

Factors Affecting Site Of Rupture In Patients With Multiple Intracranial Aneurysms

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Purpose:

Multiple intracranial aneurysms provide a unique setting to study the factors leading to rupture of an aneurysm and help determine treatment of the aneurysm at highest risk of rupture.

Materials and Methods:

A total of 25 patients were analysed retrospectively. Site of rupture was determined based on location of maximal thickness of SAH, significant adjacent vessel vasospasm and other per-operative findings. Aneurysmal characteristics were determined using standard digital subtraction angiography (viz. Location, size, shape, presence of daughter sacs, depth, width, depth/width ratio, aspect ratio (AR), bottleneck factor, flow angle, size ratio (SR) and wall motion analysis. Flow dynamic study and vessel wall morphology of bony ICA was also studied. Multiple logistic regression analysis was performed to determine the independent risk factors for rupture and attempt was made to obtain optimum thresholds.

Results:

Presence of daughter sacs, elevated AR and SR, obtuse takeoff angles, wall motion on 3D angiography, flow patterns in bony ICA were also associated with higher incidence of rupture of an aneurysm with presence of >2 factors simultaneously having a strong predictive value.

Conclusion:

Using the above mentioned characteristics, one can accurately determine the risk of rupture of an intracranial aneurysm and plan treatment of the aneurysm at highest risk of rupture when diagnosed pre-rupture.