

Assessing cerebral autoregulation changes in patients with Cerebral venous sinus thrombosis.

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Background and Aims

Few studies have shown hemodynamics in patients with cerebral venous sinus thrombosis (CVT). We therefore observe the cerebral autoregulation patterns in CVT using transfer function analysis (TFA).

Methods

We measured spontaneous oscillations of blood flow velocity (CBFV) in bilateral middle cerebral artery (MCA) and mean arterial pressure (ABP) continuously in 11 patients with CVT (age range 21-47 years, mean age 35.4 years, 4 cases were male).

The clinical features showed as follows: 5 acute onset and 6 chronic onset; 9 headache, 3 paroxysmal amaurosis, 5 decreased binocular vision, 9 papilledema, 3 diplopia and 4 tinnitus; 7 sigmoid sinus thrombosis, 5 transverse sinus thrombosis, 3 straight sinus thrombosis, 1 inferior sagittal sinus thrombosis and 2 internal jugular vein thrombosis; 4 cases involving only 1 sinus and 7 involving 2 and more than 2 sinuses. All patients and 11 healthy volunteers received CA assess in supine position during 6 circles per minute deep breath. Analysis was based on the 'black-box' model of transfer function deriving phase and gain in MCA.

Results

Though changes of phase shift and gain between the patients and healthy controls were observed in MCA, the differences are however not significant. Phase shift in MCA was significantly decreased in straight sinus thrombosis when comparing with healthy controls and other patients ($8.5\pm 33.2^\circ$ Vs $41.1\pm 40.4^\circ$ and $34.2\pm 27.2^\circ$, both $p<0.05$). Furthermore, we found that a tendency to decline of phase shift in patients presented severe increased intracranial pressure ($p<0.05$).

Conclusion

Dynamic CA in CVT reduces in patients with straight sinus thrombosis and those with increased intracranial pressure who present poor phase shift.