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Comment on "Relationship between C-reactive protein/albumin ratio and new-onset atrial fibrillation after coronary artery bypass grafting"

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Dear Editor,

We have read with great interest the article by Fatih Aksoy[1], entitled "Relationship between c-reactive protein/albumin ratio and new-onset atrial fibrillation after coronary artery bypass grafting." The authors find that the novel inflammatory marker C-reactive protein/albumin ratio (CAR) can be used as a reliable marker to predict the development of atrial fibrillation (AF) following coronary artery bypass grafting (CABG). The findings of this survey can bring new judgment indicators for the diagnosis and therapy of AF, to save the diagnosis cost of AF. Nevertheless, we believe that this article still has some issues worthy of further discussion.

The purpose of this study was to compare the predictive value of CAR with other inflammatory markers such as neutrophil/lymphocyte (N/L) ratio and platelet/lymphocyte (P/L) ratio in determining new-onset AF after CABG. Only the prediction accuracy of CAR and CPB was compared in this study. However, the reliability of CAR with N/L and P/L was not explored[2]. Therefore, we recommend that the authors edit the summary objective or add data and statement that can prove the objective. The exclusion criteria of the study included hyperthyroidism, age <18 years, prior cardiac surgery, class III or IV heart failure, previous AF, left atrial diameter >55 mm, left ventricular ejection fraction <0.25, sepsis, heart rate <60 bpm, systolic blood pressure <90 mmHg, inflammatory disease, pericarditis, patients undergoing off-pump surgery, and having antiarrhythmic treatment. The CAR was changed with diabetes, dyslipidemia, and left ventricular ejection fraction[3]. Table 1 reveals that patients with postoperative atrial fibrillation (POAF) were significantly older and more males were affected when compared to patients without POAF ($p<0.001$ and $p=0.003$, respectively) and the presence of diabetes mellitus and hypertension was higher in patients with POAF compared to patients without POAF. Therefore, exclusion criteria should also include obesity, diabetes, or other chronic diseases and the use of drugs that affect C-reactive protein or albumin.

C-reactive protein[4], a type of acute protein, rises sharply in plasma when the body is infected or when the tissue is damaged. The main problem of this study is that C-reactive protein was used to evaluate the degree of tissue inflammation and myocardial function. Heart bypass surgery will inevitably cause certain damage to myocardial function[5], meaning it inevitably enhances the CRP levels. As a result, due to tissue damage, different degrees of albumin levels will decline due to individual differences. Hence, we are suspicious of the practicality of CAR. According to relevant research reports[6], various acute inflammation, tissue damage, myocardial infarction, surgical trauma, radiation damage, and other diseases rapidly increase within a few hours after the onset and have a tendency to increase exponentially. When the *illness* develops, the level of CRP swiftly declines to normal; however, the level of CRP is not always positively correlated with the degree of infection. Level of CRP increases within hours following the operation and then reduces 7–10 days after the operation. If the CRP

Table 1. Characteristics of the subjects included.

	Without AF (n=279)	With AF (n=136)	p
Age (years)	60.5±12.4	67.5±8.9	<0.001
BMI (kg/m^2)	29.0±5.2	28.0±4.4	0.05
Female (n, %)	90 (32.3)	26 (19.1)	0.003
Diabetes mellitus (n, %)	114 (40.9)	73 (53.7)	0.009
Hypertension (n, %)	202 (72.4)	121 (89.0)	<0.001

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does not shrink or rises again, it may be complicated by infection or thromboembolism.

Another point to discuss is that the proportion of the sample (in which 299 are males, accounting for 72%) surveyed by the author is not balanced. There are only 116 females, accounting for 28%. The gender distribution of this study may cause selection bias[7]. In addition, the authors did not provide detailed demographic characteristics such as occupations and residential addresses of the sample, because different occupations or residential addresses have different effects on cardiac function.

DATA AVAILABILITY

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

CONSENT FOR PUBLICATION

All other authors have read the manuscript and have agreed to submit it in its current form for consideration for publication in the *Revista da Associação Médica Brasileira*.

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AUTHORS' CONTRIBUTIONS

MM: Conceptualization, Data curation, Formal Analysis, Methodology, Project administration. **LH**: Conceptualization, Writing – review & editing. **LZ**: Conceptualization, Writing – review & editing.

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