Kardiologia Polska 2019; 77, 2: 162–163; DOI: 10.5603/KP.2019.0020 ISSN 0022–9032

EDITORIAL

Should patients become obese before transcatheter aortic valve implantation?

Tomo Ando[1], Hisato Takagi[2]

[1]Department of Medicine, Division of Cardiology, Wayne State University/Detroit Medical Centre, Detroit, MI, United States
[2]Department of Surgery, Division of Cardiovascular Surgery, Shizuoka Medical Centre, Shizuoka, Japan

Article Tokarek et al., see p. 190

Obesity is highly prevalent in economically advanced countries and incurs a substantial burden on health care. It has been reported to be associated with comorbidities such as hypertension, diabetes mellitus, and dyslipidaemia, as well as diseases such as cardiovascular and cerebrovascular disease [1]. Despite these associations, the so-called obesity paradox, a phenomenon indicating that obese patients actually have better survival, has been repeatedly reported in various conditions [2–7].

Tokarek et al. [8] have recently presented outcomes of transcatheter aortic valve implantation (TAVI) among 148 consecutive patients classified according to the body mass index (BMI) into normal-weight (18.5–24.9 kg/m^2), overweight (25.0–29.9 kg/m^2), and obese (≥ 30 kg/m^2). After excluding one patient with a low BMI, the final analysis comprised 147 subjects. The proportion of obese patients was 25.2%, and in an adjusted model patients with normal BMI had higher all-cause mortality compared with the obese cohorts (hazard ratio 3.86). BMI was also associated with lower all-cause mortality (hazard ratio 0.91, per 1 kg/m^2 increase). While this work constitutes another piece of evidence on the existence of the obesity paradox in post-TAVI patients, we still do not have a clear idea of the mechanisms of this phenomenon. The present study adds important insights by assessing the frailty score using several scales in patients with different BMI values. Interestingly, although there was no statistical difference, most of the frailty indices were lower in the obese cohorts and the duration of the five-metre walk test was significantly shorter in obese patients (indicating lower frailty). Various frailty scales were not included in the multivariate analysis, but it would have been interesting to see how their inclusion would have affected the results, because frailty is one of the well-known predictors of mortality following TAVI [9]. Of note, there was no significant difference in the rate of myocardial infarction or cerebrovascular events, and these events were unlikely to be the cause of the obesity paradox in this study. Observing the Kaplan-Meier curve for all-cause mortality in the present study, it can be seen that the curve diverges rapidly at an early stage and stabilises later in the normal BMI cohort, whereas the event occurs more frequently after two years or so in the obese group, after an initially low mortality rate during follow-up. This finding may support one of the theories behind the obesity paradox discussed by the authors, i.e. that the metabolic reserve in obese cohorts may have a protective effect in acute morbidities and procedural stress.

In light of the previous studies relating to the obesity paradox post-TAVI, this study adds to the current literature, proving that BMI is a useful variable for further risk stratification in post-TAVI patients. Should nutritional assessment be part of a routine evaluation in TAVI patients regardless of BMI? Should patients try to gain weight prior to the procedure? While patients with low BMI gaining weight through nutritional referral and assessment prior to TAVI appears to be a plausible perioperative management, should patients with normal BMI try to gain weight and become obese prior to TAVI? Further studies are required to elucidate the mechanism of the obesity paradox.

Conflict of interest: *none declared*

References

1. American College of Cardiology/American Heart Association Task Force on Practice Guidelines, Obesity Expert Panel, 2013. Executive summary: Guidelines (2013) for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the Obesity Society published by the Obesity Society and American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Based on a systematic review from the The Obesity Expert Panel, 2013. Obesity (Silver Spring). 2014; 22 Suppl 2: S5–39, doi: 10.1002/oby.20821, indexed in Pubmed: 24961825.

Address for correspondence:
Tomo Ando, MD, Detroit Medical Centre, Division of Cardiology, 3990, John R, Detroit, MI, 48201, United States, tel: 313-745-2620, fax: 313-745-8643, e-mail: andotomo@hotmail.co.jp

2. Powell-Wiley TM, Ngwa J, Kebede S, et al. Impact of Body Mass Index on Heart Failure by Race/Ethnicity From the Get With The Guidelines-Heart Failure (GWTG-HF) Registry. JACC Heart Fail. 2018; 6(3): 233–242, doi: 10.1016/j.jchf.2017.11.011, indexed in Pubmed: 29428434.
3. Pamoukdjian F, Aparicio T, Canoui-Poitrine F, et al. Obesity survival paradox in cancer patients: Results from the Physical Frailty in older adult cancer patients (PF-EC) study. Clin Nutr. 2018 [Epub ahead of print], doi: 10.1016/j.clnu.2018.12.011, indexed in Pubmed: 30583963.
4. Sandhu RK, Ezekowitz JA, Hijazi Z, et al. Obesity paradox on outcome in atrial fibrillation maintained even considering the prognostic influence of biomarkers: insights from the ARISTOTLE trial. Open Heart. 2018; 5(2): e000908, doi: 10.1136/openhrt-2018-000908, indexed in Pubmed: 30487982.
5. Neeland IJ, Das SR, Simon DN, et al. The obesity paradox, extreme obesity, and long-term outcomes in older adults with ST-segment elevation myocardial infarction: results from the NCDR. Eur Heart J Qual Care Clin Outcomes. 2017; 3(3): 183–191, doi: 10.1093/ehjqcco/qcx010, indexed in Pubmed: 28838094.
6. Ma WQ, Wang Y, Sun XJ, et al. Does body mass index truly affect mortality and cardiovascular outcomes in patients after coronary revascularization with percutaneous coronary intervention or coronary artery bypass graft? A systematic review and network meta-analysis. Obes Rev. 2018; 19(9): 1236–1247, doi: 10.1111/obr.12713, indexed in Pubmed: 30035367.
7. Davenport DL, Xenos ES, Hosokawa P, et al. The influence of body mass index obesity status on vascular surgery 30-day morbidity and mortality. J Vasc Surg. 2009; 49(1): 140––147.doi: 10.1016/j.jvs.2008.08.052, indexed in Pubmed: 19028047.
8. Tokarek TA, Dziewierz A, Sorysz D, et al. The obesity paradox in patients undergoing transcatheter aortic valve implantation: is there any effect of body mass index on survival? Kardiol Pol. 2019; 77(2): 190–197, doi: 10.5603/KP.a2018.0243, indexed in Pubmed: 30575008.
9. Afilalo J, Lauck S, Kim DH, et al. Frailty in Older Adults Undergoing Aortic Valve Replacement: The FRAILTY-AVR Study. J Am Coll Cardiol. 2017; 70(6): 689–700, doi: 10.1016/j.jacc.2017.06.024, indexed in Pubmed: 28693934.