Assessment of Mitral Valve Disease Among Pediatric Patients Using Three-Dimensional Echocardiography

Helen Grace B. Aragones, MD

Background --- Three-dimensional echocardiography is a relatively new diagnostic modality for cardiology in the Philippines but it offers great promise for improving the understanding of the mitral valve anatomy, function and pathology. It may have important implications for medical or surgical management of different mitral valve disease.

Objective --- To determine the value of 3D echocardiography in the assessment of mitral valve disease among children and to correlate with surgical findings.

Methods --- Detailed 2D and 3D assessment was done on 14 patients undergoing mitral valve surgery. Mitral valve diameters (major and minor) were measured, the anatomic features of mitral valve pathology as to gross etiology (myxomatous, endocarditic, rheumatic or functional) and primary cause of pathology (prolapsed, flail, perforated, calcified) were identified during 2DE and 3DE and were compared with surgical findings.

Results --- The measurements of the mitral valve diameter (both major and minor) obtained in 2DE and 3DE had good correlation with the surgical findings ($p < 0.05$). Identification of the gross etiology of mitral valve disease showed that the valve was myxomatous in 1 patient (7%), endocarditic in 2 (14%), rheumatic in 5 (36%), functional in 6 patients (43%). Identification of the gross etiology of mitral valve disease showed that the valve was myxomatous in 1 patient (7%), endocarditic in 2 (14%), rheumatic in 5 (36%), functional in 6 patients (43%). There was a trend towards closer agreement between 2DE and 3DE when compared to surgical findings. For the primary cause of pathology, there was note of fused commissures in 1 (7%) patient who had mitral stenosis secondary to rheumatic heart disease, prolapse in 9 (65%) patients (most commonly of the anterior mitral valve leaflet), parachute mitral valve in 1 patient (7%), perforated in 1 (7%) patient who had infective endocarditis, and 2 (14%) with calcified mitral valve leaflets. 2DE and 3DE correctly classified these but were non-conclusive due to the small sample size. For the segments of the mitral valve, the most commonly involved were the A1 and A2 scallops.

Conclusion --- 3DE combined with assessment using the standard 2DE would greatly help the surgeon in the planning of operation for mitral valve diseases in children however, more extensive studies is recommended. ***Phil Heart Center J 2012;16:81.***