

**EDITORIAL**

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# Higher Hospitalization Rate and Impaired Quality of Life in the Presence of Severe Tricuspid Regurgitation in Patients With Newly Diagnosed Atrial Fibrillation: Is the Risk Real?

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**A**lthough highly prevalent, tricuspid regurgitation (TR) is often left untreated and overlooked because of lack of definitive evidence regarding its impact on the disease course and outcomes in patients with atrial fibrillation (AF).<sup>1</sup> In the current issue of the *Journal of the American Heart Association (JAHA)*, Fujisawa et al. reported TR severity at AF diagnosis to be an independent predictor of subsequent hospitalization for heart failure (HF) and poorer quality of life (QoL) in patients with moderate to severe TR.<sup>2</sup>

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**See Article by Fujisawa et al.**

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Overall, the study was well structured and clearly defined, especially the methodology.<sup>2</sup> A total of 2211 newly diagnosed or referred patients with AF and known TR severity and without any prior history of HF were included in the analysis. Based on the recommendations of the American Society of Echocardiography, patients were divided into 4 groups according to the severity of TR: severe TR group (n=13), moderate TR group (n=159), mild TR group (n=935), and no TR group

(n=1104). Primary outcome of the study was time to first hospitalization for HF after enrollment. Moreover, quality of life (QoL) was measured at baseline and 1-year follow-up using the Atrial Fibrillation Effect on Quality of Life questionnaire.

During the follow-up period, 44 (2%) of the study population were hospitalized for HF and there was a direct relationship between the severity of TR and the hospitalization rate with higher likelihood of HF-related hospitalization for patients with moderate or severe TR. Although the Atrial Fibrillation Effect on Quality of Life score was comparable across groups at baseline, the change in the overall score at 1-year follow-up was significantly lower in proportion to TR severity. No significant intergroup differences in the Atrial Fibrillation Effect on Quality of Life scores were detected when patients were stratified by performance of catheter ablation. In terms of subsequent HF-hospitalization, no interaction was noted between TR severity and left atrial diameter, heart rate at rest and ablation outcome at 1 year after enrollment.

Several studies have reported findings that are in agreement with the current analysis. In a large study

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of almost half-million US patients with HF conducted by Messika-Zeitoun et al., TR was reported to be associated with a marked increase in the mortality risk.<sup>1</sup> Moderate and severe TR was detected in 5.1% and 1.4% of the study population and the adjusted hazard ratio for mortality was 1.17 (95% CI, 1.14–1.20) and 1.34 (95% CI, 1.28–1.39) for moderate and severe TR respectively. Sadeghpour et al. observed similarly high incidence of mortality as well as prolonged hospitalization and increased rehospitalization rate in patients with severe TR.<sup>3</sup> In another retrospective analysis by Prapan et al. moderate to severe TR without structural abnormality of the valve was associated with an increase in adverse outcomes such as hospitalization for HF and death.<sup>4</sup>

While discussing the risks associated with TR, it is critical to know the available interventions for the management of this valvular disease. Once considered nonimportant, surgical management of TR is currently viewed as essential.<sup>5</sup> Additionally, transcatheter tricuspid valve repair and replacement trials are ongoing that show promise for the treatment of patients with tricuspid regurgitation.<sup>6</sup> In the TRILUMINATE (Trial to Evaluate Treatment With Abbott Transcatheter Clip Repair System in Patients With Moderate or Greater Tricuspid Regurgitation) study, TriClip device was reported to reduce TR in 86% of patients.<sup>6</sup> In the CLASP-TR (Edwards PASCAL Transcatheter Valve Repair System in Tricuspid Regurgitation) study, another percutaneous device was used with a meaningful reduction in the TR grade in 85% of study-participants.<sup>6</sup>

Significant TR is known to be associated with poor ablation outcome. However, successful catheter ablation could result in reverse remodeling with improvement in TR severity.<sup>7–13</sup> On the other hand, chronic AF has been reported to be an independent risk factor for the recurrence of TR after tricuspid annuloplasty.<sup>14</sup> Of note, tricuspid valve annulus, among other right heart locations, is a common site of origin for nonpulmonary vein triggers in patients with nonparoxysmal AF.<sup>15</sup> Therefore, in this population, it is crucial to address the AF triggers, going beyond the pulmonary veins if needed. In the current study, neither the ablation targets nor the procedure outcome at follow-up was stated clearly. However, the authors reported no interaction between TR severity and performance of catheter ablation within 1 year after enrollment, which could be due to suboptimal ablation approach and subsequent poor outcome. Most likely, the same mechanism also played a decisive role in the “no significant intergroup differences” in the QoL scores when patients were stratified by the performance of catheter ablation procedures during the follow-up period.

There were several limitations in this study that made it hard to generalize the findings in the global AF population. First, the groups classified by TR severity

were substantially different at baseline, which could have affected the study end points including ablation outcome and change in QoL. Second, with only 13 patients included in the “severe TR” group, the small sample size precluded derivation of any definitive conclusion. Third, no patient with severe TR received antiarrhythmic therapy including catheter ablation within 1 year of enrollment. Fourth, the authors did not provide the ablation outcome in terms of arrhythmia-free survival rate sorted by the TR severity grade. Fifth, it is not clear how the TR was treated in this population.

With these limitations in place, the obvious question that comes to mind is whether the risk of poor outcome is real in the presence of moderate to severe TR in patients with AF. Based on the available evidence from earlier work as well as the current study, it seems to be tangible. However, it is also important to understand that persistence of AF not only causes decline in the cardiovascular health and QoL by itself but also leads to impaired QoL and higher hospitalization rate for HF by preventing the reversal of TR. Therefore, to curb this risk, the operators need to consider ablation of AF beyond pulmonary vein isolation to accomplish long-term arrhythmia-free survival. That would plausibly improve the functional TR and consequently curtail its adverse impacts on QoL and progression of HF symptoms. Additionally, surgical or transcatheter valve repair should be considered to achieve better cardiovascular health and life quality in patients who are candidates for valve replacement.<sup>6</sup> Moreover, multiple comorbidities such as obesity, metabolic syndrome, sleep apnea, renal insufficiency, diabetes, chronic obstructive pulmonary disease, coronary artery disease, affective disorders such as anxiety and depression, stroke, and cognitive impairment as well as socioeconomic factors play critical role in the impairment of QoL in patients with AF.<sup>16–18</sup> Therefore, it is pertinent to adopt a holistic approach by addressing those risk factors including lifestyle changes along with the therapeutic management of TR and AF, in order to achieve a better QoL.

## ARTICLE INFORMATION

### Disclosures

Natale is a consultant for Abbott, Baylis, Biosense Webster, Boston Scientific, Biotronik, and Medtronic. Mohanty has no disclosures to report.

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