Author’s response to reviews

Title: Left ventricular geometric patterns in patients with type A aortic dissection

Authors:
Soo-jin Kim (circleabc@naver.com)
Tae-Ho Park (thpark65@dau.ac.kr)
Young-Rak Cho (nephrone@dau.ac.kr)
Kyungil Park (sotier@dau.ac.kr)
Jong-Sung Park (thinkmed@dau.ac.kr)
Moo-Hyun Kim (kimmh@dau.ac.kr)
Young-Dae Kim (kimyd@dau.ac.kr)

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Author’s response to reviews:

Thank you for helpful comments about our manuscript. According to the reviewer’s suggestions, we have revised the manuscript, as described below. Changes are indicated in red text in the revised version of the manuscript.

Reviewer #1 Comments:

1. The authors concluded that LV hypertrophy (LVH), especially eccentric hypertrophy could be a 'risk factor' for aortic dissection and aortic dilatation. However, as this study included only patients who are already diagnosed as type A aortic dissection, this finding cannot be used as a predictive risk factor for upcoming aortic dissection. However, LVH and its associated aortic dilatation still can be a predictor of the patient’s prognosis. Is there any analysis regarding relation between LV geometry, MAA diameter and the patient's prognosis (in-hospital and/or after discharge)?

Thank you for your comments. We revised the conclusion according to your comments and explained that eccentric LVH was related to larger MAA in type A aortic dissection patients. In addition, there was no significant correlation between LV geometry and 1 month mortality in the patients, nor was there association between MAA diameter and 1 month mortality.
2. In some cases, the ascending aorta has oblique direction and requires multiplanar analysis for precise diameter measurements. How many CT planes did you use for MAA diameter measurements and which one was the standard CT plane when you determined MAA diameter? Please provide detailed information about your MAA measurements.

Thank you for your comments. We used two CT planes for this study; axial plane and coronal plane. We used the axial plane as the standard CT plane for the measurement of MAA and defined MAA as either the largest short-axial diameter of the dissected ascending aorta or the largest diameter perpendicular to the curvature of aortic arch. We added detailed explanation of MAA measurement in the method section according to your comment.

3. Sometimes accompanied heart diseases, such as significant aortic regurgitation (AR) affects both LV geometry and aortic diameter. Also, blood pressure (BP) state can be another factor of them. Between patients with LVH and without LVH, was there any significant differences in prevalence of significant AR or BP control state?

There was no significant difference of prevalence of significant AR and hypertension between patients with LVH and without LVH. The prevalence of hypertension was 18 (69.2%) and 38 (76.0%) in no LV hypertrophy and LV hypertrophy. The duration of hypertension showed no significant difference between LV hypertrophy group and no LV hypertrophy group (no LV hypertrophy versus LV hypertrophy; 4.8±6.6 versus 8.5±8.4 years, p=0.08) Also, the prevalence of significant AR showed no significant difference between the two groups (no LV hypertrophy versus LV hypertrophy; 7(26.9%) versus 12(50.0%), p=0.15).

Reviewer #2 comments

In this manuscript, the authors retrospectively reviewed the data of type A non-Marfan aortic dissection patient in respective of the relationship between left ventricular (LV) geometry and maximal ascending aorta (MAA). The total duration is 13 years and the number of the patients was 161. But echocardiographic exams were only performed only 50 patients preoperatively.

The authors only reviewed the MAA and echocardiographic data which can be easily acquired during the routine echocardiographic exam. And the relationship between aortic diameter and LV hypertrophy is already published by other authors (Iarussi et al.2001. Angiology 2001:52:447-455). But the authors also concluded that there are significant differences in MAA according to the LV geometry. This finding is surprising considering the number of the patient subject to the analysis.

Major comments
1. First of all, the data itself is frustrating because the demographic and computed tomographic (CT) data were acquired from 151 patients but the echocardiographic data was retrieved from 50 exams.

The number of the patient should be same and the data from only 50 patients should be demonstrated in the article.

Thank you for your comments. We changed table 1 for only 50 patients instead of 151 patients.

