Prognostic Value of Exercise Capacity as Evaluated by the 6-Minute Walk Test in Patients Undergoing Transcatheter Aortic Valve Implantation

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ABSTRACT
Introduction. The 6MWT is a simple and safe functional test used in clinical trials to assess treatment outcomes, but its prognostic value in patients undergoing TAVI is unknown. The objective of our study was to determine the prognostic value of exercise capacity as evaluated by the 6-minute walking test (6MWT) in patients with severe symptomatic aortic stenosis undergoing transcatheter aortic valve implantation (TAVI)

Methods. A total of 212 patients (mean age 79±9 years, STS score: 7.0 [4.0-8.6]%) with severe aortic stenosis had completed a 6MWT within one month of their TAVI procedure. Baseline, procedural and follow-up data were prospectively collected.

Results. The 6MWT was performed without complications in all patients. Mean distance walked was 182 ± 108 m. Female gender, anemia, renal impairment and prior stroke were associated with a shorter distance walked in the 6MWT (each p<0.01). Thirty-day and late cumulative mortality rates were 7.1% and 23.6%, respectively. A shorter distance walked pre-TAVI was associated with a higher 30-day [OR 1.06 for each decrease in 10 m (1.00-1.13), p=0.050] and late mortality [HR 1.07 for each decrease in 10 m (1.04-1.12), p<0.001]. In multivariate analysis, a lower baseline 6MWT was a predictor of late cumulative mortality [HR 1.08 for each decrease in 10 m (1.04-1.13), p<0.001] independent of baseline comorbidities, surgical risk scores or procedural complications. A distance of <160 m best determined a higher risk for cumulative late mortality (p=0.002).

Discussion. Among patients with moderate to severe heart failure, a significant correlation exists between distances walked during the 6MWT and peak oxygen consumption as measured by cardiopulmonary exercise test. Also, a shorter distance walked in the 6MWT may be a marker of frailty, which may, in turn, translate into worse outcomes. Accordingly, 6MWT may actually represent a “maximal” functional test and, thus, predict clinical outcomes in patients with symptomatic severe aortic stenosis. Although the results of this study may be applicable to the vast majority of patients undergoing TAVI, confirmatory studies will be required. Also, larger series will be needed to determine the most appropriate 6MWT cut-off distance to predict worse outcomes. In conclusion, a lower exercise capacity as evaluated by 6MWT was a strong and independent predictor of 1-year mortality in patients undergoing TAVI. The incorporation of this simple functional test can potentially enhance risk stratification in this challenging population.

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