Teaching Neuro*Images*: False-positive magnetic resonance sign in spontaneous spinal CSF leak

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A 39-year-old woman developed orthostatic headache. Cranial MRI indicated spontaneous intracranial hypotension (SIH) (figure, A). Spinal MRI suggested CSF leaks at C1–2, C2–3, and C5–6 levels (figure, B and C), but both radionuclide cisternography and CT myelography (immediate and 3-hour delayed scanning) showed no CSF leak at C1–2 and C2–3 levels (figure, D–F). Conservative management with absolute bed rest and IV hydration resulted in gradual disappearance of the headache in 3 weeks and MRI resolution in 3 months.

Extra-arachnoid fluid collections at C1–2 and C2–3 levels are common MRI findings of SIH.[1,2] However, MRI is a static rather than dynamic study. These collections do not necessarily indicate the actual CSF leakage sites and are probably the result of a transudate from local dilated epidural veins.[2]

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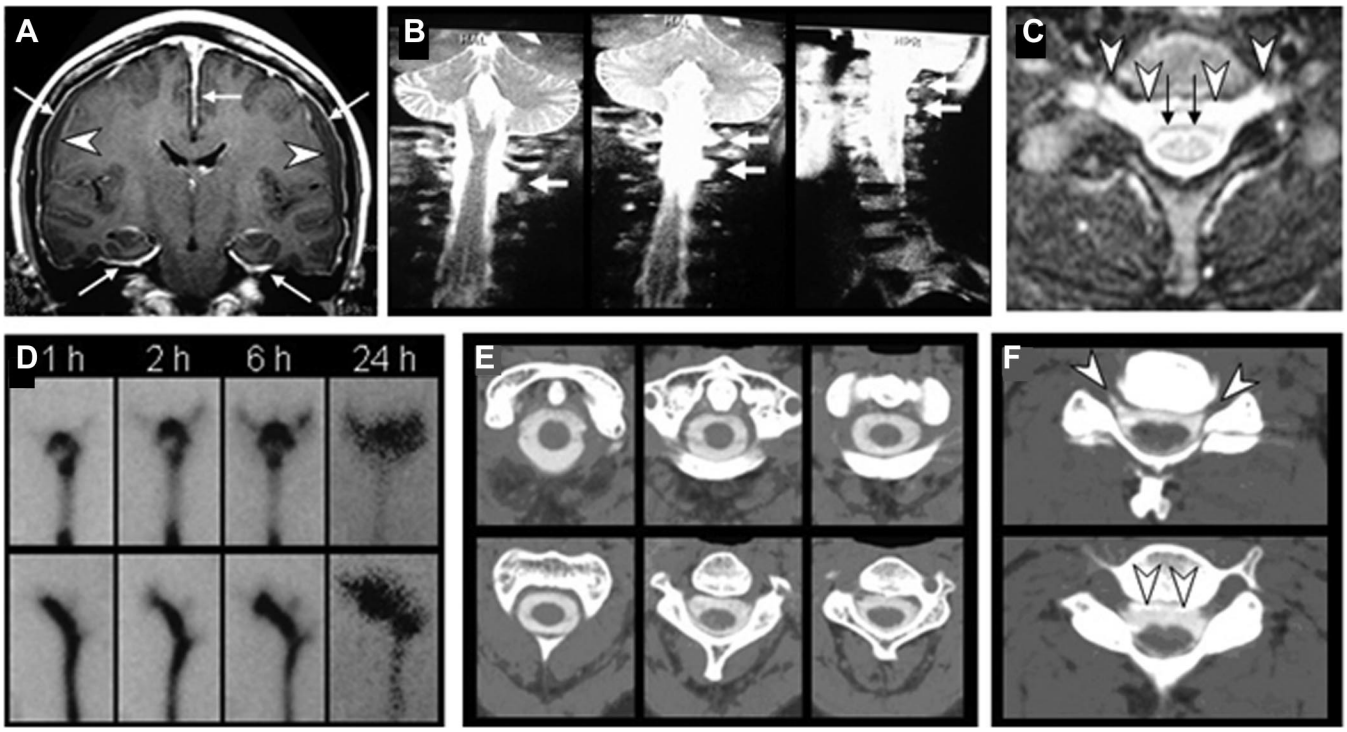
Figure Neuroimaging findings



(A) T1-weighted gadolinium-enhanced MRI demonstrates pachymeningeal enhancement (arrows) and subdural hematomas (arrowheads). (B) Noninvasive magnetic resonance myelograms show extra-arachnoid fluid collections at C1–2 and C2–3 levels (arrows). (C) T2-weighted fat-saturated MRI at C5–6 level shows ventral extradural fluid collections (arrowheads), separated from the thecal sac by hypointense dura (arrows) and along bilateral nerve sleeves. (D) Radionuclide cisternograms (upper row: posterior view; lower row: left view) reveal an absence of radioactivity over the cerebral convexities, an indirect sign of CSF leakage. (E) Sequential CT myelograms from C1 (upper left) to C3 (lower right) levels show no CSF leak. (F) CT myelograms at C5–6 level demonstrate CSF leaks (arrowheads).

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Disclosure: The authors report no disclosures.

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Neurology 2011;76;e15
DOI 10.1212/WNL.0b013e3182088133