

Venous sinus stenosis

Venous sinus stenosis is a narrowing of the veins that drain blood from the brain, which can lead to increased pressure inside the skull. Idiopathic intracranial hypertension (IIH) is a neurological disorder characterized by increased pressure inside the skull without an identifiable cause. It often presents with symptoms such as headaches, visual disturbances, and tinnitus.

Recent studies have suggested that venous sinus stenosis may be a contributing factor to IIH, and that treatment of the stenosis may help alleviate symptoms of the disorder. The theory is that stenosis of the venous sinuses leads to impaired drainage of cerebrospinal fluid (CSF) from the brain, which in turn increases intracranial pressure and causes symptoms of IIH.

Several treatments have been used to address venous sinus stenosis in IIH patients, including endovascular stenting or angioplasty, and these procedures have shown promise in reducing intracranial pressure and improving symptoms in some patients. However, there is still much debate among physicians and researchers about the role of venous sinus stenosis in the management of IIH, and more research is needed to determine the most effective treatment strategies for this disorder ¹⁾.

The cerebral sinus narrowing might be a consequence of the increased **intracranial pressure**. However, venous sinus narrowing/thrombosis could cause increased intracranial pressure as well. This situation could represent the chicken or egg debate as to which occurs first ²⁾.

Endovascular **stenting** is an effective treatment for patients with clinically significant cerebral venous sinus stenosis. Traditionally, stenting is indicated in elevated intravenous pressures on conventional venography; however, noninvasive monitoring is more desirable. Quantitative magnetic resonance angiography is an imaging modality that measures blood flow non-invasively. Established in the arterial system, applications to the venous sinuses have been limited.

Case series

Five patients with intracranial hypertension secondary to venous sinus stenosis underwent cerebral venous stenting between 2009 and 2013 at a single institution. Preoperatively, venous sinus flow was determined by using Quantitative magnetic resonance venography (qMRV), and intravenous pressure was measured during venography. After stenting, intravenous pressure, qMRV flow, and clinical outcomes were assessed and compared.

A mean prestenotic intravenous pressure of 45.2 mm Hg was recorded before stenting, which decreased to 27.4 mm Hg afterward (Wilcoxon signed rank test $P = .04$). Total jugular outflow on qMRV increased by 260.2 mL/min. Analysis of the change in intravenous pressure and qMRV flow identified a linear relationship (Pearson correlation $r = 0.926$). All patients displayed visual improvement at 6 weeks.

Venous outflow by qMRV increases after endovascular stenting and correlates with significantly improved intravenous pressures. These findings introduce qMRV as a potential adjunct to measure venous flow after stenting, and as a plausible tool in the selection and postoperative surveillance of the patient who has cerebral venous sinus stenosis ³⁾.

1)

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2)

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3)

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