

Venous Sinus Stenting in Patients Without Idiopathic Intracranial Hypertension

Michael Robert Levitt MD; Felipe Albuquerque MD; Bradley A Gross MD; Karam Moon MD; Ashutosh Jadhav; Andrew F.

Ducruet MD; R. Webster Crowley MD

University of Washington, Seattle WA; Barrow Neurological Institute, Phoenix AZ; University of Pittsburgh, Pittsburgh

PA; Rush University, Chicago, IL.

Introduction

Venous sinus stenting is an effective treatment option for patients with idiopathic intracranial hypertension and venous sinus stenosis. Its utility in the treatment of symptomatic venous sinus stenosis without a diagnosis of idiopathic intracranial hypertension remains unknown.

Methods

We performed a retrospective review of a prospective multicenter database of patients undergoing venous sinus stenting between January 2008 and February 2016. Patients with acute dural venous sinus thrombosis, arteriovenous fistula or arteriovenous malformation, or idiopathic intracranial hypertension were excluded. Baseline and follow-up clinical, radiological and ophthalmological information was recorded.

Results

Nine patients met inclusion criteria and underwent venous sinus stenting for symptomatic dural venous sinus stenosis. Reason for treatment included isolated unilateral pulsatile tinnitus (n=1), congenital hydrocephalus (n=2), unilateral pulsatile tinnitus following prior venous sinus thrombosis (n = 1), and acquired hydrocephalus following dural sinus thrombosis (n = 2), meningitis (n = 2) and tumor invasion into the dural venous sinus system (n = 1). Six patients underwent lumbar puncture or shunt tap, and all of these patients had elevated intracranial pressure. All stenoses were located in the transverse sinus, transverse-sigmoid junction and/or jugular bulb, and all were treated with self-expanding bare-metal stents. At follow-up, clinical symptoms had resolved in all but two patients, both of whom had congenital hydrocephalus and preexisting shunts. There was no significant in-stent stenosis, and those patients with ophthalmological follow-up demonstrated improvement or resolution of papilledema.

Conclusions

Dural venous sinus stenting may represent a safe and effective treatment for patients with symptomatic venous sinus stenosis without idiopathic intracranial hypertension, but may not be effective in resolving the symptoms of congenital hydrocephalus.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the efficacy of venous sinus stenting in non-pseudotumor patients; 2) Discuss, in small groups, possible theories of pathophysiology of dural venous sinus stenosis; 3) Identify patients who may not benefit from such procedures.