ONLINE SUPPLEMENT

Transcatheter Aortic Valve Implantation in Patients with Rheumatic Aortic Stenosis

Okuno et al.

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Online Supplement 1. Video of echocardiographic images showing the morphological features of rheumatic heart disease.

1) Restricted leaflet motion with thickened anterior mitral valve leaflets, 2) chordal thickening, 3) and commissural fusion are shown.

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Online Supplement 2. Additional information on propensity score matching.

The propensity score was calculated using a multivariable logistic regression model based on 28 relevant baseline variables. The variables included age, sex, body mass index (BMI), Society of Thoracic Surgeons Predicted Risk of Mortality (STS-PROM), New York Heart Association (NYHA) functional class III or IV, hypertension, diabetes, dyslipidemia, chronic kidney disease (CKD), chronic obstructive pulmonary disease (COPD), atrial fibrillation, coronary artery disease, history of myocardial infarction (MI), history of percutaneous coronary intervention (PCI), history of coronary artery bypass graft (CABG), previous mitral valve replacement or repair, history of cerebrovascular accident, peripheral artery disease, previous permanent pacemaker, aortic valve area, aortic valve mean gradient, left ventricular ejection fraction, moderate or severe aortic regurgitation, moderate or severe mitral regurgitation, moderate or severe tricuspid regurgitation, moderate or severe mitral stenosis, pulmonary artery systolic pressure, and transfemoral access. Ten patients with rheumatic AS with missing data on aortic valve area, mitral regurgitation, tricuspid regurgitation, or pulmonary artery systolic pressure were separately matched to degenerative AS patients excluding the missing variables from the propensity score model. Patients with rheumatic AS were matched in a 1 to 4 ratio to those with degenerative AS using the propensity scores and a nearest neighbour matching protocol with replacement within a calliper of 0.2. We used 1:4 propensity score matching because sufficient controls were available and more than 4 controls per 1 case does not provide much more gain in the statistical power (Stat Med.1986;5(1):29-36.).

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Online Supplement 3. Morphological assessment of the aortic valve.

A) Rheumatic AS (rheumatic mitral stenosis based on the WHF criteria and the presence of commissural fusion of the mitral valve): A typical pattern of rheumatic AS that is most likely to be observed in a young population (a less-calcified triangular orifice with commissural fusion) is observed. B) Rheumatic AS combined with degenerative changes (a history of acute rheumatic fever and mitral valve replacement for rheumatic mitral valve disease): A triangular orifice with degenerative changes is observed. C) Rheumatic AS combined with degenerative changes (a history of acute rheumatic fever and mitral valve replacement for rheumatic mitral valve disease): A triangular orifice with degenerative changes is observed. D) Rheumatic AS combined with degenerative changes (rheumatic mitral stenosis and regurgitation based on the WHF criteria and a clinical diagnosis of rheumatic heart disease according to ICD-10 codes): The shape of the orifice and the commissural opening/fusion cannot be assessed due to severely restricted valve opening. E) Degenerative AS (no concomitant valvular lesion and no history of acute rheumatic fever): A stellate-shaped orifice with opening commissures is observed. F) Degenerative AS (no concomitant valvular lesion and no history of acute rheumatic fever): A triangular orifice with commissural fusion due to degenerative changes is observed. G) Degenerative AS (no concomitant valvular lesion and no history of acute rheumatic fever): A triangular orifice with commissural fusion due to degenerative changes was observed. H) Degenerative AS (no concomitant valvular lesion and no history of acute rheumatic fever): The shape of the orifice and the commissural opening/fusion cannot be assessed due to severely restricted valve opening.

AS = aortic stenosis; WHF = World Heart Federation.

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