Invited author response to editorial commentary: hypoalbuminemia in patients undergoing transcatheter aortic valve replacement: culprit or surrogate?

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With great interest, we read the editorial commentary by Drs. Aranda-Michel, Bianco, Kilic and Sultan. Their commentary highlights the many factors possibly leading up to and interacting with hypoalbuminemia. Low albumin level could be used as a possible indicator of anemia, limited daily living, and heavy smoking in elderly patients which we confirmed in the characterization of our patient cohort such as dialysis requirements, chronic obstructive pulmonary disease (COPD), and a worse New York Heart Association classification. Patients with hypoalbuminemia had more comorbidities, which was associated with higher postoperative complications. A frailty score was not evaluated in this group of patients. To address the question whether hypoalbuminemia is a feasible marker to predict early mortality and morbidity in elderly patients undergoing transcatheter aortic valve replacement (TAVR) procedure, we performed a retrospective analysis at our Heart Center.

We agree that factors such as active malignancy, frailty, porcelain aorta, chest wall radiation, liver cirrhosis, or neurological impairment interact with serum albumin levels and are not comprehensively integrated in current risk stratification models (STS-PROM, logistic EuroSCORE, EuroSCORE II). However, recent publications have shown that TAVR is not only feasible in patients with surgical high risk but is increasingly being performed in patients at intermediate to low surgical risk (1,2). At our hospital, individual treatment decisions are made by a Heart Team

taking these crucial factors into considerations according to current European guidelines (3). Therefore, we carried out a retrospective study to investigate the prognostic value of serum albumin levels.

As we have stated in the original article, we are aware that study has limitations due to its small sample size in the hypoalbuminemia group. However, we decided to investigate this in order to start looking for markers that may be good candidates to add to a new or existing scoring system more directly aimed at TAVR. A multivariate adjustment for 30-day mortality or postoperative complications in the statistical analysis could not be evaluated. We focused on the perioperative morbidity and mortality and did not analyze the long-term follow-up.

The commentary picked up adequacy concerns for the use of EuroSCORE or STS PROM scores for the TAVR population and question whether a new score may be warranted. We focused on the acute postoperative effect of hypoalbuminemia and addressed the question whether perioperative mortality is increased comparing risk stratification scoring systems. The surgical scores, STS and EuroScore were designed for patients undergoing cardiac surgery to predict operative mortality as mortality within 30 days from operation or later if the patient is still hospitalised (4,5). We showed, that the STS PROM score calculated a higher expected mortality in the hypoalbuminemia group. Both scoring systems are

consistently calculated at admission at our Heart Center. Whether these scoring systems could be adopted for the long-term follow-up has to be addressed. Arsalan and his group compared established scoring systems with a newly developed scoring system, STS/ACC TAVR risk score, in a German patient cohort undergoing TAVR to predict 30-day mortality (6). Their data show superiority of the STS PROM and STS/ACC TAVR scores compared with other risk calculation models in predicting 30-day mortality. We showed that hypoalbuminemia goes along with the STS PROM score and underlines the critical health care status, such as malnutrition, frailty and comorbidities. As the field of TAVR procedures is expanding and including patients at intermediate or low surgical risk, we need to evaluate the long-term durability and function of TAVR. Interestingly, patient selection is changing, as ever younger patients are considered to undergo TAVR procedures. A new and specifically tailored risk score could be helpful but whether it is warranted and critically needed for the TAVR population remains unanswered.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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