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EDITORIAL COMMENTARY

Finally, Cinderella goes to the party

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Central Message

For years the right ventricle has played a Cinderella role in cardiac surgery. This study demonstrates that right ventricle has gained full credit in cardiac surgery and also the post-operative course.

See Article page 613.

The strength of the study in this issue of *The Journal* by Garcia Gigorro and coworkers¹ relies on the significant correlation found between tricuspid annular plane systolic excursion (TAPSE) and right ventricular (RV) ejection fraction ($r = 0.73$), as assessed by noninvasive and invasive techniques after cardiac surgery. This finding has 2 major implications from a clinical standpoint. First, it confirms the possibility of monitoring RV function postoperatively with an easily performed noninvasive method (TAPSE). Second, such an echocardiographic measure can guide invasive monitoring of RV function with a pulmonary artery catheter in selected patients only, reducing the rate of possible development of complications. RV dysfunction or dilatation is present in almost half of the patients with hemodynamic compromise after cardiac surgery,² with a mortality of 86% in the presence of predominately RV dysfunction, greater than the 30% to 40% when left ventricular dysfunction predominates.³ As emphasized by Garcia Gigorro and coworkers,¹ continuous assessment of RV function in the postoperative intensive care unit setting often requires invasive pulmonary hemodynamic monitoring, but this may be avoided in patients with good echocardiographic acoustic windows by means of serial echocardiograms. Another important aspect that emerges from this study is the weak correlation of pulmonary vascular resistance or pulmonary arterial pressure with

RV ejection fraction, as assessed by either echocardiography or thermodilution. This provides further evidence that pulmonary hypertension should not be considered as the only prognostic determinant of right heart chamber function.

For years, the RV has played a Cinderella role in both diagnostic workup and prognostic assessment, either before or after cardiac surgery. If we take a glance at the euroSCORE,³ pulmonary hypertension is listed among the risk factors, but not RV dysfunction. Yet it is well known that these 2 entities could not coexist in a single patient, who may show RV dysfunction also in the absence of pulmonary hypertension.⁴ Moreover, RV impairment has been shown

to be a prognostic factor independently of pulmonary hypertension in both medically⁴ and surgically⁵ treated patients.

Recently, the prognostic value of preoperative RV dysfunction has received more intensive investigation in cardiac surgery, demonstrating a significant impact on short-term and midterm mortality.^{2,5,6} The debate is still open, however, as to how surrogate echocardiographic indexes can effectively mirror RV systolic function, particularly after cardiac surgery. Although several old (TAPSE, fractional area change, Tei index) and new (tissue Doppler S' velocity, longitudinal and radial strains) echocardiographic indices are available, TAPSE remains the easiest and most reproducible parameter in the setting of the intensive care unit.

These results need to be definitely confirmed in larger and more homogeneous cohorts that are more representative of routine cardiac surgery, including more valve and coronary artery bypass procedures. In the experience of Garcia Gitorro and colleagues,¹ a great proportion of patients underwent heart transplant or pulmonary thromboendarterectomy.

Despite some minor limitations, this study demonstrates that the RV has gained full credit for being part of routine preoperative and postoperative care in cardiac surgery.

We can then say that Cinderella finally goes to the party!

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