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Conference Abstract

P.14 Transcranial Colour Duplex Reveals Haemodynamically Significant Venous Flow Alterations Following Resection of Arteriovenous Malformation of the Brain

Kathryn Busch*, Andrew Davidson, Mark Butlin, Alberto Avolio, Hosen Kiat

Faculty of Medicine, Health, and Human Sciences

Keywords

Arteriovenous malformation
brain
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ABSTRACT

Background: Resection of a brain arteriovenous malformation (bAVM) can impose several post-operative challenges including post- operative haemorrhage (POH) [1]. The mechanism of such complications remains controversial although deliberately inducing hypotension has proven successful for POH prevention [2]. Daily non-invasive monitoring for patients may be useful in predicting POH. Transcranial color duplex (TCCD) and central aortic pressures (CAP) can be derived non-invasively providing pressure and haemodynamic measurements. These techniques may provide valuable insight into the process of vessel remodeling following bAVM resection.

Methods: This prospective study evaluated fifteen patients with bAVMs. CAP and TCCD were studied pre-operatively and then daily for up to 14 days post-operatively. CAP and TCCD parameters were compared with a group of normal volunteers and a control group of participants having craniotomies.

Results: The post-operative venous changes were dramatic and have not been previously studied. In the early post-operative period there was a marked prominence of venous flow adjacent to the middle cerebral artery. The venous signals demonstrated significantly increased velocities and pulsatility. Furthermore, two of the patients with sustained increased venous prominence, velocity, and pulsatility suffered a POH. After the initial period of post-operative venous flow alteration, the venous parameters returned to normal values.

Conclusion: These preliminary findings provide insight into vessel remodeling and elucidate the time frame for venous flow alterations after surgery. If confirmed in future validation studies, the period of increased venous velocity, pulsatility and prominence may correlate to the time at which patients are at risk of POH.

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*Corresponding author. Email: kathrynjbusch@gmail.com