

## **Intracranial venous collaterals in cerebral venous thrombosis: clinical and imaging impact.**

Miguel A. Barboza, Carolina Mejias, Jonathan Colin-Luna, Alejandro Quiroz-Compean, Antonio Arauz

**Background:** Few studies have examined collateral formation in patients with cerebral venous thrombosis (CVT). The aim of this study was to analyze the impact of baseline intracranial venous collaterals on the clinical outcome and imaging features of patients with acute CVT.

**Methods:** Magnetic resonance images from consecutive patients with acute CVT were retrospectively analyzed. The category system described by Qureshi was used to assess the pattern of venous collaterals. Clinical and imaging features and outcomes were analyzed using bivariate and multivariate models to assess the association of collateral patterns with the type of parenchymal lesion and clinical outcome (modified Rankin Scale: mRs) at 30 and 90 days.

**Results:** One hundred patients were included (77 women; median age 32 years; and median of 18 months of follow-up). Venous collaterals were present in 88% of the patients; type I collaterals in 3 patients; type II collaterals in 27 patients; and type III collaterals in 58 patients. Twelve patients did not exhibit any collaterals. Cohen's Kappa coefficient between evaluators was 0.86. In the bivariate analysis, type III collaterals were associated with isolated intracranial hypertension and complete recovery, whereas type I collaterals were associated with encephalopathy. However, in the multivariate regression analysis, the collateral pattern was not associated with clinical presentation, type of brain lesion or outcome.

**Conclusions:** Intracranial venous collaterals are frequently found in patients with CVT during the acute phase. However, they do not have an independent effect on the type of brain damage, clinical manifestations or prognosis.