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CASE REPORT

Syringomyelia associated with syphilitic spinal meningitis: real complication or possible association?

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Study design: The study has been designed as a case report.
Objective: The objective of this study was to report a rare case of syringomyelia in a patient with syphilitic spinal meningitis.
Setting: The Neurology Department, University Hospital Mohamed VI Marrakesh, Morocco.
Case report: A 40-year-old Moroccan male presented with the complaints of weakness of the lower extremities. Neurological examinations confirmed the motor dysfunction of the lower extremities and revealed a sensory loss to the T2–T4 dermatome. The magnetic resonance imaging (MRI) scan detected a hypointense signals on the T1 sequences and hyperintense signals on T2 in the cord extending from C7 to T4. The condition was diagnosed as dorsal syringmyelia. Blood and cerebrospinal fluid were positive for Venereal Disease Research Laboratory and *Treponema pallidum* hemagglutination tests. The patient was treated with intravenous penicillin therapy with a significant improvement in motor deficit. After 2 years, his neurological deficit was limited to a mild weakness of the distal right leg.
Conclusion: A case of syphilitic spinal meningitis presenting with syringomyelia, and effectively treated with penicillin has been described.
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Keywords: syringomyelia; syphilis; myelitis; magnetic resonance imaging

Introduction

Syringomyelia is a condition consisting of a fluid cavity formed in the central canal of the spinal cord. It was rarely associated with syphilitic spinal meningitis. We report a case of neurosyphilis characterized by syringomyelia.

Case report

A 40-year-old male, presented with a 3-year history of progressive gait disturbance. He had extramarital unprotected sexual contacts, but denied any history of trauma, spinal intervention or meningitis. The neurological examination found hypertonia, hyperreflexic and grade-4 power of both lower limbs, with dermatomal sensory deficit at the T2–T4 sensory level. The magnetic resonance imaging (MRI) of the cervicothoracic spine showed hypointense signals on T1 sequences and hyperintense signals on T2 in the cord extending from C7 to T4, compatible with syringomyelia or edema (Figure 1). Axial views confirmed the presence of a fluid-filled central cavity (Figure 2). Both cerebellar tonsils were above the foramen magnum. Blood tests were positive for syphilis (positive reaction of the VDRL (Venereal Disease Research Laboratory) and TPHA (*Treponema pallidum* hemagglutination) tests at 1:640 dilutions). Cerebrospinal fluid examination revealed 40 leukocytes; mainly lymphocytes (no red blood cells) and provided a protein level of $0.76\,g\,l^{-1}$. VDRL test in cerebrospinal fluid was reactive (1:512 dilution) and TPHA test was positive. The diagnosis of syringomyelia associated with syphilitic spinal meningitis was established, because the clinical presentation is for a chronic centromedullary processes and the MRI images represent syrinx rather than edema in the cord. The patient received high-dose intravenous penicillin: crystalline penicillin G (30 million U i.v. daily) for 10 days, 3-monthly for 1 year. There was significant clinical improvement with negative cerebrospinal fluid–VDRL and TPHA in the sixth month. A follow-up cervicothoracic spine MRI, performed 30 months later, showed that the syringomyelia had disappeared with generalized dorsal cord atrophy (Figure 3).

Discussion

Syringomyelia is a condition consisting of a fluid cavity formed in the central canal of the spinal cord. It has been associated with trauma, congenital anomalies, tumors, arachnoiditis and inflammatory central nervous system

