Author's response to reviews

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

Authors:

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Author's response to reviews: see over
Comments to the reviewers.

Dr. Judy Illes:

1. The abstract and conclusion need to be tied together better:
   The conclusion of the Abstract was rewritten as below (same as the conclusion in the Discussion):

   *Brain-docking participants had a variety of abnormalities on brain MR examinations, but a small percentage of these findings require further evaluation. The usefulness of the brain docking with MRI and MRA has yet to be proven, and at this time we cannot approve this screening procedure.*

2. I do not find Table 2 as informative as would be a similar but more discrete analysis of all findings by age:
   If all findings were analyzed according to age, the Table will be much more complicated. The number of the subject with findings requiring further evaluation was only 15, thus, statistical analysis will be inappropriate. We would not like to change this Table as the reviewer recommended.

3. Abstract:
   “with their own costs” has been changed to “at their own costs” as Dr. Illes corrected. “required” has also been changed to “require”. Thank you.
   The article of Dr. Illes et al. (Neurology 2004; 62:888-890) has been added to the literature review (Table 3). Thank you for your advice.

4. Background:
   We also think that this sentence is an important point, thus we wrote as below in this paragraph:

   *However, to our knowledge, there has not been any scientific evidence to demonstrate that a screening brain MR examination may provide more benefit than harm to people being screened.*
   Thank you for your comment.

5. Discussion
   We described that no malignant tumor was discovered in any participants in our study, in order to emphasize that no life-threatening
diseases were discovered.
1. The other major shortcomings of this study (lack of clinical follow-up and thus underestimation of FN findings) need to be addressed:

    Thank you for your advice. We added a paragraph in Discussion as below:

    The lack of clinical follow-up, which may result in the underestimation of false negative findings, was a shortcoming of our study. Currently, the false negative rate of brain docking is unknown.

2. The conclusion in the abstract is too positive; the final conclusion of the discussion already somewhat better:

    The conclusion of the Abstract was rewritten as below (same as the conclusion in the Discussion):

    Brain-docking participants had a variety of abnormalities on brain MR examinations, but a small percentage of these findings require further evaluation. The usefulness of the brain docking with MRI and MRA has yet to be proven, and at this time we cannot approve this screening procedure.

3. High WML grades are ignored:

    In our study, both PVH and DWMH were considered abnormal when the grades were 2 or 3, and classified as a finding not requiring further evaluation, but should be reported to the referring physician. High WML is an established risk factor of stroke, as the reviewer told. However, we suppose that further evaluation is usually not necessary, since in our brain docking all participants underwent a clinical interview, physical and neurological examinations and regular laboratory examinations. This has been written in the Material and Method.
Dr. Brian E Chapman:

1. Only a single radiologists read each exam, and insufficient details are provided about how the MRA images were read:

   In our brain docking, not only a radiologist but also a well-experienced neurosurgeon interprets MRI and MRA, separately. When there is no agreement in image interpretation, two physicians will discuss and the radiologist makes the final decision. This detailed information was added in the Material and Method.

2. Insufficient details regarding the nature of the MRA acquisition are provided:

   We added some detailed sequence data to the manuscript (field of view = 200mm; slice thickness = 1.0mm; volume thickness = 54mm; matrix = 256 * 174; number of acquisitions = 1; acquisition time = 6 minutes 15 seconds). The MRA data were reconstructed around the head-to-foot axis and right-to-left axis. Target MIP reconstructions were not performed.

3. The observed incidence of aneurysms seems low:

   The prevalence of intracranial aneurysm detected on MRA in our study was low. This may be due to the low field strength of our MR unit used in this study as well as relatively old hard and software despite of rapidly developing technology. This limitation had been written in the Discussion.

4. Were follow up data available for any of the subjects?

   Follow-up data was available only in approximately 10% of the subject, thus was not included in our analyses.

5. The authors should provide details of the CTA technique:

   We added some details protocol for 3D-CT as below:

   When an intracranial aneurysm was suspected on MRA, three-dimensional computed tomography (3D-CT) examinations with contrast material or digital subtraction angiography (DSA) were recommended for the participants to confirm the diagnosis. 3D-CT was performed using a single-detector helical CT scanner (HiSpeed®, GE-Yokogawa, Tokyo, Japan) with intravenous bolus injection (2.5 ml/s) of
contrast material (Iopamiron 370, 80 ml/sec), and surface rendering (SR) images were constructed from 40 or 50 axial images (thickness = 1.0 mm, pitch = 1.0) using Advantage Workstation (Version 3.1: GE-Yokogawa, Tokyo, Japan).