

## Left Atrial Volume Index as Predictor of Events in Acute Coronary Syndrome

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### Dear Editor,

The Left Atrial Volume Index (LAVi) is a measurement that has gained importance in daily clinical practice due to evidence of its capacity to predict mortality, in patients followed after an Acute Myocardial Infarction (AMI), as well as in the general population<sup>1</sup>.

The study by Secundo Junior et al. sought to evaluate the role of LAVi as a predictor of late events in patients with acute coronary syndrome<sup>2</sup>. This study was able to corroborate previous findings in patients with AMI and demonstrated that increased LAVi may also be able to predict major cardiovascular events in patients with unstable angina. Correspondingly, it showed that patients with increased LAVi were those with higher prevalence of systemic arterial hypertension (SAH), previous AMI and angioplasty, of older age, with higher body mass index (BMI), lower left ventricular (LV) ejection fraction and more severe diastolic dysfunction, showing that the index may be a marker related to a higher occurrence of cardiovascular diseases and comorbidities.

In cohort studies, a significant problem is the presence of non-controlled variables, which are potential confounding factors that can possibly interfere with the results. The degree of reperfusion success (assessed by TIMI flow, myocardial blush or ST-segment recovery), which maintains significant correlation with better survival, can be one of those factors not measured in this study<sup>3</sup>. Another confounding factor could be the incidence of atrial fibrillation (AF) in the extra-hospital period. The causal association between AF and ischemic cerebrovascular accident (CVA) has been documented, regardless of echocardiographic findings. It is associated with a four to five-fold increase in the risk of ischemic CVA<sup>4</sup> and it is responsible for more than 15% of these events in individuals in all age ranges and 30% in individuals older than 80 years<sup>5</sup>.

Thus, it is not clear, in the results of Secundo Junior et al., whether the high incidence of CVA in the non-hospital follow-up was due only to the increase in LAVi or the possible occurrence of this arrhythmia, and one cannot say that there was no influence of better or worse reperfusion on the incidence of events in either group.

### Keywords

Organ Size; Heart Atria; Myocardial reperfusion; Atrial Fibrillation; Acute Coronary Syndrome/mortality.

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### References

1. Moller JE, Hillis GS, Oh JK, Seward JB, Reeder GS, Wright RS, et al. Left atrial volume: a powerful predictor of survival after acute myocardial infarction. *Circulation*. 2003;107(17):2207-12.
2. Santos MA, Faro GB, Soares CB, Silva AM, Secundo PF Jr, et al. Índice de volume atrial esquerdo e predição de eventos em síndrome coronária aguda: registro solar. *Arq Bras Cardiol*. 2014; 103(4): 282-91
3. Sattur S, Sarwar B, Sacchi TJ, Brener SJ. Correlation between markers of reperfusion and mortality in ST-elevation myocardial infarction: a systematic review. *J Invasive Cardiol*. 2014; 26(11):587-95.
4. Wolf PA, Abbott RD, Kannel WB. Atrial fibrillation as an independent risk factor for stroke: the Framingham Study. *Stroke*. 1991;22(8):983-8.
5. Wolf PA, Abbott RD, Kannel WB. Atrial fibrillation: a major contributor to stroke in the elderly: the Framingham Study. *Arch Intern Med*. 1987;147(9):1561-4.

## Answer to Letter to the Editor

Thank you for your comments and interest in our research and the SOLAR registry. Regarding the potential influence of atrial fibrillation on the higher incidence of ischemic cerebrovascular accident (CVA) in patients with high Left Atrial Volume Index (LAVi), we believe it has not occurred in a significant manner in our study. As shown in Table 3, no significant difference was found regarding atrial fibrillation as a late event between the groups ( $p = 0.14$ ). As for the possible inclusion of the degree of reperfusion success, we consider it unlikely the presence of any influence of this factor, as the aforementioned table showed no difference regarding hospital treatment between the high LAVi and low LAVi groups, for both clinical treatment alone ( $p = 0.42$ ) and for angioplasty ( $p = 0.56$ ), as well as for myocardial revascularization ( $p = 0.68$ ).

Additionally, we believe that the chosen model was the most adequate to the study design and statistical analysis. This was demonstrated by the number of factors (eight) considering the sample size, avoiding overfitting and remaining within a

prudent association between predictors and achieved number of events. Several *post hoc* tests were used, such as landmark analysis, proportional hazards assumption test and obtaining Schoenfeld residuals.

These tests showed absence of violations, robust estimates and satisfactory fit of the final model which, incidentally, included factors of extreme clinical relevance and that are easy to acquire, such as the age, gender, presence of diabetes or hypertension acute coronary syndrome type and ejection fraction, then adjusted to LAVi. Finally, because this is a registry, it is indeed necessary to consider the virtual presence of confounding factors and interactions, which was duly explained in the midst of the article, when we describe the potential limitations of this study.

Sincerely,

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