

Perioperative predictors of atrial fibrillation

To the Editor,

We have read with great interest the article entitled "Postoperative 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.

 Şahin Işcan,  Börteçin Eygi,  Yüksel Beşir,  Orhan Gökalp
Department of Cardiovascular Surgery, Katip Çelebi University, İzmir
Atatürk Training and Education Hospital; İzmir-Turkey

Reference

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

Address for Correspondence: Dr. Şahin Işcan,

Katip Çelebi Üniversitesi,
Atatürk Eğitim ve Araştırma Hastanesi,
Kalp ve Damar Cerrahisi Anabilim Dalı,
İzmir-Türkiye

Phone: +90 505 488 20 90

E-mail: sahiniscan@gmail.com

©Copyright 2018 by Turkish Society of Cardiology - Available online
at www.anatoljcardiol.com

DOI:10.14744/AnatolJCardiol.2018.34946



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/m²), moderate tricuspid regurgitation, prolonged ventilation, longer intensive care unit stay, and increased left atrium volume (>35 mL/m²). 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 proarrhythmic substrate (which is different among patients). We could emphasize that those postoperative acute factors are trig-

gers for AF (as the main substrate for AF). However, the pathophysiology of POAF is unclear. Therefore, a better preoperative control of factors incriminated as substrate in POAF could be very important. For example, the use of statins is associated with a 22%–34% lower risk of POAF (3).

In the third line, we have noted the following statements in study limitations (1): “The underlying mechanisms of POAF are yet to be determined. Future models should include parameters of the inflammatory response and other new variables derived from these findings.” Also, in discussions, we have noted the following: “In our opinion, future studies should include variables that describe the inflammatory response to surgery, such as C-reactive protein or interleukin 6.” We understand that authors of this letter agree with us.

Finally, the suggestion “to select a standardized patient population between with and without AF group” is not in accordance with the patient population with need for SAVR in real life. However, estimating individual risks for POAF in patients undergoing SAVR is important for applying prophylactic strategies only in patients with high arrhythmic risk, thereby avoiding excessive cost and unwanted side effects in low-risk individuals. Therefore, we consider that our tree model based on chi-squared automatic interaction detection for patients with POAF is very important.

 Alina Cristina Iliescu¹,  Delia Lidia Salaru^{1,2},  Ionut Achitei¹,
 Mihaela Grecu¹,  Mariana Floria^{2,3},  Grigore Tinica^{1,2}

¹Institute of Cardiovascular Disease; Iași-Romania

²Grigore T. Popa University of Medicine and Pharmacy; Iași-Romania

³Sf. Spiridon Emergency Hospital; Iași-Romania

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.
2. Frenzl G, Sodickson AC, Chung MK, Waldo AL, Gersh BJ, Tisdale JE, et al. 2014 AATS guidelines for the prevention and management of perioperative atrial fibrillation and flutter for thoracic surgical procedures. *J Thorac Cardiovasc Surg* 2014; 148: e153-93. [[CrossRef](#)]
3. Kirchhof P, Benussi S, Kotecha D, Ahlsson A, Atar D, Casadei B, et al. 2016 ESC Guidelines for the management of atrial fibrillation developed in collaboration with EACTS. *Eur Heart J* 2016; 37: 2893-962. [[CrossRef](#)]
4. Mihai BM, Petriș AO, Ungureanu DA, Lacatușu CM. Insulin resistance and adipokine levels correlate with early atherosclerosis – a study in prediabetic patients. *Open Med (Wars)* 2014; 10: 14-24.
5. Lacatușu CM, Cijevschi-Prelipcean C, Mihai C, Mihai BM. Ethics of artificial nutrition. *Rev Rom Bioet* 2014; 12: 44-55.

Address for Correspondence: Mariana Floria, MD,

From 3rd Medical Clinic and
Grigore T. Popa University of Medicine and
Pharmacy 16 University Street,
Iași-Romania

Phone: +40 232 301 600

Fax: +40 232 211 820

E-mail: floria_mariana@yahoo.com

©Copyright 2018 by Turkish Society of Cardiology - Available online
at www.anatoljcardiol.com