Reviewer's report

Title: Diffusion-weighted imaging: a valuable aid for the determination of the margin of breast carcinoma

Version: 2 Date: 25 February 2008

Reviewer: Evelyn Wenkel

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1. Major Compulsory Revisions

This study shows among other cited studies that ADC values of malignant lesions and benign lesions can be statistically different and that ADC values from reader 1 and reader 2 were highly consistent in all breast lesions. However, the lesions for which the ADC values were calculated were quite large in size (mean diameter: 38.0 mm for benign and 28.4 mm for malignant lesions). The results and threshold may be different with smaller lesions.

The authors found that ADC values gradually increased from the center of the tumor to its peripheral tissue. The authors draw the conclusion from their results that there existed another margin, which they regarded as molecular margin. As the authors didn’t compare their results with the histological specimen this conclusion definitely cannot be made. The histological tumor size could even be larger than that measured with ADC. We do not know what caused the effect that the ADC values gradually increased from the center of the tumor to its peripheral tissue as no histological comparison was made.

The only conclusion I can draw from the results is that correct measurement is crucial for the differentiation between benign and malignant lesions. The conclusions of the authors regarding tumor margins are not reflected in the results. It is always preferable to have at least a 10 mm surgical margin from suspicious tissue in MRI which is a common statement.

The authors should rewrite their manuscript as the second part of the stated study purpose - precisely detect the margin of breast carcinoma in molecular perspective by echo planar-diffusion weighted imaging is definitely not addressed. The conclusions regarding tumor margins are mere guesses. Furthermore a method that measures within 5 mm layers can never show the minute change of tissue (see introduction) and detect transitions from carcinoma to normal tissue.

For these reasons I recommend rewriting the manuscript substantially for its purpose and conclusion and adding limitations. I do not recommend the manuscript to be published as is.
2. Minor Essential Revisions

Title:
Change title: "a valuable aid for the determination of the margin of breast carcinoma" this was not proved

Abstract:
Purpose and conclusion: choose other words than "precisely" and "accurate" as this sounds exaggerated.
"10 mm outwards from the anatomical margin of breast carcinoma could be viewed as a safe margin for excision." Yes, but how was it proved in the study as no comparison with histological specimen was made.

Introduction:
P3, Line 6: "However, because" correct English?
P3, Line 8: "previous study" correct "studies"
P3, Line 10: The study cited deals with hepatocellular carcinoma which can't be compared to breast cancer.
P3, l 21: "higher resolution than that of mammography and ultrasonography" If you write this statement please cite the resolution of the different methods.
P4, l12: "minute" choose another word as this sounds exaggerated.

M&M:
How were patients recruited for the study? Please define inclusion criteria.
P5, l4: "Lymph node metastasis in malignant lesions was observed in 13 cases." Shouldn't it be plural?

Discussion:
P7, l23: Vice versa: correct spelling.
P7, l24: tumor? Or tumors?
P8, l27: based: correct spelling.
P9, l 9 and 10: This was not examined.
P9, second paragraph: results are repeated
Table 1:
slightly: please correct
incrassation: please use a different word

Table 3:
Readers: please correct

Figure 1: A: with hyperintense (missing word?)
 Speculate, do you mean speculation?

D: missing words?

Figure 2:
B: Hyperintense #! Add #lesion#
D: correct #isointense# to isointense

Figure 5 and 6: following not followings

What next?

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Based on your assessment of the validity of the manuscript, what do you advise should be the next step?

- Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions (first part)
- Reject because scientifically unsound (second part)

Level of interest

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- An article of limited interest

Quality of written English

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- Acceptable

Statistical review

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- No, the manuscript does not need to be seen by a statistician.

I declare that I have no competing interests.