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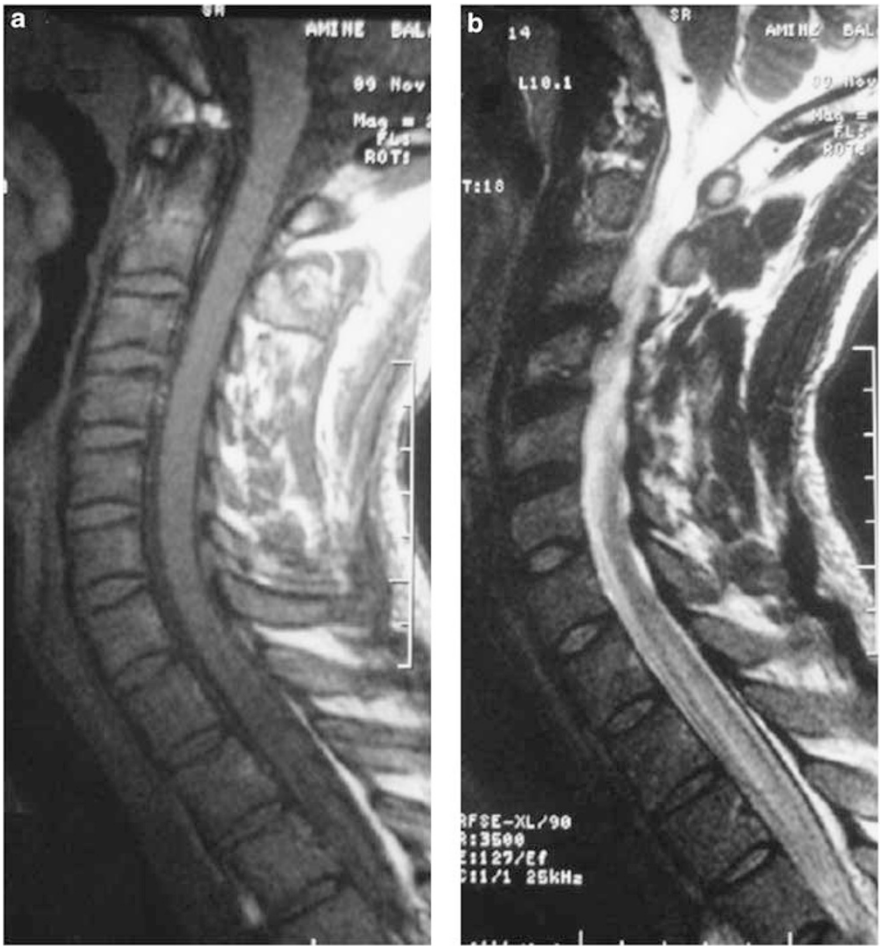

Figure 1 Initial study. Sagittal mid-slice view of the cervicothoracic spine. Bony elements and the craniocervical junction have normal appearances. There were hypointense signals on T1 sequences (**a**) and hyperintense signals on T2 (**b**) in the cord extending from C7 to T4, compatible with syringomyelia.

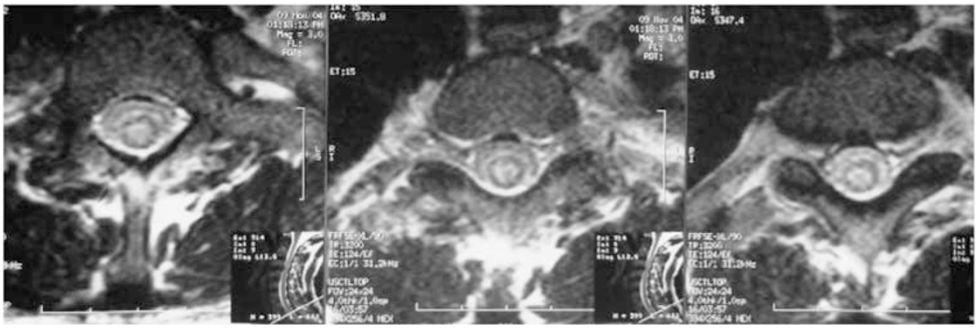

Figure 2 Initial study. Axial view at the level of T3. Presence of a fluid-filled central cavity, seen as hyperintense signals on T2.

diseases.[1] The widely supported pathogenic theory is that syrinx formation is most likely the result of aberrant flow of cerebrospinal fluid.[1] Neurosyphilis is a very old infection of the central nervous system caused by the spirochete *Treponema pallidum*.[2] The AIDS pandemia have brought neurosyphilis back to the center of attention in global health.[2] Its clinical presentation may include acute lymphatic meningitis, stroke, dementia and myelopathy.[3] Syphilitic spinal meningitis has rarely been described as a cause of syringomyelia. It was described in the early literature, but has not been the subject of any subsequent reports. A MEDLINE search from 1980 to 2009 provided one case in the English language literature. Bulundwe[4] reported a 53-year-old man admitted with a progressive history of spastic paparaesia. MRI of the spine showed dorsal syringomyelia and serodiagnostic tests for syphilis were positive. A follow-up MRI demon-

