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: 4 January 2006

Reviewer: Petrina Causer

Reviewer's report:

General:
This remains a potentially useful paper. When considering screening women at high risk for hereditary breast cancer, less expensive, feasible means must be considered for high risk MRI screening to occur at a population based, routine clinical level. Such a dedicated MRI unit could be used at breast clinics.

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

1) There are problems with the overall organization of the manuscript. The hypothesis or purpose of the study is not stated clearly, particularly in the abstract. What is unique about the purpose over already published studies must be stated. With the knowledge that screening with breast MRI at 1.5 T offers a high sensitivity compared with conventional screening methods, the question then appears to be: Is screening high risk women with a low magnetic field strength (0.5 T) unit feasible?, ie., can it offer a higher sensitivity over conventional surveillance?

How patient eligibility is defined is not part of the hypotheses, but rather material and methods. This is being stated throughout the manuscript as though it is part of the hypothesis. The means of risk stratification is not being assessed and compared with other means of risk assessment. Therefore too much of the manuscript is devoted to this aspect including a large part of the discussion (conclusions). This is also stated in the Abstract (background, conclusions). The statement that the study demonstrates for "the first time" enrollment based on risk assessment by the "Gail and BRCAPro models" is overstated. BRCAPro has been used previously for enrollment (reference 55) in high risk screening. Perhaps the combination is unique? However it remains a means of defining patient eligibility.

The study purpose is more clearly stated in the Methods (study design). The remainder of the manuscript, including abstract, results and discussion should be based on this study purpose.

2) This manuscript is based on the ability of imaging to detect cancers in a screening setting. There are several problems centered around description of the imaging. These include:

a) Materials & Methods: The role of ultrasound in the workup is not stated clearly enough. It is stated that US added no new information. Does this mean that the BI-RADS final category assessment was not affected by ultrasound findings? What about BI-RADS 3 lesions with no corresponding US findings, how were these classified? What was the follow-up of BI-RADS 3?

b) Materials & Methods: What is the follow-up of patients? The pilot study date ended in 2000. There must be some follow-up on many if not all patients. The follow-up time and method of follow-up should be stated. This is very important especially for BI-RADS 2 & 3 lesions.

c) The BI-RADS terminology is not used correctly throughout the manuscript. Results: "extremely dense heterogeneous breast tissue"??- Using terms from 2 density categories. Similar in the Figure 2.

d) Wording in Figure 2 text problematic. Also not clear on what is being demonstrated for patient 006 in Results/figure. Results states cancer, but figure 2 states benign and cancer. If including both lesions, this should be reflected in the results also. BI-RADS MRI terminology of mass with descriptors should be used in place of "well-demarcated" and "lesion". The description of the
enhancement pattern is contradictory in (c) as stated that the mass accumulates contrast but demonstrates a "washout curve"???

3) Discussion (Medium vs high...): Mentions that there is no standard method, interpretation, etc... There are however guidelines for MRI protocol and interpretation guidelines as published in the BI-RADS MRI syllabus. This should be mentioned.

4) Discussion (Medium vs high...): Mentions "without sacrificing specificity". There are not statistical calculations, including specificity. This should not be mentioned.

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) abstract (conclusions): typo "for" instead of "or"
2) Patient selection and consent: Is JHS a Radiologist (MD) or technologist (radiographer)? It seems unlikely that the task of mammographic interpretation is being given to a radiographer.
3) Figure 2 - typo - "subtraction"
4) Figure 2 - Labels are missing from (b), indicating the lesion. The arrows should be indicated in the text legend also for b & c.

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.