

[P1] Screening for Brain Aneurysm in the Familial Intracranial Aneurysm Study: Frequency and Predictors of Detection

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Background and Purpose: Patients with an intracranial saccular aneurysm (IA) frequently report a family history of IA or subarachnoid hemorrhage. In these cases of familial IA, controversy remains regarding optimal aneurysm screening strategies. An improved understanding of predictors of aneurysm detection in families would allow more targeted aneurysm screening strategies.

Methods: The multicenter Familial Intracranial Aneurysm study (FIA) aims to define the susceptibility genes related to the formation of IA. Siblings of those affected with IA are offered screening with magnetic resonance angiography (MRA) if they are previously unaffected by IA, are 30 years of age or older and have a history of smoking and/or hypertension. Two neuroradiologists review all screening MRA exams, discordant cases are adjudicated, and cases are further reviewed to define the level of certainty of IA presence. Numerous potential predictors of IA detection on MRA were considered, and independent predictors determined using the generalized estimating equation version of logistic regression.

Results: Among the first 180 patients screened with MRA in the FIA study, 32 (18%), including 24 women and 8 men, had at least one IA. Of these, a history of prior or current cigarette smoking was present in 29 (91%), and hypertension in 17 (53%). Seven (22%) of the 32 affected siblings had multiple aneurysms. Within a given subject, the largest aneurysm was >7 mm in maximal diameter in 4 patients (13% of the affected siblings), 4-7 mm in 8 (25%), and 2-3 mm in 20 (63%). Independent predictors of aneurysm detection on MRA included never graduating from high school [odds ratio (OR), 1.89, p=0.02], age 40-60 years [OR, 3.31, p=0.04], age >60 years [OR, 3.58, p=0.04], and any history of cigarette smoking [OR, 3.21, p=0.04].

Conclusion: In the FIA study, one in six siblings of an individual with an IA, who are over the age of 30 years and have a history of smoking or hypertension, were found to have a brain aneurysm on screening MRA. These data further suggest that there may be some predictive characteristics that put siblings of those with IA at particularly high risk, suggesting they should be strongly considered for aneurysm screening.

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