

A Prospective Analysis of Endovascular Treatments of Chronic Cerebrospinal Venous Insufficiency in Patients with Multiple Sclerosis.

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Introduction: Recently an association has been made between Multiple Sclerosis (MS) and Chronic Cerebrospinal Venous Insufficiency (CCSVI) characterized by stenosis and reflux of the principal extracranial venous drainage including the Internal Jugular veins (IJV) and the Azygous veins (AV). This prospective study evaluates the safety, feasibility, and efficacy of percutaneous transluminal angioplasty (PTA) of extracranial venous stenosis and its influence on the clinical outcomes of MS.

Materials & Methods: 150 MS patients underwent a detailed evaluation of bilateral IJV and AV via selective venography, and patients with angiographic evidence of >50% venous stenosis underwent PTA. Clinical evaluation included MS Quality of Life (MSQOL), and Modified Fatigue Impact Scale (MFIS) at 3, 6, and 12 months. The study was conducted with IRB approval and statistical analysis was performed using two-tailed Student's t-test.

Results: Venography in 150 MS patients identified 267 central veins with >50% stenosis in the IJV (n=240/267, 90%) and AV (n=27/267, 10%), accounting for mean 1.8 lesions per patient. In treating IJV and AV lesions, PTA was technical feasible in 97%, technical successful in 77% (<20% residual stenosis), and 9% of lesions required re-interventions over a mean follow-up of 4 months. MS patient clinical evaluation indicated a significant improvement in the mean MSQOL Physical Health Composite scores (pre-PTA: 40.2 vs. post-PTA: 59.2, p=0.002), MSQOL Mental Health Composite scores (pre-PTA: 52.7 vs. post-PTA: 70.5, p=0.006), and Modified Fatigue Impact Scale (pre-PTA: 15.8 vs. post-PTA: 12.2, p=0.001).

Discussion & Conclusion: Results of this prospective study suggest an association between MS and CCSVI. PTA of venous stenosis in MS patients with CCSVI is feasible and safe, and results in significant clinical improvement as indicated by MSQOL and MFIS parameters. These findings need to be substantiated with future randomized blinded controlled trials that evaluate endovascular and surgical options for treatment of CCSVI.