

An Interesting Case of Intracranial Tuberculoma with Spinal Tuberculous Spondylitis in a Patient with Muscular Dystrophy

Kalyani J*, Saravanan S and Narayanan S

Department of Neurology, Tirunelveli Medical College, Palayamkottai, Tirunelveli, Tamil Nadu, India

Abstract

This case describes an unusual or novel occurrence. An unexpected association between intracranial tuberculoma and spinal tuberculosis. This is an unexpected event in the course observing and treating a patient with muscular dystrophy. We report a case combination of spinal tuberculous spondylitis and intracranial tuberculoma which is extremely rare. So far only five cases have been reported in the literature. 32-year-old female who is a known case of muscular dystrophy presenting with fever, diplopia, low back ache and motor weakness of both upper and lower extremities based on magnetic resonance imaging and polymerase chain reaction, we diagnosed as tuberculoma. She was started with conventional antituberculous treatment and steroids. The association of potts spine with intracranial tuberculomas is extremely rare. Up to date, there are only few cases which have been reported in the literature. Intracranial tuberculomas associated with intramedullary tuberculomas only about 5 cases has been reported worldwide.

Keywords: Intracranial tuberculoma; Brain; Spine; Weakness and magnetic resonance imaging

*Corresponding author: Jasmine Kalyani

✉ jasminekalyani31@gmail.com;
cbaskarchelliah@gmail.com

Department of Neurology, Tirunelveli Medical College, Palayamkottai, Tirunelveli, Tamil Nadu, India.

Tel: 9442370976

Citation: Kalyani J, Saravanan S, Narayanan S (2022) An Interesting Case of Intracranial Tuberculoma with Spinal Tuberculous Spondylitis in a Patient with Muscular Dystrophy. J Neurol Neurosci Vol.13 No.1:405

Received: 20 October 2021; Manuscript No. ipjnn-21-11193; **Editor assigned:** 22 October 2021; PreQC No. P-11193; **Reviewed:** 15 January 2022; QC No. Q-11193; **Revised:** 21 January 2022, Manuscript No. R-11193; **Published:** 28 January 2022

Introduction

Tuberculosis which is a catastrophic infectious disease caused by Mycobacterium tuberculosis presents with extra pulmonary forms with drug resistance in the recent days [1-7]. Most common manifestations of tuberculosis in the CNS [8] are tuberculous meningitis [9] and intracranial tuberculoma. Brain is far more commonly affected than the spinal cord. Infratentorial tuberculomas [10] are more frequent in children, whereas lesions are mostly supratentorial [11] in adults. Tuberculous spondylitis, also known as Pott disease, refers to vertebral body osteomyelitis and intervertebral discitis from tuberculosis (TB). The spine is the most frequent location of musculoskeletal tuberculosis almost 50%. In spinal tuberculosis, characteristically, there is destruction of the intervertebral disk space and the adjacent vertebral bodies, collapse of the spinal elements, and anterior wedging leading to the characteristic angulation and gibbus. Discitis [12] and/or osteomyelitis usually affects the lower thoracic and upper lumbar levels of the spine.

Spine is involved due to hematogenous spread [13] that can occur via both arteries and veins, resulting in different patterns of infection.

Spread through the anterior arterial arcade that richly supplies the subchondral paradiscal bone results in infection anterosuperiorly and anteroinferior, adjacent to the disc [14]. In adults and particularly older individuals the disc is conspicuously spared due to its sparse vascularity. In contrast, in younger individuals, especially children, the disc may be involved early as it has a far richer blood supply.

Infection then spreads beneath the longitudinal ligaments and can lead to infection of adjacent vertebral bodies. Gradual anterior collapse typically results in an acute kyphotic or gibbus deformity [15]. This angulation, coupled with epidural granulation tissue and bony fragments, can lead to cord compression [16,17]. Central involvement: Spread via the venous plexus of Batson typically results in infection arising centrally within the vertebral body. This is more common in older individuals [18]. Gradual collapse can result in vertebra plana and acute kyphotic or gibbus deformity. This angulation, coupled with epidural granulation tissue and bony fragments, can lead to cord compression.

Posterior involvement, also known as an appendiceal [19] is also due to venous hematogenous spread via the posterior venous plexus pattern. Synovial involvement is relatively rare but can be

seen involving facet joints and atlantoaxial and atlanto-occipital joints. In late-stage spinal tuberculosis, large paraspinous abscesses can develop without severe pain or frank pus or prominent inflammatory signs and symptoms; thus "cold abscess."

Incidence of neurologic complications in spinal tuberculosis varies from 10 to 43%.

