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Case Report
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Neurobrucellosis Presenting with Spinal Cord İnvolvement in a Young Patient: A Rare Case

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Abstract

Neurobrucellosis (NB), a rare complication of brucellosis, may affect both adults and children. Due to its nonspecific clinical and Cerebrospinal Fluid (CSF) findings, diagnosis remains challenging, especially in endemic regions such as Türkiye.

Keywords: Neurobrucellosis; Diagnosis; Etiology; Serological

Introduction

Neurobrucellosis (NB), a rare complication of brucellosis, may affect both adults and children [1]. Due to its nonspecific clinical and Cerebrospinal Fluid (CSF) findings, diagnosis remains challenging, especially in endemic regions such as Türkiye [2]. Neurological involvement may manifest as meningitis, encephalitis, myelitis, radiculitis, or neuropathy [3].

Case Presentation

An 18-year-old male livestock farmer presented with progressive difficulty walking, standing, and climbing stairs, preceded by gastroenteritis and a 20 kg weight loss. Neurological examination showed mild upper limb weakness [4,5] and pronounced proximal weakness in the lower limbs (right 2-/5, left 3-/5) with absent deep tendon reflexes and negative Babinski signs. Brain MRI was normal, while spinal MRI revealed cauda equina contrast enhancement.

Nerve conduction studies were unremarkable, but electromyography demonstrated acute denervation. CSF analysis revealed albumin 2589.9 mg/L, protein 3667.7 mg/L, glucose 35.8 mg/dL, and 540 leukocytes/mm^3. Brucella agglutination was weakly positive, and the Coombs test was positive at 1/640. Based on these findings, neurobrucellosis was diagnosed. Ceftriaxone (4 g/day), rifampicin (600 mg/day), and doxycycline (200 mg/day) were initiated (Figure 1). The patient showed marked clinical improvement, with near-complete recovery at discharge.

Discussion

Neurobrucellosis (NB) represents a rare yet clinically diverse manifestation of Brucella infection. The present case of an 18-year-old male with progressive lower-limb weakness, cauda equina enhancement on MRI, markedly Elevated Cerebrospinal Fluid (CSF) protein, and a strong

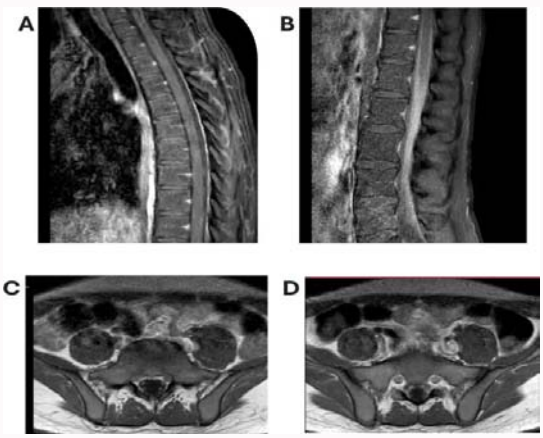

Figure 1: A: Post-contrast T1-weighted sagittal (A-B) and axial (C-D) spine MRI shows linear and nodular leptomeningeal enhancement involving the entire spinal cord and the nerve roots of the cauda equina.

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Table 1: Needle EMG findings.

		Spontaneous						MUAP			Recruitment
Muscle	Nerve	Roots	IA	Fib	PSW	Fasc	H.F.	Amp	Dur	PPP	Pattern
R.TA	Deep peroneal (fibular)	L4-L5	N	None	1	None	None	N	N	N	N
R.Gastrocnemius	Tibial	S1-S2	N	None	1	None	None	N	N	N	N
L.TA	Deep peroneal (fibular)	L4-L5	N	None	1	None	None	N	N	N	N
L.EHL	Deep peroneal (fibular)	L5-S1	N	None	2	None	None	1	1	Reduced	Reduced
L.VL	Femoral	L2-L4	N	None	1	None	None	1	1	Reduced	Reduced
R.VL	Femoral	L2-L4	N	None	1	None	None	1	1	Reduced	Reduced
L.Deltoid	Axillary	C5-C6	N	None	1	None	None	1	N	N	N
L.FDI	Ulnar	C8-T1	N	None	1	None	None	N	N	N	N
L.TFL	Superior Gluteal	L4-S1	N	1	2	None	None	1	N	N	N
R.TFL	Superior Gluteal	L4-S1	N	1	2	None	None	1	N	N	N

Abbreviations: TA: Tibialis Anterior; EHL: Extensor Hallucis Longus; VL: Vastus Lateralis; FDI: First Dorsal Interosseous; TFL: Tensor Fasciae Latae; IA: Interference Activity; Fib: Fibrilliation; PSW: Positive Sharp Wave; HF: High Frequency; Amp: Amplitude; Dur: Duration; PPP: Polyphasic Potentials; N: Normal

serological response to Brucella infection expands the spectrum of NB presentations. The patient's excellent response to combined antibiotic therapy further supports an infectious rather than autoimmune etiology Table 1.

Previous studies reported similar patterns: Zhuang, et al. observed spinal cord involvement in 66.7% of NB cases and limb weakness in 52% [4]. In contrast, Naderi, et al. described predominant meningeal findings with milder CSF abnormalities, indicating regional and temporal variability in disease expression [5].

Differential diagnoses included Guillain–Barré syndrome and tuberculous meningitis, but rapid response to specific antimicrobial therapy confirmed the infectious etiology. This case underscores the importance of considering neurobrucellosis in patients from endemic areas presenting with polyradiculoneuropathy, even in the absence of systemic brucellosis symptoms.

References

1. Alikhani A, Ahmadi N, Frouzanian M, Abdollahi A. Motor polyradiculoneuropathy as an unusual presentation of neurobrucellosis: a case report and literature review. BMC Infect Dis. 2024;24(1):491.
2. Kizilkilic O, Calli C. Neurobrucellosis. Neuroimaging Clin N Am. 2011;21(4):927-37.
3. Reza R, Gharaei FK, Faroughi F. Neurobrucellosis manifested by recurrent aseptic meningitis: A case report. ID Cases. 2025:40:e02193.
4. Zhuang W, He T, Tuerheng Jerheng J, He G, Wang BL, Yang YH, et al. Neurobrucellosis: laboratory features, clinical characteristics, antibiotic treatment, and clinical outcomes of 21 patients. BMC Infect Dis. 2024;24(1):485.
5. Naderi H, Sheybani F, Parsa A, Haddad M, Khoroushi F. Neurobrucellosis: report of 54 cases. Trop Med Health. 2022;50(1):77.