

**Misdiagnosed!****69F with progressive lower extremity weakness followed by deteriorating mental status**

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**Case**

A 69-year-old female presented with progressive bilateral lower extremity weakness evolving over several months. Except for previous lumbar disc surgery and newly diagnosed diabetes mellitus, she was healthy prior to onset of the weakness. Initially, her condition was characterized by marked weakness in her lower extremities in comparison to her upper extremities, with preserved sensory function in all four extremities. Reflexes were preserved in her upper extremities and absent in the knees and ankles. Lumbar magnetic resonance imaging (MRI) demonstrated disc bulging with some ventral effacement of the dural sac. There was severe central spinal stenosis at L3-4, plus evidence of the prior laminectomy at L4-5. These MRI findings were not significantly different from a prior MRI done a year earlier. Nerve conduction studies (NCS) and electromyographies (EMG) suggested polyradiculopathy of the lumbar region. Head CT was normal. Lumbar puncture was not performed at that time. Given the relatively unchanged MRI, autoimmune radiculopathy was suspected and patient was treated with intravenous immunoglobulin (IVIg) for 6 weeks, but this resulted in no improvement. She continued to decline and required nursing home care.

Two months later, the patient was found obtunded and admitted with pneumonia. She was found to have flaccid, areflexic paralysis of the lower extremities, while upper extremities showed normal strength and reflexes. She had dysconjugate gaze of unknown duration. Spinal fluid demonstrated WBC 85 /uL (75% lymphocytes), RBC 9/uL, glucose 60 mg/dL, and protein 3984 mg/dL. A repeat spinal MRI showed diffuse intrathecal leptomeningeal enhancement and thickened cauda equina (Figure 1). Brain MRI demonstrated periventricular T2 hyperintensities involving both thalami, hypothalamus, periaqueductal white matter, dorsal pons, superior cerebellar peduncles, and the left dentate nucleus (Figure 2). There was no diffusion restriction or gadolinium enhancement. Repeat

NCS/EMG was consistent with a lumbosacral polyradiculopathy, with a high suspicion for cauda equine syndrome.



Figure 1: sagittal lumbar MRI images of the following sequences (from left to right): T2, T1 post contrast with fat saturation, T1 and T2 STIR. There is diffuse intrathecal leptomeningeal enhancement and thickened cauda equine.

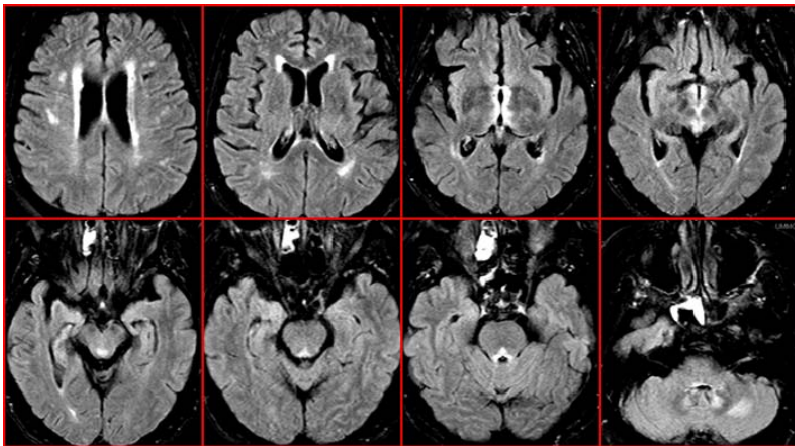


Figure 2: brain MRI, axial FLAIR images showing hyperintense lesions in both thalami, hypothalamus, periaqueductal white matter, dorsal pons, superior cerebellar peduncles, and the left dentate nucleus.

In concern for systemic malignancy, a CT chest/abdomen/pelvis was performed, showing no evidence of primary malignancy. Spinal fluid was obtained three separate times after the initial tap, with the latter two from the cervical region. Flow cytometry confirmed large B-cell lymphoma (CD 19, 20, 38, and 45 positive). A bone marrow biopsy showed no evidence of B cell lymphoma, ruling out non-Hodgkin's lymphoma with secondary spread to the CNS; therefore confirming primary CNS B-cell lymphoma. She subsequently had waxing and waning mental status, performing simple commands

and occasionally saying a word or two. Towards the end of the one month hospitalization, she developed left ptosis, then left-sided facial paralysis. Repeat brain MRI three weeks from the first one showed no change in T2 hyperintensities. However, new enhancing lesions appeared in the left sclera (Figure 3), as well as multiple cranial nerves (Figures 4 and 5). She was discharged to a nursing home and died two months later.

