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Cranial MRI Screening in Healthy Young Men

To the Editor:

Subarachnoid hemorrhage (SAH) due to aneurysm bleeding is a serious disease with a high morbidity and mortality. The prevalence of intracranial aneurysms in the general population is estimated in the range of 1% to 2% and might be higher in high-risk patients, e.g., patients with autosomal dominant polycystic kidney disease or in relatives of patients with SAH.1 Here we report the results of a cranial MRI screening in 1772 healthy young men.

In the German Air Force Institute of Aviation Medicine, every applicant for military flying duties is screened by a cranial MRI to rule out intracranial abnormalities that may be hazardous for aviation safety. MRI is performed as follows: Standard procedure is a transversal T2 turbo spin-echo sequence (5.0 mm), a sagittal T2 turbo spin-echo sequence (4.0 mm), a transversal T1 true inversion recovery (2.0 mm), and a coronary FLAIR (6.0 mm). In case of suspicious findings, a 3-dimensional time-of-flight MR angiography with secondary restrictions (maximum-intensity projection) and further T1 post-gadolinium series are performed; a Magnetom Harmony device (Siemens) is used. In the time period from January 1, 2000, until December 31, 2002, we screened 1772 healthy young men (mean age 20.5 years, range 17 to 35) and did not find a single intracranial aneurysm, although we carefully looked for it. This is highly significant compared with an expected prevalence of 2% (95% CI 0.0% to 0.2%, binomial distribution).

Our study has 2 major shortcomings: (1) Our population is highly selected in a 4-fold way: young men who voluntarily apply for military flying service, with normal general medical findings, and have passed a psychological examination to check the occupational aptitude for military flying. We do not consider this an invalidation of the result, because it is not probable that the presence of a hitherto unknown asymptomatic intracranial aneurysm might keep its carrier from application for military flying. (2) Since we did not perform a conventional angiography, it is possible that we overlooked some aneurysms. However, we think that our MRI regimen is strict enough to detect even smaller aneurysms due to the combination of the sequences, the thin slices (2 mm) of the inversion recovery sequence, which gives exact anatomic details and is reliable in detecting mass effects, and the MR angiography and gadolinium application in doubtful cases.

Finally, our data argue for a lower prevalence than 1% to 2% at least in young men and for the assumption that aneurysms may develop later in life.1,2

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