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EDITORIAL

Refining the grading of tricuspid regurgitation: enhancing outcome prediction and patient management

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This editorial refers to 'Tricuspid regurgitation severity grades: is more always better?', by R.T. Hahn and J.L. Zamorano, https://doi.org/10.1093/ehjci/jeae143.

Tricuspid regurgitation (TR) exists along a continuum with outcomes worsening as TR severity increases, encompassing impaired quality of life, heart failure and death.[1–5] While the management of patients with severe TR was until recently mostly medical, largely comprising of diuretics to minimize volume overload and control oedema, an increasing number of patients are now offered a curative treatment. This shift has been made possible by a better understanding of the important factors relevant to the assessment of operative risk,[6] enabling an earlier and more timely referral to surgery, and by the development of transcatheter therapies with both valve repair and replacement systems.[7]

Previous American and European Echocardiographic Societies advocated for a classification system that stratifies TR into three grades of severity ('mild', 'moderate' and 'severe').[8,9] Notably, patients referred for transcatheter therapies often present with extensive TR and large gaps. Acknowledging the continuum of TR severity and its impact on outcome, Hahn and Zamorano[10] have suggested expanding the grading system beyond 'severe' to include 'massive' and 'torrential' grades. These two new grades have been incorporated into the latest European recommendations for patients being considered for transcatheter tricuspid valve interventions.[11] However, on the other side of the spectrum, there is much less granularity with less than 'severe' TR, limited to only 'mild' or 'moderate' TR.[9–11] This raises several potential concerns. First, classification of TR severity differs from that of mitral regurgitation (MR), which consists of four grades ('mild', 'moderate' and 'severe' with the moderate grade further subdivided into 'mild-to-moderate' and 'moderate-to-severe').[11] This inconstancy has practical implications and many centres use a four-grade classification for TR severity based on the analogy with the MR classification. Describing severe TR as grade 3 out of 5 can be potentially misleading. Secondly, and more critically, the 'moderate' TR grade group encompasses a wide range of TR severity (ERO from 20 to 39 mm^2), thereby grouping patients with very diverse outcomes. Recent findings from TRIGISTRY, a large international multicenter registry of patients with severe isolated functional TR, have shown that subdividing the 'moderate' grade into 'mild-to-moderate' and 'moderate-to-severe', mirroring the approach used for MR, further refines the prognosis of TR patients. In 613 patients who underwent a transcatheter tricuspid valve repair, subdividing the 'moderate' TR grade into 'mild-to-moderate' and 'moderate-to-severe' TR provided a better prognostic discrimination. Patients with 'mild-to-moderate' residual TR at discharge exhibited a better 2-year survival rate than the 'moderate-to-severe' residual TR group, with the former group approaching survival rates similar to that of 'mild' residual TR. On the other hand, patients with 'moderate-to-severe' residual TR faced a bleaker prognosis, trending towards those with 'severe' residual TR.[12] This issue is even more critical as 38% of patients exhibited 'moderate' residual TR in TRILUMINATE,[13] and 35% in TRIGISTRY,[14] a sizable population who might benefit from improved prognostication. Furthermore, it has been shown that achieving 'mild-to-moderate' or lower residual TR at discharge post tricuspid valve surgery or transcatheter tricuspid valve repair was imperative to ensure a satisfactory 2-year survival rate in comparison to medical therapy alone.[14]

We therefore advocate for a new TR severity classification consisting of four grades ('mild', 'mild-to-moderate', 'moderate-to-severe' and 'severe'), aligning with the classification used for MR in the latest European recommendations,[11] or six grades if we incorporate the 'massive' and 'torrential' grades (*Figure 1*). Assessing TR severity requires a comprehensive multiparametric approach, integrating both quantitative and semi-quantitative measures, ideally conducted under euvolemia.[9,11,15,16] Arbitrarily, we have partitioned the effective regurgitation orifice area range of the 'moderate' grade at the mid-point to discriminate 'mild-to-moderate' from 'moderate-to-severe' TR, but it is now crucial that scientific societies and experts come together to establish optimal criteria for subdividing the 'moderate' group based on the analysis of outcome studies.

