Reviewer's report

Title: Enhanced expression of ROCK2 in left atrial myocytes of mitral regurgitation: A potential mechanism of myolysis

Version: 2 Date: 3 November 2014

Reviewer: Lei Wei

Reviewer's report:

This study has screened ROCK2 activity and expression in 22 patients with severe mitral regurgitation by immunohistochemistry and Western blotting analysis. The authors reported correlation between ROCK2 expression, cleaved caspase 3 expression, and loss of myofibrils in MR patient tissues compared with normal left atrial tissues. The study has been carefully performed and the manuscript is well-written and easily to be followed.

However, the major concern of this study is the descriptive and correlative nature. Increased ROCK2 expression and activity may be a compensatory response to the loss of myofibrils, and may not contribute to the loss of myofibrils and caspase activation.

There are also several minor concerns.

1) ROCK1 is also expressed in atrial tissue. It is not known the relative contribution of ROCK activity by ROCK1 and ROCK2 in atrial myocytes (as well as in many major tissues). It is therefore important to examine expression of ROCK1 as well. In addition ROCK1 is a substrate of caspase 3 and can be activated by caspase 3. The increased ROCK activity measured in MR tissues may be a consequence of ROCK1 activation by caspase 3.

2) Immunohistology analysis shows an increase in ROCK2 protein expression and cleaved caspase 3 expression. As an antibody may have non-specific reaction especially with histology analysis, this data should be confirmed by Western blotting for ROCK2 and cleaved caspase 3 and also at RNA levels for ROCK2. Again, RhoA and ROCK1 expression should also be examined.

Level of interest: An article of limited interest

Quality of written English: Acceptable

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.