2. Aortic root size showed no differences according to the LV geometry. But the authors did not describe how they measured the aortic root size. Aortic root size should be measured at the aortic valve annulus, the sinuses of Valsalva, the sinotubular junction and proximal ascending aorta from the parasternal long axis view of 2-dimensional echocardiography according to the 2015 ASE/EACVI recommendation.

Adding the data and analysis according to aortic root size measured at various site according to the 2015 ASE/EACVI recommendation can help the manuscript better. And it also can provide the possibility to reveal another insight of the relationship between MAA and aortic root size.

Thank you for the comments. We corrected the method and added the aortic measurements in Table 2 and Table 3. MAA was also significantly correlated with proximal ascending aortic dimension (r=0.62, p<0.001), sinotubular junction dimension (r=0.55, p<0.001) and sinus of Valsalva (r=0.43, p=0.003).

3. How did you analyze the differences MAA diameter according to LV geometry? You described that you used ANOVA. There is no description how to perform the post-hoc analysis such as Scheffe, Tukey or Ducan method. It should be demonstrated in the method section. And Figure 2 also should be corrected if concentric hypertrophy showed the differences with normal geometry and concentric remodeling (Do not use only "*" but "*" and other symbol).

Thank you for your comments. In the statistical analysis, we defined that we used the Bonferroni method for post hoc analysis. Figure 2 was corrected by using another symbol.

4. Authors described in the discussion section that the one of the major finding of the study is (i) MAA diameter correlated…

But this is not a novel finding as I previously mentioned in the general comments.

The numbering of the major findings should be corrected. And the article published by Iarussi et al. must be added to the references.

Thank you for your comments. According to your comments, we added the article published by Iarussi et al. to the references, and changed the discussion section ((i) MAA diameter
correlated…). Iarussi et al reported that aortic enlargement and LV hypertrophy showed significant association in “thoracic” aortic dissection patients. However, this study was performed to analyze the LV mass index and LVH types (such as concentric LVH and eccentric LVH) in type A aortic dissection patients.

Minor comments

1. How the patients of genetic disorders were excluded? Did the subjects of this study undergo the genetic exam? Describe it precisely in the method section.

We excluded the patients with connective tissue diseases based on physician’s clinical information review. Unfortunately, genetic examination was not performed. We described this fact in the method section.


Authors used the recommendation of chamber quantification by ASE/EACVI both old and new versions. Only use the recommendation published in 2015. It covers all the measurements used in this manuscript.

Thank you for your comments. We used only the 2015 version of the ASE/EACVI guidelines for the measurements in this study according to your comments.


The symptoms of the patients were chest pain (82.1%)….

Should be described as

The symptoms of the patients were chest pain (n=…, 82.1%)…

Thank you for your comments. We included the number of patients according to your comments.


Echocardiographic data is also demonstrated in table 2. So these section can be removed from the article.

Thank you for your comments. We deleted the redundant echocardiographic data in that section according to your recommendations.
5. Table 2 is frustrating because MAA diameter is acquired from CT of 151 patients and other data is from echocardiographic exam of 50 patients. Use only CT data of the 50 patients who were undergone echocardiographic exam preoperatively.

Thank you for your comments. We changed the table using only the data from the 50 patients who underwent preoperative echocardiographic examination.

6. Cut-off value of relative wall thickness (RWT) classifying concentric and eccentric geometry is 0.42. The value of RWT is demonstrated as 0.40±0.10, Not 0.4±0.1.

And RWT has no unit because length is divided length. Correct it.

Thank you for your comments. We corrected the values according to your comment.

7. Figure 1 shows the Pearson correlation between MAA and LV mass index. The number of the subject is 50 so the number of the dots showed be 50. But there are only 45 dots in the figure. Check it.

Thank you for your significant intellectual point of view. We rechecked the figure and data, but there were 5 identical pairs of MAA and LV mass index values, so while the total number of data is 50, only 45 dots are presented in the figure. Thus, we added a legend explaining that there are 5 overlapped dots in the figure.