



## **IVUS during jugular vein PTA in chronic cerebrovascular insufficiency**

***SCALISE F., AUGUADRO C., MANFREDI M., FARINA M.***

*Policlinico di Monza, MONZA, ITALY*

### **Aims**

Chronic cerebrospinal venous insufficiency (CCSVI) is a syndrome characterized by stenoses of the internal jugular (IJV) and/or azygous veins with opening of collaterals and insufficient drainage proved by reduced cerebral blood flow and increased mean transit time in cerebral MRI perfusional study. The diagnosis is achieved using color-doppler echography (ECD). CCSVI is frequently present in patients affected of multiple sclerosis (prevalence between 56 and 100%). Recently, the angioplasty of this abnormal venous conduits has been introduced with the aim to improve blood flow drainage. The aim of the study was to evaluate the diagnostic accuracy of ECD in the identification of morphologic abnormalities compared with intravascular ultrasound (IVUS) and angiography (ANGIO).

### **Methods and results**

50 consecutive patients underwent IJV angioplasty (PTA) because CCSVI. In 25/50 pts IVUS was performed. The parameters taken into consideration were: IJV maximum diameter (calculated with IVUS, ECD and ANGIO); IJV cross sectional area (calculated with IVUS, ECD and ANGIO). Bland-Altman test was utilized to compare the measurements obtained with ECD, IVUS and ANGIO. Results: the maximum diameter difference was  $0.5 \pm 0.71$  mm between ECD and IVUS ( $p = \text{NS}$ ),  $3.3 \pm 1.4$  between IVUS and ANGIO ( $p < 0.001$ ) and  $2.8 \pm 1.35$  between ECD and ANGIO ( $p < 0.001$ ). The cross sectional area difference between ECD and IVUS was  $-11.2 \pm 4.8$  mm<sup>2</sup> ( $p < 0.001$ ). ECD showed a good diagnostic accuracy (88%) in the identification of IJV valves (sensitivity 94%, specificity 78%, positive predictive value 88%, negative predictive value 88%). On the contrary ANGIO showed a diagnostic accuracy of 32% (sensitivity 6%, specificity 78%, positive predictive value 33%, negative predictive value 32%).

### **Conclusions**

ANGIO resulted inferior to ECD and IVUS in the identification of IJV valves. No significant differences between IVUS and ECD were found for the identification of vein valve abnormalities and the quantification of veins' diameters. Contrary, vessel mean cross sectional area is underestimated with ECD compared to IVUS. These results support the importance and the accuracy of ECD in the diagnosis of CCSVI.

