Reviewer’s report

Title: Visual recovery after perinatal stroke evidenced by functional and diffusion MRI.

Version: 2 Date: 9 June 2005

Reviewer: Xavier Golay

Reviewer’s report:

General
This is a short case report demonstrating recovery in a child 20 months after perinatal stroke. The authors used both functional MRI and Diffusion Tensor Imaging to demonstrate bilateral recovery of the optic radiation. The paper is concise and well written, and shows the potential for these new imaging techniques to assess brain plasticity in early childhood. However, a few points need to be addressed prior to publication:

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

The two major points of revision are in the interpretation part of the results:

1. In the first paragraph of the Discussion section. How does newly found activation in the left hemisphere compare to simple test-retest results using fMRI in young children? Also, the absence of activation in the first examination at 3 months does not signify that there was no neuronal activity in the damaged hemisphere, as absence of evidence is rarely synonymous to evidence of absence. Therefore, at least the last sentence claiming illustration of functional recovery should be rewritten a bit more cautiously.

2. As far as the DTI results are concerned, what kind of influence on FA could we expect from the natural brain growth between 12 and 20 months? Furthermore, what implication would have the use of different resolutions in both cases?

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

1. The abstract is not very clear as to how many and what type of measurements was done at which age. Please rewrite and include the necessary information.

2. Methods (page 5): The definition of the fractional anisotropy index is missing.

3. In the fMRI experiment, the stimulation procedure consisted in a 2Hz-flashing stimulus. This seems a bit odd, as the strongest response from the visual cortex is believed to be at 8 Hz flashing frequency. Is there a reason for using a lower frequency in this case? Also, was a stroboscope used for flashing?

4. Also in the fMRI method section, all p values are mentioned as uncorrected for multiple comparisons, while in the results, corrected p values are given. Please correct this mismatch or explain the reason for such a discrepancy.

5. The results section could be more precise, and incorporate a better description of the type of exams done at which age (see also point 1). Also, a summary of the results of the fMRI examination done at 3 months should be described.

6. Line 6 and 8: the terms in parenthesis include both a T and a Z value (infinite?). Was a T test or a Z test performed to depict activation? What does Z=inf mean?
Discretionary Revisions (which the author can choose to ignore)
1. Methods (page 5): The method section could contain a few references to the general Diffusion Tensor Imaging literature concerning the definitions used here.

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

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:
I declare that I have no competing interests.