The most common etiology for spontaneous intracranial hypotension (SIH) is a cerebrospinal fluid (CSF) leak along the spinal axis [1], and spinal dural tears are also an increasingly recognized cause of superficial siderosis (SS) of the central nervous system [2]. MRI plays a pivotal role in the diagnosis of both of these conditions. Characteristic intracranial MRI features of SIH include subdural fluid collections, meningeal enhancement, venous engorgement, brain sagging, and pituitary hyperemia [3], while a number of direct and indirect findings have also been increasingly recognized on spinal MRI [4]. Although SS is classically diagnosed with MRI through the identification of magnetic susceptibility from hemosiderin deposition in the subpial layers of the brain and spinal cord, the presence of a longitudinally extensive extradural fluid collection on spinal MRI indicates that a CSF leak must be sought [5].

The presence of a spinal CSF leak can be accentuated on MRI through the suppression of epidural fat signal. More recently, heavily T2-weighted MR myelography has been advocated as a means of improving sensitivity [6, 7]. Contrast-enhanced MR myelography is also playing an increasing role in this field through the identification of an active spinal CSF leak [8]. The absence of ionizing radiation exposure and the potential to better capture very slow or intermittent CSF leaks are advantages of this technique. Although the intrathecal administration of gadolinium-based contrast agents is not yet sanctioned by the United States Food and Drug Administration, there is increasing data to support its safety and efficacy [9].

Although MRI is frequently sufficient to suggest the presence of a CSF leak, one limitation is that conclusive localization is not always possible because of insufficient temporal resolution. Targeted minimally invasive therapies and surgical approaches require precise knowledge of the site of CSF leak. As a result, additional myelographic techniques have been developed and used successfully for this purpose. Dynamic CT myelography improves the likelihood of visualizing the site of CSF leak by performing the intrathecal administration of iodinated contrast during CT acquisition [10]. Although offering superior anatomic detail, very rapid CSF leaks may still not be localizable with this method, so digital subtraction myelography was developed as an adjunct test that provides improved temporal resolution [11].

REFERENCES