

Adequate Evaluation of Aortic Valve and Root. Radiologist's Aspect

Whal Lee, M.D., Ph.D.

Department of Radiology

Seoul National University College of Medicine, Seoul, Korea

Aortic valve and aortic root evaluation can be done in many modalities. The echocardiography is definitely the choice of examination because it can do functional and anatomical assessment at the same time. Other option for aortic valve and root evaluation is cardiac catheterization, EKG gated CT and cardiac MRI. CT and MRI cannot present functional status of aortic valve but can present more detail anatomical information. Especially CT have its intrinsic three dimensional high resolution information and the aortic root evaluation with numeric data such as diameter, perimeter and area is possible. In selection of cardiac phase is also possible in CT through EKG gating scanning.

For TAVI, exact measurement is important because the implantation failure or post op aortic regurgitation can happen in the case of inappropriate selection of prosthetic valve. recently many vendors introduce automatic or semi automatic method for aortic root measurement or TAVI planning tools. they are beneficial for shortening the process time and increased reproducibilities even though there is no study about this yet.

The cardiac CT is also useful assess the aortic root in terms of pseudoaneurysm in the patient with infective endocarditis or inflammatory aortic root disease such as Behcet disease. Any arbitrary plane of heart can be reformatted from CT data set and the short axis image of aortic root can be generated with EKG gated CT image.

MR can provide most accurate functional data of left ventricle and myocardial status. Not only the hypertrophy but also the fibrotic change can be seen in the of in the myocardium of the patient with aortic stenosis. Delayed enhancement image can provide these kind of information.

In summary, CT and MRI cannot optimal to assess the functional status of aortic valve but CT is the reliable method to assess the aortic root morphology and cardiac MR is the best tool to assess the myocardium in the patient with aortic valve disease.