

Quantitative MRA Screening And Submaximal Angioplasty Is Cost-Effective For Symptomatic Vertebrobasilar Occlusive Disease

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Purpose

The Vertebrobasilar Flow Evaluation and Risk of Transient Ischemic Attack and Stroke (VERiTAS) study demonstrated posterior circulation distal flow status, as determined by quantitative magnetic resonance angiography (qMRA), is a robust predictor of vertebrobasilar (VB) stroke risk in patients with symptomatic atherosclerotic VB disease. In this study we examine the cost-effectiveness of qMRA screening in identifying patients who may benefit from submaximal angioplasty to restore VB flow.

Methods

A Markov model was created comparing a “no screening” strategy with standard medical management alone and a “screening” strategy involving qMRA imaging and submaximal angioplasty for treatable patients with low VB flow. A 30 year time horizon was modeled. Outcomes included the average number of quality-adjusted life years (QALY) and lifetime costs. Rates of stroke and death were obtained from VERiTAS data, and disability rates and costs were derived from VERiTAS and the literature.

Results

At a 6% periprocedural stroke risk, the “screening” strategy saved an average of 0.364 QALYs per patient, and a lifetime cost savings of \$8,346 versus the “no screening” strategy. Amongst patients with low flow suitable for intervention, the benefit was substantially higher, averaging 1.485 QALYs saved and lifetime cost savings of \$28,017. The benefit of screening declined at higher periprocedural risk.

Conclusion

qMRA screening and submaximal angioplasty in suitable patients is cost-effective both in terms of QALY and lifetime costs for patients with symptomatic VB occlusive disease. With potential health and economic savings, a clinical trial examining the peri-procedural risk of submaximal angioplasty is warranted.