ELLIPSOID-SHAPED AORTIC ANNULUS IS ASSOCIATED WITH THE ANGLE BETWEEN INTERVENTRICULAR SEPTUM AND ASCENDING AORTA: EVALUATION BY TRANSTHORACIC THREE-DIMENSIONAL ECHOCARDIOGRAPHY

ACC Poster Contributions
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Background: Evaluation of accurate aortic annular (AA) size and shape is considered as one of the important points for selection of the prosthesis size at transcatheter aortic valve implantation procedures. The accuracy of transesophageal 3-dimensional echocardiography for AA measurement and the presence of ellipsoid-shaped aortic annuli (ESAA) in some patients were reported. However, usefulness of transthoracic 3D echocardiography (3DTTE) for AA measurements and the characteristics of patients with ESAA are unknown.

Method: Fifty-eight patients with various cardiac diseases were performed transthoracic 2-dimensional echocardiography (2D) and 3DTTE (GE Vivid E9). Using 3DTTE, minimum and maximum diameters of AA were measured and AA area was traced. The diameter of AA was measured and area of AA was calculated by 2D. Twenty of 58 patients were performed multi-slicecomputed tomography (MSCT) for the measurement of AA and compared the values evaluated by 2D or 3DTTE. The angle between interventricular septum and ascending aorta (IVS-Ao angle), LA diameter, LV diameter, LVmass, age, and blood pressure were measured, and multiple regression analysis was performed to evaluate the relation between these parameters and ESAA.

Results: The AA area by 3DTTE had good correlation with AA area by MSCT (r=0.85). However, 2D underestimated AA area and had fair correlation (r=0.54) with the values by MSCT. Defining ESAA as the ratio of minimum to maximum diameter of AA<0.9, 24 of 58 patients showed ESAA. IVS-Ao angles were significantly smaller in ESAA group than that in non-ESAA group and were related to ESAA.

Conclusion: 3DTTE was useful method for evaluating AA size equal to MSCT.

It is suggested that ESAA was one of the reasons for underestimation of AA size by 2D and was associated with acute IVS-Ao angle.