Reviewer's report

Title: BRG1 overexpression in smooth muscle cells promotes the development of thoracic aortic dissection

Version: 1 Date: 17 July 2014

Reviewer: LI JIA

Reviewer's report:

The authors demonstrated that BRG1 is upregulated in the aortic SMCs of TAD. BRG1 overexpression may enhance MMP2 and MMP9 expression, promote apoptosis and SMCs phenotype change. These results were taken by the authors as evidence that BRG1 overexpression in aortic SMC may play a role in the development of TAD. This experiment is carefully designed and the various steps of the demonstration are well described. However, some points need to be addressed.

Minor Essential Revisions

1. Abbreviations should be spelled out first in abstract.
2. N number for each experiment should be indicated.
3. There should be a brief methods description (or reference) regarding adenovirus mediated cell transfection.

Discretionary Revisions

4. In the Figure 1, the authors stained the expression of BRG1 in TAD and normal aortic tissue section. According to the BRG1 staining, the authors indicated that BRG1 was mainly localized in the nucleus of aortic SMCs. It is more convincing if there is one more staining to indicate smooth muscle layer in aortic tissue, such as using #-actin staining.
5. In Figure 6A, the representative blots are not entirely convincing and should be replaced with better quality images.
6. The authors suggest that BRG1 promotes the development of TAD by increasing MMP2 and MMP9 expression, inducing SMC apoptosis and the transition from contractile to synthetic phenotype. Does BRG1 induce these responses respectively? Do they have interaction? Is ECM degradation due to MMP2 and MMP9 overexpression involved in the process of apoptosis and phenotype switch? The author should discuss it.

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

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