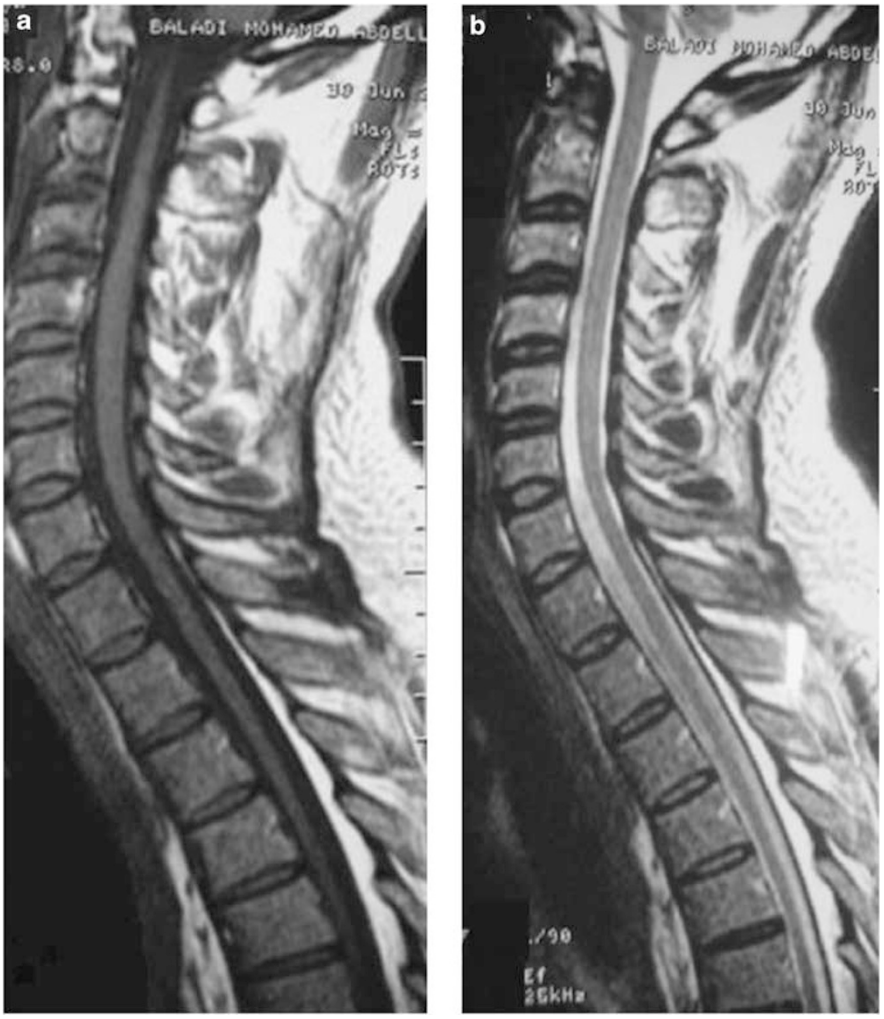

Figure 3 Follow-up cervicothoracic spine MRI at 30 months showed that the syringomyelia had disappeared with generalized dorsal cord atrophy (**a**, **b**).

strated that the cavity had reduced significantly after penicillin therapy. The pathophysiology of syringomyelia in syphilitic spinal meningitis remains unclear. The most plausible explanation is that an ischemic process, resulting in myelomalacia, predisposes to the formation of syringomyelia.[4] Although there are few reports of spinal MRI findings in syphilitic meningomyelitis, cerebral MRI findings have reported various small infarcts that are related to a focal syphilitic endarteritis.[5] Other mechanisms are reported such as specific granulomatous infiltration and meningial inflammatory process.[5] Involvement of thoracic segments present in this case, as was also seen by Bulundwe, could be compatible with a vascular pathogenesis. The absence of any other predisposing causes in this case, particularly cerebellar octopia and basal intracranial arachnoiditis, as well as collapse of the syrinx and improvement of related symptoms after penicillin treatment, suggests that there is a genuine causative link between syphilitic spinal meningitis and syringomyelia, rather than simple coincidence. Increased use of MRI in spinal syphilitic disease at earlier stages may help to elucidate the processes and pathways involved in syrinx formation.

Conclusion

In cases of syrinx due to syphilitic spinal meningitis, in which other causes of syrinx formation have been excluded, treatment should be directed toward treating neurosyphilis, rather than primary drainage of the syrinx.

Conflict of interest

The authors declare no conflict of interest.

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