

Challenging Case: Spontaneous Cerebral Spinal Fluid Leakage Resolved after Three Epidural Blood Patch

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Introduction

We report a challenging case that a spontaneous cerebral spinal fluid (CSF) leakage was treated by three epidural blood patches.

Material and Methods

Patient informed consent was obtained. There was no patient protected health information.

Results

A 27 young healthy female presented with severe orthostatic headache. The headache was not present when she woke up, but it instantly started when she got out of bed and increased in intensity to 10/10 over the course of the morning. It was constant, and associated with neck stiffness, nausea and vomiting. Her neuro examination was unremarkable and initial CT/CTA was normal. It did not improve with migraine cocktail.

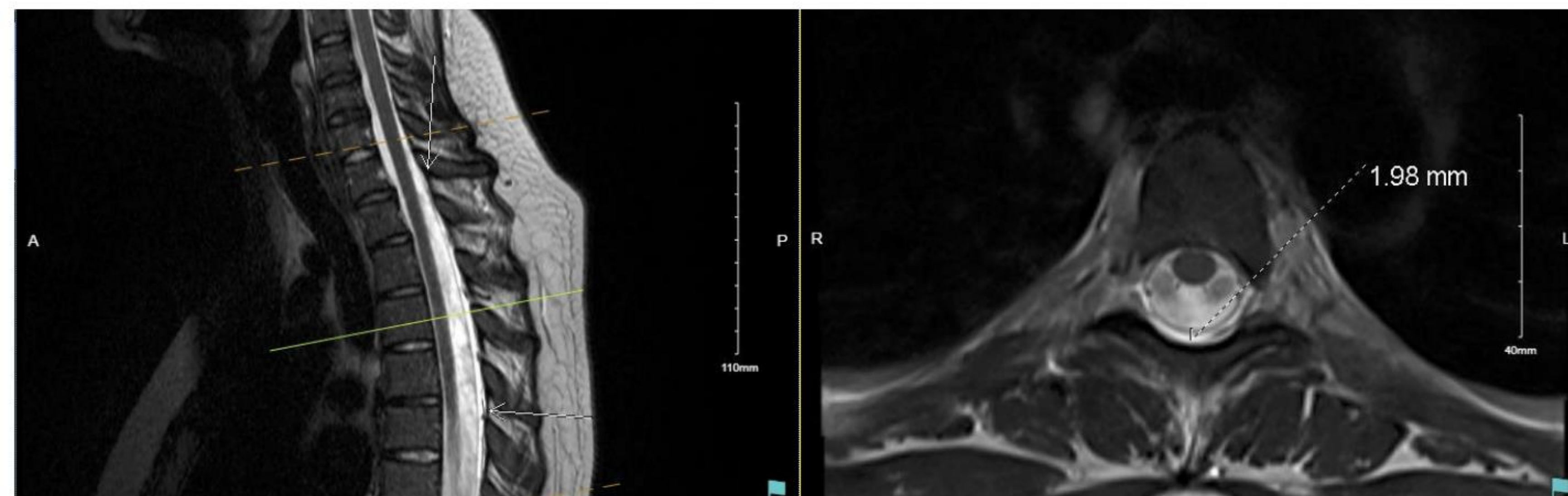


Figure 1: MRI spine showed CSF leakage as epidural collection extending from T1 to L1 (most prominence at T6).

