Perioperative predictors of atrial fibrillation

To the Editor,

We have read with great interest the article entitled "Post-operative atrial fibrillation prediction following isolated surgical aortic valve replacement" in the current issue of the journal (1). In this study, authors aimed to determine pre- and perioperative risk factors in patients undergoing surgical aortic valve replacement and to design a model that can predict the postoperative arrhythmic event.

They found that age, diabetes mellitus, increased preoperative creatinine levels, and increased LA volume were associated with postoperative atrial fibrillation (AF). Intraoperative variables, such as cross clamp and cardiopulmonary bypass times, which are very important for AF, were not associated with postoperative AF. We see that variables associated with AF by the authors are mostly preoperative variables. They also reported that prolonged ventilation, stroke, neurological complications, and acute renal failure showed significant differences in the AF group. When we consider all of these results in the study, we believe that postoperative AF is mostly associated with postoperative inflammatory problems, which is not enough to design a model that can predict the postoperative arrhythmic event with preoperative variables as in this study. Otherwise, inflammatory markers must be added to predict postoperative AF. They reported that multivariate analysis identified high arrhythmic risk for advanced age, body mass index, moderate tricuspid regurgitation, prolonged ventilation, longer intensive care unit stay, and increased LA volume. We think that we must exclude patients with prolonged ventilation, longer intensive care unit stay, acute kidney injury, and neurological complications from the AF group because these variables are postoperative problems that cause AF in this study group. If authors want to design a model that can predict the postoperative arrhythmic event, then they need a standardized patient population between with and without AF group. We are also in the opinion that, currently, it is not enough to design a model to predict postoperative AF without perioperative inflammatory markers, such as CRP and interleukins.

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Reference

1. Iliescu AC, Salaru DL, Achitei I, Grecu M, Floria M, Tinica G. Post-operative atrial fibrillation prediction following isolated surgical aortic valve replacement. Anatol J Cardiol 2018; 19: 394-400.

Author`s Reply

To the Editor,

We would like to thank to the colleagues for their interest in our article (1). First, postoperative atrial fibrillation (POAF) in patients with isolated surgical aortic valve replacement (SAVR) is far from being completely elucidated (2), and novel predictors and algorithm still cause substantial debate. This is very important because POAF has an important impact on patient's recovery and hospitalization duration, requires additional interventions or medications with possible side effects, and can result in major complications such as stroke or death (2, 3). The assessment of predictors for POAF is important not only for increasing morbidity of this arrhythmia but also for increasing related costs in these patients (2).

Second, in this study, we found six variables associated with high postoperative arrhythmic risk using multivariate analysis, namely advanced age, body mass index (with a cut-off value of 27 kg/m^2), moderate tricuspid regurgitation, prolonged ventilation, longer intensive care unit stay, and increased left atrium volume (>35 mL/m^2). The parameters included in preoperative risk assessment (by EuroScore II) are factors with a high risk for AF (age, NYHA class, renal impairment, systolic left ventricular dysfunction, diabetes mellitus, etc). In our patients, EuroScore II was significantly higher in patients with POAF (9.00±2.87 vs. 5.78±1.97; p<0.001). We also found that prolonged ventilation, stroke, neurological complications, and acute renal failure were significantly more frequent in the AF group. We consider that these complications were determined by a higher surgical risk. It is not ethically (4) and scientifically appropriate to exclude these patients from the AF group. In addition, in real life, these are the patients who are referred for SAVR. We consider that a higher risk of POAF in these patients could be related to a pre-existing substrate for AF (atrial enlargement and structural atrial remodeling due to the chronic diastolic dysfunction).

Clinically meaningful AF requires the presence of both a trigger and a vulnerable atrial substrate (3). Obviously, there are also incriminated acute factors such as inflammation, atrial oxidative stress, high sympathetic tone, electrolyte changes, and volume overload (3, 5). Beyond the perioperative status of these patients (which ideally should be almost the same) is the degree of pro-arrhythmic substrate (which is different among patients). We could emphasize that those postoperative acute factors are trig-