VERiTAS

Vertebrobasilar Flow Evaluation and Risk of Transient Ischemic Attack and Stroke (VERiTAS)

https://clinicaltrials.gov/ct2/show/NCT00590980

The VERiTAS study is the first prospective study of haemodynamics and stroke risk in the posterior circulation. The results may impact the selection criteria for interventional candidates and also define a low-risk population in whom the risks of invasive interventions would be unnecessary [1)].

The study demonstrated that distal hemodynamic status is a robust predictor of subsequent vertebrobasilar stroke risk. See et al. sought to compare predictive models using thresholds for posterior circulation vessel flows standardized to age and vascular anatomy to optimize risk prediction.

VERiTAS enrolled patients with recent vertebrobasilar transient ischemic attack or stroke and ≥50% atherosclerotic stenosis/occlusion in vertebral and/or basilar arteries. Quantitative magnetic resonance angiography measured large-vessel vertebrobasilar territory flow, and patients were designated as low or normal flow based on a prespecified empiric algorithm considering distal territory regional flow and collateral capacity. For the present study, post hoc analysis was performed to generate additional predictive models using age-specific normalized flow measurements. Sensitivity, specificity, and time-to-event analyses were compared between the algorithms. The original prespecified algorithm had 50% sensitivity and 79% specificity for future stroke risk prediction; using a predictive model based on age-normalized flows in the basilar and posterior cerebral arteries, standardized to vascular anatomy, optimized flow status thresholds were identified. The optimized algorithm maintained sensitivity and increased specificity to 84%, while demonstrating a larger and more significant hazard ratio for stroke on time-to-event analysis. Conclusions These results indicate that flow remains a strong predictor of stroke across different predictive models, and suggest that prediction of future stroke risk can be optimized by use of vascular anatomy and age-specific normalized flows [2)].

Dynamic susceptibility weighted contrast enhanced perfusion imaging (DSC MRP) has been used to assess changes in cerebral perfusion attributable to vascular stenosis or occlusion that may predict stroke risk. However, DSC MRP is not validated for identifying hemodynamic compromise in the posterior circulation.

See et al. investigated the clinical utility of DSC MRP in vertebrobasilar atherosclerotic disease in the observational VERiTAS study.

VERiTAS enrolled patients with symptomatic ≥50% VB stenosis/occlusion. Posterior circulation hemodynamic status was designated as low or normal based on large vessel flow measured using quantitative magnetic resonance angiography (QMRA) and was predictive of future stroke risk. In this study, DSC MRP conducted concurrently with QMRA was used to evaluate posterior circulation perfusion. The primary outcome was the mean transit time (MTT) andrelative cerebral blood volume (rCBV) in the posterior circulation normalized to the anterior circulation, compared between patients with low and normal blood flow as determined on QMRA.

Twenty-six subjects had 47 DSC MRP studies for review. There was no statistically or clinically significant difference in the rCBV ratio (1.02 vs. .96 P = .89), or MTT ratio (1.04 vs. 1.04 P = .96) relative to normal or low VB territory flow.

They did not find that DSC MRP adequately distinguished between patients with low or normal flow status based on large-vessel flow measurements [3].

References

1)
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