Reviewer's report

Title: Early detection of Doxorubicin myocardial injury by Ultrasonic Tissue Characterization in an experimental animal model.

Version: 1 Date: 2 July 2012

Reviewer: Gillian Whalley

Reviewer's report:

I have significant concerns about the study. Others have used this approach and found similar findings, and this does not seem to be a major advance in this field, but for this to be considered a significant advance I would like to see better imaging performed. Secondly, as a frequent imager of rat hearts it is my belief that the machine and transducer suggested here would be inadequate resolution for the measurements suggested.

That myocardial injury that arises in the setting of Doxorubicin is well characterised. And whilst it would be helpful to identify a technique that would enable early detection of this damage, this paper does not offer that.

Major Points:
One of the stated significant findings of the study by the authors is that backscatter outperforms ejection fraction for assessment of myocardial collagen deposition. In fact ejection fraction used in this context is actually measuring the myocardial dysfunction that arises because of collagen deposition. Furthermore using this m-mode technique is very insensitive for assessment of ejection fraction. The authors do not discuss the m-mode sweep speed which is an important determinant of this. Lastly, the author have used a phantom to compare their backscatter measurements to. Although i think this is practical, it does not take into account individual variation in the animals, and ultimately if this were to be clinically useful, it is the comparison within an individual over time that is necessary. I would suggest the authors re-analyse their data using each rat's baseline data as the comparison point.

Minor points:
The pathological analyses are limited to rats that died (presumably of pathological causes), which seems ad hoc and uncontrolled. The authors need to explain why they did not have a pre-study plan to sacrifice animals at various time points.

Formatting:
There are a few grammatical errors and typographical errors that need to be corrected:

Introduction–second paragraph, line 2 change "it its" to it is
Methods - two-dimensional conventional echocardiography - second line - what is meant by sectoral?

next line - para-esternal is spelt incorrectly (this is repeated throughout)

page ten first paragraph - the last five or six lines of this paragraph do not make sense, I think they are two or three sentences run together.

References are not formatted correctly in the text, e.g., a semi-colon is used instead of a comma to separate two references.

**Level of interest:** Reject as not of sufficient priority to merit publishing in this journal

**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:**

no competing interests.