Reviewer's report

Title: Prevalence of Abnormal Findings on Brain Magnetic Resonance (MR) Examinations Performed as a Part of an Annual Medical Check-up: Results of Brain Docking

Version: 1 Date: 3 June 2005

Reviewer: Brian E Chapman

Reviewer's report:

General

The authors examine the issue of whether a routine brain screening protocol performed on asymptomatic adults from the general population yields any medical benefits. The topic of this study is of interest and the large size of the screening population (1113 adults) is potentially valuable. The results of this study are largely consistent with similar studies and the data support the authors conclusions. However, the current manuscript has limited appeal due to the following general concerns: First, do the technology and expertise employed in this study represent a clinical standard that is sufficiently accurate to do this type of screening? Second, insufficient details are provided regarding how the images were interpreted. Third, insufficient details are provided regarding the image acquisition techniques.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. Having only a single radiologist read each exam is a limitation. Having had more than one participating radiologist would have allowed more confidence that these results are generalizable, even if only one radiologist read each study. On page 10 of the manuscript it is stated that the radiologist was a general radiologist and it is not clear how experienced the reader was with neuro MR applications. This is particularly important when interpreting MRA images which have a large number of artifacts which must be read through. The study by Okahara (Stroke. 2002 Jul;33(7):1803-8) showed a substantial difference in the sensitivity for detecting aneurysms between neuroradiologists and general radiologists. The authors need to justify this aspect of the study.

2. Insufficient details are provided about how the MRA images were read. The manuscript states that 16 MIP projections of the MRA images were generated. Did the reader evaluate both the MIP images and the original source images? Were the MIP images made out from subregions for particular circulations? The manuscript does not state whether these readings were done during the clinical course or if these reads were retrospective reads for the study. Considering the large fraction of false positives among the observed aneurysms, a failure analysis should be provided. After the findings were failed to be confirmed by CTA or DSA, were the MRA images reexamined. Could the false positive finding be explained?

3. Insufficient details regarding the nature of the MRA acquisition are provided. Presumably this was a 3D technique, but this is not stated. Was a MOTSA technique used? What was the matrix size? Slab thickness? Number of slices? Was magnetization transfer used to suppress background? Was zero-filled interpolation used? While the authors state that the hardware and software available were older, more details are needed to assess the validity of the study. Example images should be provided to help determine the quality of the imaging studies.

4. The observed incidence of aneurysms seems low. Typical estimates of the prevalence of an unruptured intracranial aneurysm in the general population are around 4%. While this prevalence
probably increases with age, for the average population age of this study the incidence of aneurysms seems low. Were the authors surprised by the very small number of aneurysms?

-----------------------------------
Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

5. Were follow up data available for any of the subjects? For example did any of the participants have a subsequent brain MRI/MRA that was available to the authors to review?

6. The authors should provide details of the CTA technique used to follow up on the MRA findings.

-----------------------------------
Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No

Declaration of competing interests:

I declare that I have no competing interests.