



Evaluation of intracranial thrombosed aneurysm with dynamic contrast-enhanced MRI

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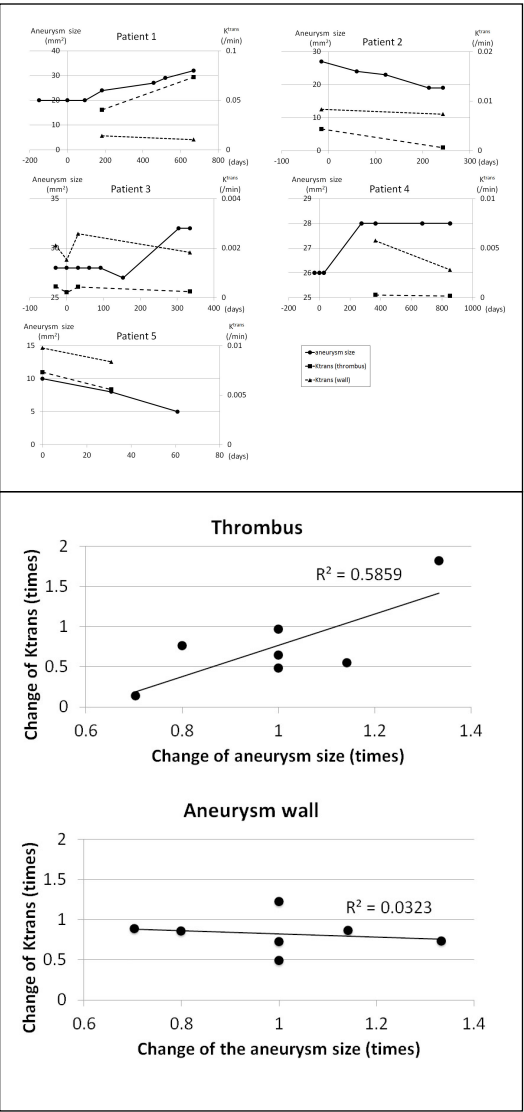
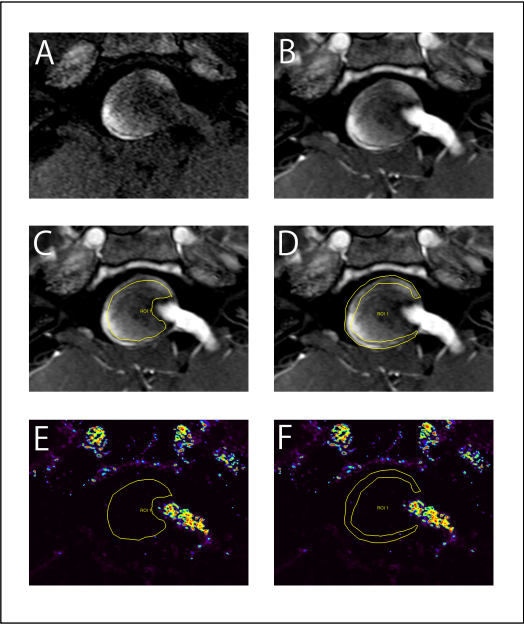


Introduction

The natural history of intracranial thrombosed aneurysm is unfavorable and treatment is difficult. Although the development of bypass and endovascular surgeries has improved results, some aneurysms grow larger and rupture. The mechanisms of growth remain unclear and some studies have reported the involvement of the vasa vasorum. We examined dynamic contrast-enhanced magnetic resonance imaging (MRI) to demonstrate the vasa vasorum of the aneurysm wall and evaluate relationships with the growth of intracranial thrombosed aneurysm.

Methods

Participants comprised 5 patients (4 men, 1 woman; mean age, 57.6±7.8 years) diagnosed with intracranial thrombosed aneurysm from December 2011 to November 2013 who were examined using dynamic contrast-enhanced MRI on more than two separate occasions. Two patients underwent bypass surgery, another 2 underwent endovascular surgery, and the remaining patient was treated conservatively. Dynamic MRI was performed using a 1.5-T system, and images were acquired from 15 s after injecting gadolinium-based contrast agent. Acquired images were analyzed and the transfer constant (Ktrans) was calculated. The region of interest was set in aneurysm thrombus.



Results

Three aneurysms grew larger and two decreased in size. Ktrans value of the aneurysm thrombus changed in proportion to aneurysm size. In linear regression analysis, the correlation coefficient between Ktrans and aneurysm size was 0.77.

Conclusions

In a dynamic contrast-enhanced study of intracranial thrombosed aneurysm, Ktrans of the thrombus correlates with changes in aneurysm size. Dynamic contrast-enhanced MRI is a valuable modality for predicting changes in thrombosed aneurysm size.

Learning Objectives

By the conclusion of this session, participants should be able to describe the usefulness of dynamic contrast-enhanced MRI to evaluate thrombosed aneurysm.

References

Iihara K, Murao K, Yamada N, et al. Growth potential and response to multimodality treatment of partially thrombosed large or giant aneurysms in the posterior circulation. Neurosurgery. 2008;63(5):832.