The manuscript presented by Liu and collaborators describes the association of MMP-2 gene haplotypes with the genetic susceptibility to thoracic aortic dissection (TAD) in the Chinese Han population. This is a relevant case-control study that included 315 case patients with TAD and 440 control participants, providing windows of the of MMP-2 gene with haplotype frequencies using a variable-sized sliding-window strategy. Although there is no evidence for a significant association of MMP-2 SNPs by employing a single-marker analysis, this work suggests the association of the 2-SNP haplotype window rs2241145-rs9928731 of the MMP-2 gene to the risk of TAD.

Comments:

The authors concluded that the 2 constituent SNPs rs2241145-rs9928731 haplotype window independently contribute to the risk of TAD. It may be interesting to further discuss on the evidence leading to this conclusion as well as to consider the results based on the single-marker analysis.

I suggest including the results on the genetic model for the risk haplotype defined by the 2 SNPs rs2241145-rs9928731.

Based on the significantly larger number of male than female TAD patients enrolled in this case study, I wonder if the adjustment of this study for gender stratification could provide further evidence for the implication of MMP-2 haplotypes.

Minor points:

The sentence (12-17) in background should be rearranged: "There is also clinical and genomic evidence in different ethnic populations shows that genetics plays an important role in the development of thoracic aortic diseases".
The discussion on the potential impact of rs9928731 in refractive and high myopia (references 28, 29) could include the study of Leung et al. Systematic investigation of the relationship between high myopia and polymorphisms of the MMP2, TIMP2, and TIMP3 genes by a DNA pooling approach. Invest Ophthalmol Vis Sci. 2011; 52:3893-900.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

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I recommend additional statistical review

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