Clinical Presentation

A 32-year-old female immunocompetent patient who is a known case of muscular dystrophy came with signs of headache, diplopia, and weakness in both upper and lower limbs. She had severe low back ache and progressive weakness of both lower limbs. There was also the history of the evening rise of temperature, loss of weight and appetite. On examination, she had quadriparesis with a power 2/5 proximally and 4/5 distally in upper limbs and 2/5 in the lower limbs both proximally and distally.

Both superficial and deep tendon reflexes were absent and plantar was extensor. Tone was hypotonia in both lower limbs. Generalised wasting was present. She presented with sensory involvement in the form of reduced perception of all modalities from T₁₀ segmental level. There was excruciating radiating pain from the lower back down to both legs which was aggravated by movement, coughing and straining at stools. Regarding higher mental function she was conscious, oriented, memory, speech and behaviour were normal. She had right lateral rectus palsy.

On evaluation, erythrocyte sedimentation rate (ESR) was 40mm/h, chest X-ray was normal. Sputum examination for acid fast-bacilli (AFB) could not be done as a patient had no cough. Mantoux test was positive and cerebrospinal fluid (CSF) was clear, with 4 white blood cell/dL (100% lymphocytes), sugar 52 mg/dL, proteins 37 mg/dL, chloride 89mmol/L. AFB staining was negative in CSF with adenosine deaminase activity levels of 7 IU/L. Magnetic resonance imaging (MRI) brain showed well-defined ring-enhancing lesions with perilesional edema in pons, suggestive of tuberculoma (Figure 1). X-Ray spine showed bony destruction of D12 and anterior wedge fracture of L1 (Figure 2). Spine CT showed spondylitic destruction of D12 to L1 vertebral bodies, compression of conus medullaris and Rt sacroiliitis.

Discussion

Central nervous system tuberculosis is rare, affecting 0.5-2% of patients with systemic tuberculosis.

Tuberculoma is a peculiar manifestation of tuberculosis that might occur in any solid organ of the body. It is, usually, formed by conglomeration of several miliary tubercles [20], with the centre of the conglomeration becoming caseous. Caseous material gets inspissated and sometimes liquefied. A thick capsule may form around these lesions. Concurrent occurrence of intracranial tuberculomas along with spinal tuberculosis is extremely rare.

The case presented here was diagnosed in the background of muscular dystrophy. The chest X-ray of this patient was normal. The patient had elevated ESR and was symptomatic in the form of loss of weight and appetite with occasional evening rise of temperature. Magnetic resonance imaging is the optimal measure because it shows location, size, and number of lesions



Figure 1 Magnetic resonance imaging showing ring-enhancing lesions with perilesional edema in pons and suggested tuberculoma.

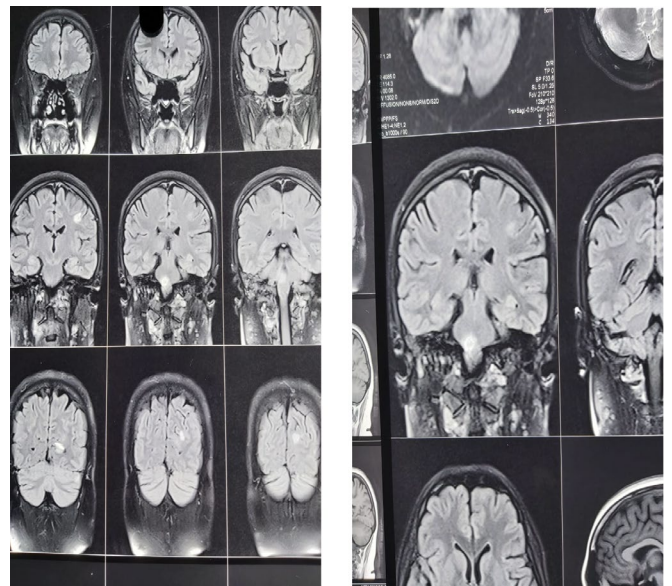


Figure 2 X-Ray of spine showing bone destruction at D12 and anterior wedge fracture of L1.

and the presence of degeneration and necrosis.

The differential diagnosis of tuberculomas includes granulomas such as cysticercal granulomas and neoplastic lesions such as astrocytoma, metastasis or lymphoma. In this case, the clinical presentation and size of the lesion combined with the classical ring enhancement and surrounding edema was thought to be typical of a tuberculous granuloma. Associated pott's spine also confirms the aetiology. Paraplegia is the devastating complication found in this patient, Hodgson, in his classical paper on Pott's paraplegia, classified paraplegia into two groups according to the activity of the tuberculous infection. These two groups were paraplegia of active disease (early-onset paraplegia) and paraplegia of healed disease (late-onset paraplegia). Early-onset paraplegia develops in the active stage of spinal tuberculosis and requires active treatment. This type of paraplegia has a better prognosis and is frequently seen in adults with Pott's spine.

