The truly forgotten chamber: prognostic value of right atrial dilation in patients with sinus rhythm and significant functional tricuspid regurgitation

F. Fortuni[1], M.F. Dietz[1], E.A. Prihadi[1], S.G. Priori[2], J.J. Bax[1], V. Delgado[1], N. Ajmone Marsan[1]

[1]*Leiden University Medical Center, Leiden, Netherlands (The);* [2]*Istituti Clinici Scientifici Maugeri IRCCS, Molecular Cardiology, Pavia, Italy*

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Background: Functional tricuspid regurgitation (FTR) can be caused by right ventricular (RV) and/or right atrial (RA) dilation, and it leads in turn to further RV and RA remodeling. While it is known that in these patients RV dilation is associated with worse prognosis, there are no data on the prognostic value of RA enlargement.

Purpose: To assess the prognostic impact of RA dilation in patients with significant (≥ moderate) FTR taking into account the presence of atrial fibrillation (AF).

Methods: 1382 patients (mean age: 69±13 year; 50% male) with moderate or severe FTR were included. Patients with congenital heart disease were excluded. Significant RA enlargement was identified by the value of RA area associated with excess of mortality according to spline curve analysis in the overall population (30 cm^2 – Figure: Left Panel). The prognostic value of RA enlargement was investigated separately in patients with sinus rhythm (SR) and AF. The primary endpoint was all-cause mortality.

Results: A total of 987 (71%) patients were in SR while the remaining 395 (29%) had AF at the time of significant FTR diagnosis. Patients in SR with RA enlargement were more likely to present with RV failure symptoms and to receive diuretics compared with patients in SR with non-enlarged RA, whereas these differences were not detected in patients with AF. During a median follow-up of 53 (interquartile range, 20–89) months, 698 (51%) patients died. The survival rates of patients in SR with RA enlargement were significantly worse compared to the ones of patients in SR with normal RA size (Figure: Right Panel). In contrast, RA enlargement did not affect the prognosis of patients in AF (Log-rank χ^2: 0.41; P=0.522). RA enlargement was associated with 33% increase risk of all-cause mortality in patients with SR and this association was retained on a multivariable Cox regression analysis (HR 1.27; 95% CI 1.04–1.56; P=0.022) together with older age, coronary artery disease, diabetes, severe renal impairment, reduced left ventricular or RV systolic function, and increased pulmonary artery pressures.

Conclusion: RA enlargement has an independent prognostic value for all-cause mortality in patients with FTR and SR, and therefore its evaluation might be useful to further improve their risk stratification.