Results

Lumbar puncture (LP) was performed to rule out subarachnoid hemorrhage and infectious etiologies. CSF opening pressure was 10, with elevated WBC, traumatic RBC elevation, normal protein, without xanthochromia, which was indicative of aseptic meningitis. CSF HSV was negative and prophylactic antibiotics were discontinued. MRI brain w/o showed extraxial hemorrhage abutting the superior sagittal sinus and cortical veins, representing cortical vein thrombosis vs. atypical subdural hemorrhage. Neurointerventional angiogram confirmed the cortical vein thrombosis (CVT). MRI spine showed CSF leakage as epidural collection extending from T1 to L1 (most prominence at T6), and from L3 to S1-2 (perineural cyst in S1-S2 neural foramen) (Figure 1). It's thought that the CSF leak was spontaneous as the orthostatic headache even started before the LP, and likely the CSF leakage caused the CVT. An epidural blood patch (EBP) was performed at L3/4, and another one at T6 through a catheter. Unfortunately her orthostatic headache only improved temporarily after the EBP. Then further images were performed to determine the areas of CSF leakage. Though CT myelogram did not find obvious source of leakage, CT with contrast suggested the leak was at L4/5 throughout S1-2 (Figure 2). Then a third EBP was performed at L5/S1 which resolved her orthostatic headache completely. The patient was discharged with apixiban and following up outpatient to work up hypercoagulability.

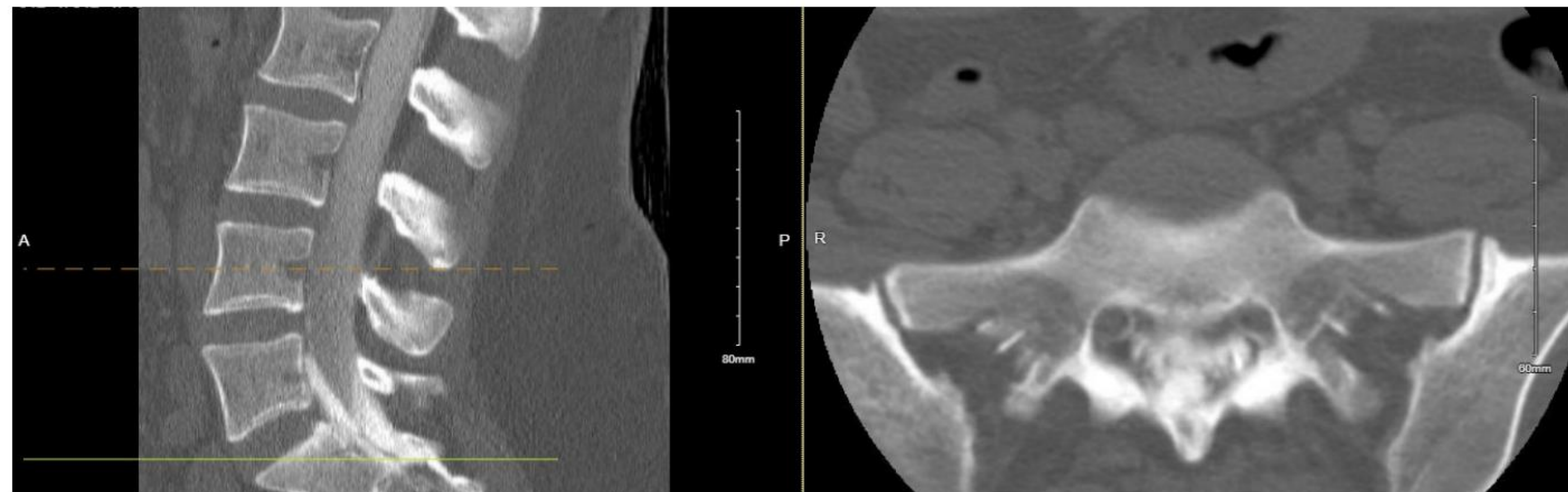


Figure 2: CT with contrast suggested the leak site was at L4/5 throughout S1-2.

Discussion

Spontaneous CSF leak is more common than previously appreciated [1]. Low CSF pressure may lead to thrombosis due to downward traction on the cortical sinuses and veins [2]. EBP is the most common nonsurgical intervention if the patients fail conservative treatments. Some patients may need multiple treatment, for instance only 9 out 25 patients (36%) with spontaneous CSF leak responded well to the first EBP, and the rest of the patients received at least second or more EBP [3]. The possible reason is that the source of leak is hard to find as in the scenario of our patient who requested multiple imaging modalities to explore the site of leakage. Therefor precise locating the source of CSF leak is fundamental to successful treatment and dedicated diagnostic and therapeutic guidelines are required [2].

References

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