Reviewer's report

Title: Meta-analysis of quantitative diffusion-weighted MR imaging in the differential diagnosis of breast lesions.

Version: 5 Date: 31 August 2010

Reviewer: Matthew DiFranco

Reviewer's report:

Overall, much improved from the original version, and all points seem to be addressed. There are a few recurring grammatical errors which I try to address below. The abstract and background are confusing and need to be reworded and strengthened as per suggestions in Major compulsory revisions, and there appears to be a discrepancy in the reported AUC value of the sROC analysis, although it is in the 4th significant digit, and it is unclear why so many are needed (or valid) in the first place.

Major Compulsory Revisions

1. Abstract, Results - AUC value of 0.9085? Why 4 significant digits, and why do you say 0.9087 in your conclusion?
2. Abstract, Conclusion - "Quantitative DWI has a better specificity..." It is not obvious here how you are making this comparison. It may be worth stating that this conclusion is based on comparison with another meta-analysis which specifically focuses on contrast-enhanced MRI. Also, say "higher" or "increased", not "better".
3. Background, paragraph 1 - This may sound trivial, but it is not clear in your first few sentences that there are benign and malignant lesions, and that breast cancer diagnosis hinges on the successful differentiation between the two. It's only in the last sentence of this paragraph that you mention the challenge of benign vs. malignant.

Minor Essential Revisions

General
It's "et al.", because "al." is an abbreviation.
"Figure" and "Table" should not be capitalized unless they begin a sentence. They are not proper nouns.

When referring to your analysis, use present tense (e.g., "our analysis shows", "figure 1 shows"). When referring to what someone actually did, past tense is OK (e.g., "M.D. performed a search").

1. Abstract, Methods - "...Spearman correlation coefficient; and to pool...
2. Abstract, Results - Lowercase "s" in SROC.
3. Background, paragraph 2 - I would put the sentence which begins "ADC is
measured..." after the sentence that begins "Restricted water movement...". This seems to flow more logically. Also, "In is natural logarithm" does not need its own sentence. Add it to the end of the sentence before.

4. Background, end - Add a paragraph outlining the paper at the end of your background.

5. Methods, Lit Review - Last sentence ("The list of articles...") should be more passive ("EXtensive cross-checking...was used to supplement the list of articles"), or something like that.

6. Methods, Selection of Articles, last paragraph - The word "explanatorily" is very confusing here. You can probably just remove it and the sentence will read fine.

7. Methods, Quality Assessment, paragraph 3 - "studies" should be "study".

8. Methods, QUality Assessment, paragraph 4 - The explanation and equation for each measure should be formatted more clearly.

9. Methods, Meta-analysis, Publication bias - "A relatively small NFS should be cause for concern. However, if NFS is large, we can be confident that the..."

10. Methods, Meta-analysis, Statistical pooling - "The necessary precondition for pooling estimates..."

11. Methods, Meta-analysis, Statistical pooling - "An sROC curve summarizes and combines...".

12. Methods, Meta-analysis, Statistical pooling - "...and reflected by an sROC curve without being affected by a change..."

13. Methods, Meta-analysis, Statistical pooling - The sentence "If the curve is closer..." is weak in explaining the sROC curve and AUC.

14. Results, paragraph 2 - "...breast lesions (615 malignant, 349 benign) were included...". Also, "...while the sensitivity and specificity ranged from 63%..."

15. Results, paragraph 3 - "...QUADAS items are shown in...".

16. Results, paragraph 4 - "...23 subsets of data from all 13 studies are shown in figure 1. A homogeneity test...". Also, "...an ROC space...". Also, "...for threshold effect, and Spearman ...".

17. Results, paragraph 5 - "The funnel plot in figure 3 shows ...combined effect size and yield...

18. Discussion, paragraph 3 - "Because b values used in the included studies varied, we needed to explore whether b value (singular) was the source of heterogeneity".

19. Discussion, paragraph 4 - You don’t specify that the previous study is for contrast-enhanced MRI.

20. Discussion, paragraph 4 - "...our meta-analysis indicates (present tense) that DWI has higher specificity, but lower sensitivity."

21. Discussion, paragraph 5 - "...they only include (present tense) studies that enrolled..."
22. Discussion, paragraph 6 - "The quality and reliability of a meta-analysis...studies" Get rid of "whether the result of the analysis is reliable."

23. Discussion, paragraph 6 - "...included in systematic reviews and has been used to help identify severe methodological shortcomings(21)."

24. Discussion, paragraph 6 - "...DWI was always performed first, and interpretation...would usually be done without..." Also, "...interpreted at a later date, after both DWI and reference standard had been completed, ..." Also, "These problems are often not reported in the studies. Instead, the uninterpretable results are simply removed..." Also, remove "in theory". Also, "...operational challenges. The standards...".

25. Discussion, paragraph 7 - "All of the individuals..." Also, "the minimum threshold value was...(no comma) and the maximum threshold value was..." Also, "...selection of threshold value should be determined according to..."

26. Discussion, paragraph 7 - "For example, relatively high threshold values..." Confusing, reword.

Discretionary Revisions
1. Background, paragraph 2 - "Quantitative DWI is a powerful imaging tool which provides unique ... in the tissue and allows estimation...".
2. Methods, Lit Review - "We limited our search to publications in English and Chinese, female subjects, search term...article and publication..."
3. Methods, Lit Review - "Elsevier and Springer"
4. Methods, Lit Review- "case reports and unpublished articles"
   (in general, lists separated by commas should read, " item 1, item 2, item 3 and item last", with no comma before the "and". Fix this throughout.
5. Results, paragraph 1 - "...we excluded 12 of the 25 relevant articles for the following reasons: ...". Also, no "or" before "Researchers presented results from a combination..."

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

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