Reviewer's report

Title: A study of 0.5 Tesla dedicated magnetic resonance imaging for the detection of breast cancer in young, high risk women

Version: 1 Date: 15 December 2005

Reviewer: Bruce Kimler

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General

There are two major points that the authors which to make:
1) That medium strength 0.5 tesla MRI is suitable for screening for breast cancer in high risk women based on its ability to detect a tumor not detected by mammography.
2. The use of quantitative risk assessment for enrollment into a surveillance study.

The first point is made with the successful detection of a tumor. While this study is not a comparison of the utility of 0.5 T to standard 1.5 T MRI (or higher strength magnets) which has been reported, the experiment succeeds with an N of 1. Likewise unanswered is whether high strength MRI might not have detected additional lesions. But as a feasibility study, the data are adequate.

The second point is clouded by loose writing and by some missing information concerning methodology. In the Abstract (page 3; para 2; line 4) and in Methods (page 7; para 1; last line) the authors state that participants had a certain risk (based on standard models) and/or a known mutation in BRCA1 or BRCA2. But if this were indeed the basis for selection, then it would substantiate the "quantitative risk assessment" claim. Rather, it would be similar to the Kreige (2004) study which included mutation carriers and which employed a lower limit of 15% lifetime risk (which is certainly a quantitative risk assessment) for study eligibility but which these authors discount in making their claim to be the first to do so.

Next, the authors state (page 7; para 1; line 2) that subjects were "consecutively recruited". What does this mean? If it is truly consecutive 30 subjects who met the initial requirements (negative mammogram and dense breast noted on the prior report), then there is no selection. If the review of mammograms did exclude potential subjects, then they are not consecutive. Lastly, potential subjects had their quantitative risk modeled and only those with >3.5% 5-year risk were eligible. If the whole point of this is to demonstrate the use of quantitative risk assessment for selection into a study, it would seem pertinent to mention the efficiency of screening. How many potential subjects (negative mammograms and dense breasts) were excluded? How many (consecutive?) subjects were considered to arrive at the 30? Even here, the assumption must be made that no potential subject declined enrollment even though she was eligible. With this information omitted, the contention of using risk assessment for selection for a study can not be substantiated.

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Page 4; para 2; last line: Replace surveillance with screening. It may just be semantics but I think of surveillance as an ongoing series of examinations over time; while screening is a one-time
evaluation which is what was done here.

Page 7; para 1; lines 5 and 10: Seems to be disagreement over the minimum interval allowed between previous mammography and enrollment. 3 or 6 months? Also, page 8, last paragraph.

Page 17; Authors contributions: Did JHS "perform" the MRI? Or was she responsible for reading and interpretation of the MRI? As well as confirming the negative mammograms and characterization of "dense breast"?

Figure 2B: It would be helpful to have an arrow pointing to the mammographically visible lesion, similar to what is done for MRI images.

Discretionary Revisions (which the author can choose to ignore)

What next?: Accept after discretionary revisions

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

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:

I declare that I have no competing interests