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Transcatheter aortic valve implantation: are there any limits?

Danenberg, H[1]; Gilon, D[2]; Elami, A[2]; Lotan, C[2]
[1]Hadassah Medical Center, Jerusalem, Israel; [2]Hadassah Hebrew University Medical Center, Jerusalem, Israel

Objectives: Aortic valve replacement is the therapy of choice for patients who suffer from severe symptomatic aortic Stenosis (AS). Approximately one third of these patients are declined surgery due to high surgical risk. Transcatheter aortic valve implantation (TAVI) aims at treating those high surgical risk patients. In this study we assessed the clinical characteristics and appropriateness for TAVI with the CoreValve system.

Methods and Results: Between 7/2008-9/2009 we screened 30 consecutive patients with severe and symptomatic AS that were declined surgery due to high surgical risk. All patients underwent meticulous clinical and functional evaluation that included coronary, supra-aortic and femoral angiography and echocardiography. CT angiography was performed in selected cases. Out of 30 screened patients 23 (77%) were found suitable for TAVI. Seventeen underwent successful TAVI. Four patients are currently awaiting TAVI. One screened patient died while awaiting TAVI. One patient underwent coronary angioplasty and TAVI was deferred. Seven patients were declined of CoreValve TAVI due to the following reasons: valvular anatomical limitations in 2 patients, dilatation of the ascending aorta (4.5 cm) in one patient, severe organic mitral regurgitation in 1, tortuous and calcific vasculopathy in two patients and general medical condition in one. One patient that was declined of TAVI was referred back to surgery. Patients declined of TAVI were older than the implanted patient cohort, 84±4 years vs. 81±4 ($p=0.07$) and of higher Logistic Euroscore 26±6 vs. 22±4 ($p<0.05$).

Conclusions: TAVI with an expandable valve is a promising new therapy for the majority of patients at high risk for surgical AVR. However, there are still a considerable number of patients who cannot be treated with the current CoreValve technique. Further developments and combination of all transcatheter and surgical modalities are advised for the optimal treatment of complex AS patients.