

## **Short term evaluation of venous angioplasty in patients with chronic cerebrospinal venous insufficiency syndrome.**

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**Introduction:** Chronic cerebrospinal venous insufficiency (CCSVI) is a syndrome characterized by presence of several blockages obstructing the blood drainage of the central nervous system. CCSVI has been found to be highly prevalent in patients with multiple sclerosis (MS). Angioplasty of the internal jugular vein (IJV) and azygos vein (AZ) has been described as an effective method of treatment of CCSVI.

The aim of this study was to present the neurological outcome of venous angioplasty in patients with MS, and to assess the safety and effectiveness of that treatment.

### **Materials & Methods:**

In the time period between June 2010 and Jan 2011 420 (164 male; 256 female; mean age  $46,6 \pm 10,4$  years) patients with confirmed MS diagnosis were qualified for the selective venography of internal jugular veins and the azygos vein. The prevalence of disease type was as follows: relapsing-remitting (n=152), primary progressive (n=113), secondary progressive (n=145). Mean disease duration was  $11 \pm 7,9$  years. All patients had a MRI venography (1.5T Siemens) and Doppler sonography (Lab Vinco) examination. All patients had a neurological examination performed before the procedure with assessment of Expanded Disability Status Scale (EDSS), Fatigue Severity Scale (FSS), Multiple Sclerosis Impact Scale-29 (MSIS-29) scores. The decision to perform angioplasty was made if during the selective venography significant stenosis (defined as = or  $>50\%$ ) or a flow obstruction was noted. Effect of the procedure was assessed during the check-up visit scheduled 6 months after the angioplasty, or by questionnaires send by patients by e-mail. The Mann-Whitney test and the T-test were used for the statistical analysis of the variables,  $p<0.05$  was considered as statistically significant.

**Results:**

In 420 patients the venous angioplasty (IJVL-403, IJVR-386, AZ-25) was performed. Stents were implanted in 26 patients (IJVL-15, IJVR-7, AZ-5). There were 5 (1.1%) incidences of complications (3 arterio-venous fistulas, 2 pseudoaneurysms), 4 of them requiring surgical repair. In 2 patients we have observed thrombosis in the site of angioplasty without any clinical consequence. During the follow-up period 3 patients (0.7%) had a relapse of disease. Improvement in the following scores assessing the patients was observed: mean FSS (5,37 vs. 3,67  $p < 0,05$ ), mean MSIS-29 (Physical Compound 67 vs. 61; Psychological Compound 61 vs. 53; non-significant). There was no change in EDSS.

**Discussion & Conclusion:**

Venous angioplasty of CCSVI is a safe and well tolerated procedure with a minor and negligible complication rate. In our study we have noted only the access site complications, without the clinical sequel. The effect of the procedure on the neurological status of MS patients shows a favorable trend, though most of the scales has not reached the statistical significance. The only score demonstrating a significant improvement is the Fatigue Severity Scale. Further studies are necessary to validate the procedure.