

## Letter: The discrepancy over the obesity paradox



Daisuke Sueta\*, MD, PhD; Noriaki Tabata, MD, PhD; Kenichi Tsujita, MD, PhD

*Department of Cardiovascular Medicine, Graduate School of Medical Sciences, Kumamoto University, Kumamoto City, Japan*

We read with great interest the article in which Wolny et al<sup>1</sup> concluded that moderately increased body mass index (BMI) is associated with improved survival post percutaneous coronary intervention (PCI). We strongly agree with their opinions.

The prevalence of obesity has dramatically increased not only in developed countries but also in developing countries, and it has become a social problem worldwide. Accumulating longitudinal studies have suggested that obesity is an independent predictor of coronary artery disease, whereas it was also reported that BMI was inversely correlated with mortality in coronary artery disease patients. This led to the proposal of the concept called the “obesity paradox,” about which there are not yet any definite conclusions.

Recently, we reported that patients undergoing PCI with malignancy (history or current status) had significantly higher rates of adverse cardiovascular events but might not have the conventional prognostic factors<sup>2</sup>. The reason conventional prognostic factors do not apply in the malignant disease group is not clear, but the following reasons can be suggested. Because malignant diseases and atherosclerotic diseases share certain risk factors, it would be reasonable to expect malignant disease patients to have atherosclerotic diseases. Furthermore, malignant diseases and atherosclerosis lesions are both characterised by inflammation. We have

already reported that the combination of malignancy and high high-sensitivity C-reactive protein level has been associated with significantly higher incidences of cardiovascular events<sup>3</sup>. Thus, we speculate that local malignancies increase vascular wall inflammation by increasing the levels of various inflammatory cytokines and that this circulatory inflammation causes progressive arteriosclerosis. Hence, one possibility as to why conventional prognostic factors do not apply to the malignant disease group is that malignancy itself might be a residual risk factor for cardiovascular events. Although Wolny et al stated that patients diagnosed with cancer were not included in most stent trials, three of the 13 clinical studies mentioned excluded current or planned chemotherapy for malignancy.

Finally, we believe that the “discrepancy over the obesity paradox” may underlie the presence or absence of malignant diseases. Incorporating the presence or absence of malignancy into the results shown by Wolny and colleagues may provide a mechanism for the discrepancy over the obesity paradox.

### Acknowledgements

We thank the paramedical staff and clinical secretaries for their support with this work.

\*Corresponding author: Department of Cardiovascular Medicine, Graduate School of Medical Sciences, Kumamoto University, 1-1-1, Honjo, Chuo-ku, Kumamoto City, 860-8556, Japan. E-mail: sueta-d@kumamoto-u.ac.jp

## Conflict of interest statement

The authors have no conflicts of interest to declare.

## References

1. Wolny R, Maehara A, Liu Y, Zhang Z, Mintz GS, Redfors B, Madhavan MV, Smits PC, von Birgelen C, Serruys PW, Mehran R, Leon MB, Stone GW. The obesity paradox revisited: body mass index and long-term outcomes after PCI from a large pooled patient-level database. *EuroIntervention*. 2020;15:1199-208.
2. Sueta D, Tabata N, Ikeda S, Saito Y, Ozaki K, Sakata K, Matsumura T, Yamamoto-Ibusuki M, Murakami Y, Jodai T, Fukushima S, Yoshida N, Kamba T, Araki E, Iwase H, Fujii K, Ihn H, Kobayashi Y, Minamino T, Yamagishi M, Maemura K, Baba H, Matsui K, Tsujita K. Differential predictive factors for cardiovascular events in patients with or without cancer history. *Medicine (Baltimore)*. 2019;98:e17602.
3. Tabata N, Sueta D, Yamamoto E, Takashio S, Arima Y, Araki S, Yamanaga K, Ishii M, Sakamoto K, Kanazawa H, Fujisue K, Hanatani S, Soejima H, Hokimoto S, Izumiya Y, Kojima S, Yamabe H, Kaikita K, Tsujita K; KUMA study investigators. Outcome of current and history of cancer on the risk of cardiovascular events following percutaneous coronary intervention: a Kumamoto University Malignancy and Atherosclerosis (KUMA) study. *Eur Heart J Qual Care Clin Outcomes*. 2018;4:290-300.