

Nonthyroidal illness syndrome in off-pump coronary artery bypass surgery

To the Editor,

We want to congratulate Caluk et al. (1) for their fluent and impressive article "Nonthyroidal illness syndrome in off-pump coronary artery bypass surgery" published in *Anatolian Journal of Cardiology* 2015; 15: 836-42. As they mentioned, many reasons such as surgical operations, acute and chronic systemic diseases, sepsis, and severe burns may result in nonthyroidal illness syndrome (NTIS).

Cardiopulmonary bypass (CPB) usage in the cardiac surgery produces widespread alterations not only in humoral, inflammatory, or metabolic functions but also in neuroendocrine levels. Some authors studied changes that may be influenced by the duration of bypass or CPB techniques such as contents of the priming solution, degree of hypothermia, or cardiac venting. However, the mechanisms of endocrine alterations resulting from bypass are still poorly understood. Nevertheless, we can argue that these changes may increase with longer durations of CPB or extracorporeal circulatory support.

In several studies, on-pump coronary artery bypass (ONCAB) and off-pump coronary artery bypass (OPCAB) techniques were compared, and they showed that the main difference between the two is inflammation arising from extracorporeal circulation (2). In the study of Caluk et al. (1), "the results show that NTIS occurs in a significant number of patients subjected to CABG and that there is no difference in the incidence of NTIS between patients operated on using the OPCAB and ONCAB technique." But they emphasized that "NTIS occurred in some two-thirds of patients, which is less than in the studies of other authors." Their presumption is age, which can potentially be associated with adverse outcomes. They had analyzed 50–70-year-old patients, while the other authors studied older ones (1). In the article of Velissaris et al. (3), they studied the effects of coronary bypass surgery upon thyroid function and compared ONCAB and OPCAB techniques, and found that there was no significant difference between two groups for the changes of thyroid function. They gave us aortic cross clamping (AXC) and CPB time (CPB time=62.6±23.7 min; AXC time=32.6±10.8 min). On the other hand, Caluk et al. did not give AXC and total CPB time but the number of anastomosis.

In fact, NTIS may be related to the severity of the patient condition (4), and even though CPB should not be considered as the sole trigger of NTIS in cardiac surgical patients (5), we should take into account the duration of CPB. Thus, we wonder if AXC or CPB times are shorter than those in the cases in the article of Velissaris et al. (3). If Caluk et al. (1) can share the data with us, we may understand well the results that lesser visible of NTIS in their study than other authors' results.

We are interested in your opinion regarding this matter.

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Author's Reply

To the Editor,

We have read with interest the letter to the editor related to our article "Nonthyroidal illness syndrome in off-pump coronary artery bypass surgery" published in *Anatolian Journal of Cardiology* 2015; 15: 836-42 (1) and the questions within. We appreciate the authors' interest in our subject of investigation. They raise an interesting question about the effects of duration of cardiopulmonary bypass (CPB) and aortic cross-clamping time (AXC) during cardiac surgery on neuro-humoral mechanisms and, therefore, possibly on thyroid function as well. Of course, the longer the operation lasts, and the longer the CPB and AXC times are, the more we can expect these effects to become evident. In our study, we observed that the CPB time was 69.74±19.26 min and the AXC time was 46.59±12.07 min. We think that with a larger sample and a differently designed study, these effects might be observed and analyzed. It would be interesting to compare sub-groups of patients operated using on-pump coronary bypass surgery technique (ONCAB) regarding the duration of CPB and AXC, as well as sub-groups of patients of different ages, including older patients, and by all

means using larger samples. Using the data from our research, we see that CPB time in our study was just a bit longer than that in the study of Velissaris et al. (2), but the AXC time was somewhat (maybe even considerably) longer in our patients. It was therefore our conclusion that the age of our patients was the primary key as to the percentage of them having experienced non-thyroidal illness syndrome (NTIS) after cardiac surgery in comparison to other investigators' papers on this subject. We have stated some study limitations in our paper: a larger sample with more details and parameters investigated and analyzed, as well as a sample with a wider age range, might reveal additional information about this interesting phenomenon.

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Renal dysfunction as a marker of increased mortality in patients with pulmonary thromboembolism

To the Editor,

We read with great interest the article entitled "Chronic kidney disease: Prognostic marker of nonfatal pulmonary thromboembolism" published in *Anatol J Cardiol* 2015; 15: 938-43 by Ouatu et al. (1) and congratulate the authors on carrying out research on such an important subject. The study identifies renal dysfunction, assessed by glomerular filtration rate, as a predictor of death in non-high-risk patients with pulmonary thromboembolism after a 2-year follow-up. The issue of mortality risk stratification in these patients is very important, because they represent a heterogeneous group with an early mortality risk between 1–15% (2) and could benefit from further risk stratification in order to identify patients at higher risk, who could require more aggressive therapy.

Research on risk stratification of patients with pulmonary thromboembolism is focused on early, 30-day mortality risk predictors, and this study, that extends follow-up to 2 years, offers us an interesting view in the evolution of these patients. An interesting analysis would be to examine the causes of death in the study population and their time of onset from the acute event, which were not mentioned in the paper. Given the fact that chronic kidney disease is a known risk factor for cardiovascular disease, identification of the causes of death could be useful in arguing a link between atherosclerosis and venous thrombosis, especially noting the high prevalence of coronary heart disease (64%), older age, and, surprisingly, no incidence of cancer, among the patients that did not survive.

The current European Society of Cardiology guidelines on diagnosis and management of acute pulmonary embolism (2) advocate the use of the Pulmonary Embolism Severity Index for evaluating the 30-day mortality risk. This prognostic score published by Aujesky et al. (3) is based on 11 clinical patient characteristics and is most useful in identifying low risk patients. Interestingly, the study identified a blood urea nitrogen level greater than 30 mg/dL (11 mmol/L) as an independent predictor of increased 30-day mortality and elaborated an extended 17-variable prediction model, which included renal dysfunction, that had a higher discriminatory power, but similar mortality rates, and was considered to add insufficient benefit to the simpler version.

In this regard, renal dysfunction is a predictor of both early and long-term increased mortality in patients with acute pulmonary thromboembolism. However, the significance of this risk prediction and its usefulness must be evaluated in further dedicated clinical studies.

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