Residential cardiac rehabilitation (rCR) derived survival predictors in patients after transcatheter aortic valve replacement (TAVR): a retrospective multicenter study

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Purpose: To evaluate exercise-based rCR derived outcome predictors in patients referred after TAVR.

Methods: Data of 434 patients (aged 81±6 years) admitted to an average 3-week rCR program after TAVR (walking, up to 30 minutes of cycling or treadmill session twice daily, respiratory and calistenic training) from January 2009 to December 2017 and home discharged, were retrospectively collected at 10 Italian rCR Division of Istituti Clinici Maugeri SpA. Comorbidity (cumulative illness rated state-comorbidity index) (CIRS-CI) score, echocardiography on admission, Disability (Barthel Index) (BI) score, Morse Fall Scale score (MFS), six minutes walking test distance (6MWT) on admission and discharge and maximal training session intensity (MTSI expressed in METs per minutes) were collected. The mortality was assessed up to 3 years after rCR discharge.

Results: During a 3-years follow up there were 120 (28%) deaths. At t-test analysis non survivors compared to survivors had significantly higher CIRS CI (p=0.000), MFS score on admission (p=0.008) and discharge (p=0.017), serum creatinine level on admission (p=0.000) and discharge (p=0.000); moreover they had significantly lower BI score on admission (p=0.000) and discharge (P=0.000), left ventricle ejection fraction (p=0.008),6MWT on admission (p=0.001) and discharge (p=0.000) and MTSI (p=0.022) in comparison to survivors.

At multivariate logistic stepwise analysis, BI score on admission and serum creatinine level at discharge were the only independent predictors of mortality (Table 1); the AUC of the final logistic model was 0.72.

Conclusions: Patients attending rCR after TAVR seem to be very old; overall mortality at 3 years follow up in patients discharged home after rCR is substantial. Disability profile on admission (measured by Barthel Index) and impaired renal function on discharge (measured by creatinine levels) are independently correlated to death at long term follow up.

Table 1

	Odd Ratio	Standard Error	p	95% Confidence Interval
BI score admission	0.975	0.005	0.000	0.965–0.986
Serum creatinine level at discharge	2.717	0.689	0.000	1.653–4.465