Late-onset paraplegia may develop two to three decades after active infection. It is often associated with marked spinal deformities.

Conclusion

We report a case of concurrent occurrence of spinal tuberculous spondylitis and intracranial tuberculomas in a patient with muscular dystrophy. This case is being presented because of

extreme rarity. Medical therapy is generally advocated as the initial treatment. High index of suspicion is needed to diagnose extrapulmonary tuberculosis particularly in a developing country like India where the prevalence of all forms of tuberculosis is very high 5.05/1000 before considering other etiologies like demyelination.

References

- 1 Mercuri E, Bönnemann CG, Muntoni F (2019) Muscular dystrophies. *The Lancet* 394: 2025-2038.
- 2 Hartung MP (2021) Tuberculous spondylitis (Pott disease) with large psoas abscesses.
- 3 Garg RK (1999) Tuberculosis of the central nervous system. *Postgrad Med J* 75: 133-140.
- 4 Tomioka H, Namba K (2006) Development of antituberculous drugs: Current status and future prospects. *Kekkaku* 81: 753-774.
- 5 Shubin H, Lambert RE, Heiken CA, Sokmensuer A, Glaskin A (1959) Steroid therapy and tuberculosis. *J Am Med Assoc* 170: 1885-1890.
- 6 Keklikoğlu HD, Çoruh Y, Yoldaş TK, Keskin S (2008) Central nervous system tuberculoma and Pott's disease: Case report. *J Neurol Sci (Turkish)* 25: 142-147.
- 7 Wilkinson RJ, Rohlwick U, Misra UK, Van Crevel R, Mai NT, et al. (2017) Tuberculous meningitis. *Nature Rev Neurol* 13: 581-598.
- 8 Tuberculoma: Tuberculomas are conglomerate caseous foci within the substance of the brain that develop from deep-seated tubercles acquired during a recent or remote period of bacillemia. From: *Aminoff's Neurology and General Medicine (5th Edition)*, 2014.
- 9 Winarno AN (2018) Multiple intracranial tuberculomas: A rare case of CNS TB. *JKKI: Jurnal Kedokteran dan Kesehatan Indonesia* 9: 53-59.
- 10 Rajasekaran S, Soundararajan DC, Shetty AP, Kanna RM (2018) Spinal tuberculosis: Current concepts. *Global Spine J* 8: 96-108.
- 11 Clark RA, Blakley SL, Greer D, Smith MH, Brandon W (1991) Hematogenous dissemination of *Mycobacterium tuberculosis* in patients with AIDS. *Rev Infect Dis* 13: 1089-1092.
- 12 Burrill J, Williams CJ, Bain G, Conder G, Hine AW, et al. (2007) Tuberculosis: A radiologic review. *Radiographics* 27: 1255-1273.
- 13 Rajasekaran S, Shanmugasundaram TK (1987) Prediction of the angle of gibbus deformity in tuberculosis of the spine. *J Bone Joint Surg Am* 69: 503-509.
- 14 Sobti S, Grover A, John BP, Grewal SS, George UB (2018) Prospective randomized comparative study to evaluate epidural fibrosis and surgical outcome in patients undergoing lumbar laminectomy with epidural autologous free fat graft or gelfoam: A preliminary study. *Int J Appl Basic Med Res* 8: 71-75.
- 15 Garg RK, Somvanshi DS (2011) Spinal tuberculosis: a review. *J Spinal Cord Med* 34: 440-454.
- 16 Zhen P, Li XS, Lu H (2013) Single vertebra tuberculosis presenting with solitary localized osteolytic lesion in young adult lumbar spines. *Orthopaedic Surg* 5: 105-111.
- 17 Chandra BS, Girish TU, Thrishuli PB, Vinay HG (2013) Primary tuberculosis of the appendix: A rare cause of a common disease. *J Sur Tech Case Rep* 5: 32-34.
- 18 Fujimoto N, Gemba K, Yao A, Ozaki S, Ono K, et al. (2010) Tuberculosis diagnosed by PCR analysis of synovial fluid. *J Infect Chemother* 16: 53-55.
- 19 Patel R, Gannamani V, Shay E, Alcid D (2016) Spinal tuberculosis and cold abscess without known primary disease: Case report and review of the literature. *Case Rep Infect Dis* 2016: 1780153.
- 20 Sharma SK, Mohan A, Sharma A (2016) Miliary tuberculosis: A new look at an old foe. *J Clin Tuberc Other Mycobact Dis* 3: 13-27.