

The effect of underweight on mid-term outcome following transcatheter aortic valve implantation: an insight from multicenter registry

T. Tezuka¹, R. Higuchi¹, K. Hagiya¹, M. Saji¹, I. Takamisawa¹, J. Shimizu¹, N. Iguchi¹, S. Takanashi², S. Doi³, S. Okazaki³, K. Sato⁴, H. Tamura⁵, M. Takayama¹

¹Sakakibara heart institute, Fucyu Tokyo, Japan; ²Kawasaki Saiwai Hospital, Cardiovascular Surgery, Kawasaki City, Japan; ³Juntendo university graduate school of medicine, Cardiovascular Medicine, bunkyo-ku, Japan; ⁴Mie university hospital, Cardiology, Tsu, Japan; ⁵Yamagata University, Cardiology, Pulmonology and Nephrology, Yamagata, Japan

Funding Acknowledgement: Type of funding source: None

Background: Obesity has the adverse prognostic impact in the general population, whereas paradoxical effect of obesity has been reported in patients with heart failure. Several studies have suggested the same obesity paradox in patients undergoing transcatheter aortic valve implantation (TAVI), however, they included limited number of underweight patients.

Purpose: The aim of this study was to clarify the effect of underweight on outcome following TAVI.

Methods: We retrospectively analyzed consecutive 1,027 patients undergoing TAVI between April 2010 and June 2019. The patients were categorized according to body mass index (BMI) as follows: underweight (<18.5 kg/m², n=150), normal weight (18.5 to 25 kg/m², n=657), and overweight (>25 kg/m², n=220). BMI was defined as body weight (kg) divided by the square of body height (m) measured at the hospital admission. We compared the short- and mid-term outcome after TAVI among three groups, and all clinical events were accordance with Valve Academic Research Consortium-2 criteria.

Results: Underweight patients were more often female, and had a higher

prevalence of hypertension, dyslipidemia, peripheral artery disease, anemia, and hypoalbuminemia. They also presented lower ejection fraction, smaller aortic valve area, and higher surgical risk score. In procedural findings, device unsuccess and major vascular complication more occurred in underweight patients, but 30-day mortality was equivalent among three groups. The mid-term survival of the underweight was inferior to the other two groups (figure). In the multivariate analysis, female (hazard ratio [HR] 0.52, 95% confidence interval [CI] 0.37–0.73, P=0.0002), atrial fibrillation (HR 2.22, 95% CI 1.56–3.17, P<0.0001), albumin value (HR 0.37 per 1-g/dl increase, 95% CI 0.25–0.55, P<0.0001), Society of Thoracic Surgeons score (HR 1.06 per 1% increase, 95% CI 1.02–1.06, P=0.0039), 30-day combined endpoint (HR 2.12, 95% CI 1.33–3.38, P=0.0017), and underweight (HR 1.59, 95% CI 1.04–2.37, P=0.026) were associated with the survival after TAVI.

Conclusion: The underweight had a worse mid-term prognosis, representing the obesity paradox in the TAVI population.