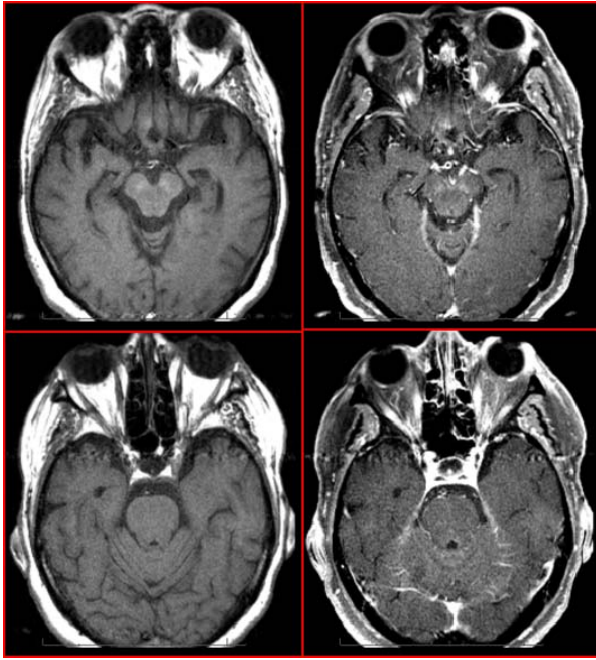


Figure 3: MRI of the orbits T1 pre- (left) and T1 post-contrast (right) showing enhancement of the left sclera and the surrounding tissues.

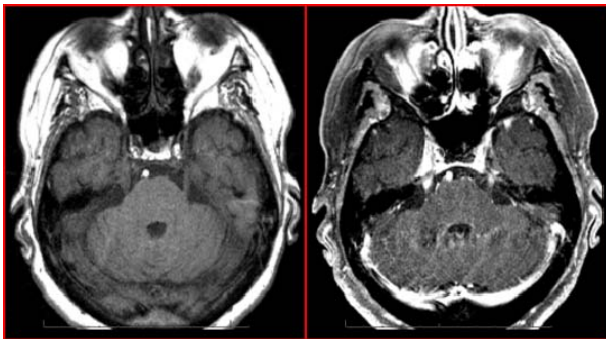


Figure 4: MRI of the brain pre- (left) and post-contrast (right) showing enhancement of the trigeminal nerve bilaterally. There is enhancement of Meckel cave and foramen ovale on the right. On the left there is enhancement of foramen ovale. No definite enhancement visualized in left Meckel's cave.

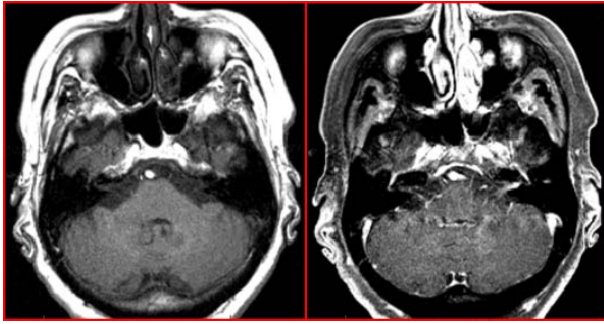


Figure 5: MRI of the brain pre- (left) and post-contrast (right) showing enhancement in left internal auditory canal, likely representing leptomenigeal process. There is also increased signal in 7th and 8th cranial nerve cisternal segment.

### **Discussion:**

**Primary CNS lymphoma (PCNSL)** is an extranodal non-Hodgkin lymphoma<sup>1</sup> with tropism for the CNS microenvironment, to which it is confined.<sup>2</sup> From 1970 to 2000, the incidence of PCNSL increased, likely due to HIV, though it continues to occur among immunocompetent individuals and appears to have stabilized over the past ten years. Over 50% of PCNSL cases demonstrate a focal enlarging mass,<sup>1</sup> but occasionally it presents in the orbit, the leptomeninges, or the spinal cord.<sup>3</sup> Uncharacteristic for PCNSL, this case demonstrated significant meningeal involvement and presented with a cauda equine syndrome.

Since PCNSL most commonly presents as a mass lesion, the more unusual presentations may lead to incorrect diagnoses, therefore delaying treatment. In this patient's case, an autoimmune polyneuropathy was initially considered, but perhaps performing the lumbar puncture earlier in its course may have drawn this diagnosis into question. Depending on the overall condition of the patient, treatment options for PCNSL include agents such as high-dose methotrexate and high-dose cytarabine. Radiation therapy continues to be under investigation, though it is not recommended in patients more than 60 years old. Regardless of treatment used, the prognosis remains relatively poor.<sup>4</sup> As we continue to improve our recognition of different presentations, earlier diagnosis will still provide some benefit to the patient, even if it is a small extension of life that may be offered.

**References**

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