This more granular classification holds significant prognostic value and should influence therapeutic decisions. The objectives of transcatheter tricuspid valve repair treatment were initially to reduce TR by at least one or two grades using the five-grade scheme including the

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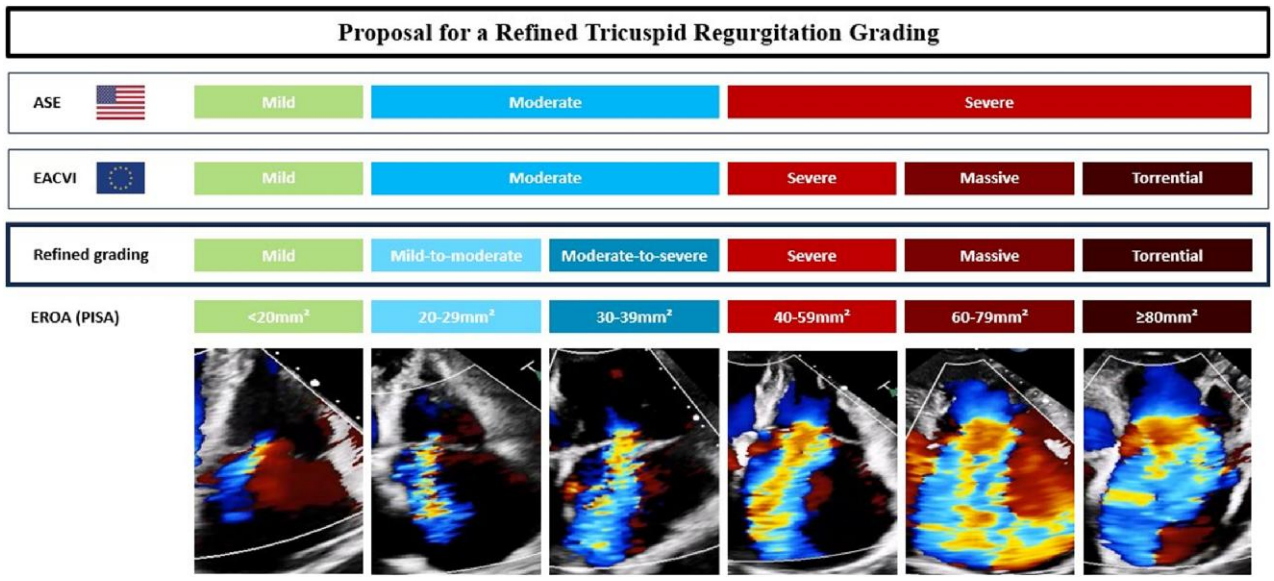

Figure 1 Proposal for a Refined Tricuspid Regurgitation Grading. ASE, American Society of Echocardiography; EACVI, European Association of Cardiovascular Imaging; EROA, Effective Regurgitant Orifice Area.

'massive' and 'torrential' grades. It is now imperative to focus less on grade reduction, but instead to achieve the smallest possible residual regurgitation, 'mild-to-moderate' or lower. This shift in paradigm will result in prompt adjustments in patient management, involving the adoption of individualized therapeutic strategies aimed at achieving this goal. When a transcatheter tricuspid valve repair intervention is considered but the results are expected to be suboptimal with a low likelihood of achieving 'mild-to moderate' or lower residual TR, transcatheter tricuspid valve replacement should be considered.

In conclusion, subdividing the 'moderate' TR severity grade into 'mild-to-moderate' and 'moderate-to-severe', aligns with the classification for MR, enhances accuracy in outcome prediction compared to the current classification system and standardizes language regardless of the atrioventricular valve described. This approach holds the potential to influence and improve patient management.

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Data availability

No data were collected for this editorial.

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