **left lower extremity weakness and constipation**. Spine MRI demonstrated **diffuse thinning of spinal cord and syringeal change from T1 level to conus medullaris** (Figure 1-C-(ii), (iii)). His neurologic deficit and spine MRI findings were continued to **progress for 3 years**, but he did not receive any disease-specific treatment.

**Table 1. Natural course and radiographic findings of TB meningitis and following syringomyelia1**

	Case 1	Case 2	Case 3
Sex/Age	28/F	34/F	42/M
Spinal Cord involvement of TB	T3-4	Upper cervical	T9-10
Treatment for TB meningitis	anti-TB medication Steroid	anti-TB medication Laminectomy	anti-TB medication Laminectomy
Sequale	Paraparesis, MRC grade 4/4 Bilateral hypesthesia below T6	Quadriparesis	Paraparesis, MRC grade 2/2 Bilateral hypesthesia below T10
Neurologic Deterioration	After 6 years from onset - Quadriparesis	After 6 months from onset - Lower extremity weakness - Voiding difficulty	After 6 years from onset - Left lower extremity weakness. - Constipation
Development of syringomyelia	From C4 to conus medullaris	From T1 to T3	From T1 to conus medullaris
Treatment for syringomyelia	Syringoperitoneal shunt	Anti TB medication Dexamethasone Intravenous methylprednisolone (after a year)	No disease specific treatment
Follow up period and prognosis	19 years after syringomyelia - Paraplegia, MRC grade 0/0 - Both finger weakness, MRC grade 0/4	1 year after syringomyelia - Paraparesis, MRC grade 3/3 - Bilateral hypesthesia below T3	3 years after syringomyelia - Paraplegia, MRC grade 0/0 - Bilateral hypesthesia below T2

Abbreviations - TB: Tuberculosis, MRC: Medical research council



**Figure 1. Spine MRI regarding TB meningitis & syringomyelia.**

## Conclusions

- As anti-TB medications may cause myopathies and neuropathies, it is **easy to overcome the possibility of myelopathy** when patient with TB meningitis show neurologic deterioration.
- However, **myelopathy, especially syringomyelia, should be included in differential diagnoses** as these cases suggest.
- Syringomyelia after TB meningitis can be treated with shunt insertion, or IV administration of mPD, but **none of them show promising effect in this study**.