

Impact of CCSVI-like venous anomalies on cerebral haemodynamics:a mathematical study

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By means of a recently constructed global mathematical model for the entire human circulation we study the intra-cranial haemodynamical impact of extra-cranial CCSVI-like venous anomalies. Pressure and velocity fields in the full cardiovascular system are computed. Computational results are compared to MRI measurements. Our model predicts that extra-cranial venous strictures cause disturbed flow and increased pressure in the cerebral venous system. The predicted pressure increase of about 10% in patients in supine position is chronic but its clinical implications are unclear. Work in progress on a mathematical model for transport of macromolecules across vessel walls and the computational study of the haemodynamical impact of anomalous IJV valves will also be discussed.

Presenter: Prof. TORO, Eleuterio (Universita' di Trento)