Overshunting-associated myelopathy

Flattened spinal cord compressed by epidural venous plexus

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A 50-year-old woman presented with a 1-month history of progressive spastic quadriparesis. She had undergone nonprogrammable ventriculoperitoneal (VP) shunt placement after intraventricular hemorrhage due to a ruptured arteriovenous malformation 16 years previously. Neurologically, she had neck extensor weakness (Medical Research Council [MRC] grade 4), symmetrical weakness of her upper extremities (right/left MRC grades 4/4), and weakness of her right proximal lower extremity (MRC grade 4). She also had spasticity and hyperreflexia in all 4 extremities with extensor plantar reflexes. Light touch and vibratory sensation was impaired in the right distal lower extremity. Neck MRI demonstrated that the cervical spinal cord was compressed from both sides by an engorged epidural venous plexus (figure 1). Brain MRI revealed diffuse pachymeningeal enhancement and slit ventricles. Overshunting-associated myelopathy (OSAM) was diagnosed. Her symptoms resolved completely 3 months after VP shunt revision (figure 2).

OSAM is an unusual complication caused by intracranial hypotension and compensatory engorgement of the epidural venous plexus after CSF shunting.¹ Compensatory increased intracranial venous blood volume for CSF volume depletion is generally believed to directly flow into the valveless plexiform venous network within the cervical spinal canal through the anatomically diverse venous drainage of the craniocervical junction.^{2,3} Multiphase contrast-enhanced MRI clearly demonstrates the characteristic imaging findings of OSAM and its dramatic changes. OSAM is rare but important because recognition of

Figure 1 MRI findings

(A) Sagittal T2-weighted MRI shows swelling of the cervical spinal cord. Axial (B) T2-weighted and (C) T1-weighted contrast-enhanced MRI at the C2 level (dotted line) and (D) coronal T1-weighted contrast-enhanced MRI show an engorged epidural venous plexus (arrows) with marked compression of the spinal cord.

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Figure 2 Follow-up MRI findings obtained 3 months after shunt revision

this reversible entity can preclude unnecessary surgical decompression and delayed treatment.^{1,2}

Author contributions

J.K. designed the study, collected and analyzed the data, and wrote the article. Y.N. collected and analyzed the data and reviewed the article. T.H. collected and analyzed the data and reviewed the article. E.T. collected and analyzed the data and reviewed the article. M.K. collected and analyzed the data and reviewed the article. T.Y. designed the study, analyzed the data, and wrote the article.

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