Impact of Hemodynamics on Stroke Risk in Symptomatic Vertebrobasilar Disease: Results of the VERiTAS Study

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Background

Atherosclerotic vertebrobasilar disease (VBD) is a significant etiology of posterior circulation stroke, with regional hypoperfusion as an important potential contributor to stroke risk. To examine the role of hemodynamic compromise in VBD, a prospective observational study, Vertebrobasilar Flow Evaluation and Risk of Transient Ischemic Attack and Stroke (VERiTAS), was conducted.

Methods

Patients with recent vertebrobasilar (VB) TIA or stroke and ≥50% atherosclerotic stenosis or occlusion in vertebral and/or basilar arteries were enrolled at 5 centers. Large vessel flow in the VB territory was assessed using quantitative MRA, and patients were designated as low flow or normal flow based on distal territory regional flow, incorporating collateral capacity. Patients underwent standard medical management and blinded follow-up assessment, with primary outcome of VB territory stroke.

Results

The cohort (n=73, 45% female) had a mean age of 66 (range 40 to 90) years; two thirds presented with ischemic stroke. Flow status was found to be a significant predictor of subsequent VB stroke (p=0.04, Figure), with a 12 and 24 month event free survival of 78 % and 71% respectively in the low flow group versus 96 % and 87 % in the normal flow group. On multivariate analysis with Cox proportional hazards adjusting for stroke risk factors the hazard ratio for the low flow group was 18 (95% CI 3.1 to 102.7, p =0.001). Medical risk factor management at 6 month intervals was similar between low and normal flow patients. Flow status remained a significant predictor even when adjusting for disease severity and location. Conclusions: Distal flow status in the posterior circulation is a robust predictor of subsequent VB stroke risk. Large vessel flow measurements represent a useful noninvasive method for risk stratification in patients with symptomatic VBD.
Disclosure

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