

### Determinants of functional tricuspid regurgitation progression

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**Background:** Tricuspid regurgitation has been the focus of increasing interest and research in recent years. However, few data are available with regard to risk factors associated with the evolution of TR.

**purpose:** The aimed to determine the risk factors for the development of hemodynamically significant functional TR.

**Methods:** We studied 1552 subjects with an index echocardiogram demonstrating trivial or mild TR. Risk factors for TR progression to moderate or severe TR during a median follow-up time of 38 months (IQR 26 to 63 months), were determined using logistic regression.

**Results:** In the multivariable logistic regression model, older age, female gender, pacemaker electrode and indicators of left heart disease (LA enlargement, increased pulmonary artery pressure (PAP), atrial fibrillation, and left-sided valvular disease) were associated with future development moderate or severe TR (Table). The strongest predictors of TR progression were PAP, LA size, AF, and age.

The final echocardiographic examination demonstrated a marked worsening in the severity of left-sided myocardial and valvular disease, that was more prominent in subjects with TR progression (Figure). Compared with subjects in whom TR did not progress, subjects with TR progression demonstrated an increase in PAP and in the severity of mitral and aortic valve disease, larger increases in LA and reductions in LVEF (Figure). Larger proportions of subjects progressing to significant TR developed AF, were implanted with pacemakers or defibrillators or underwent valvular interventions (Figure). The mean PAP change between the baseline and final echocardiographic examination was  $16 \pm 15$  mm Hg and  $3 \pm 11$  mm Hg with and without TR progression, respectively ( $P < 0.0001$ ).

**Conclusion:** Predictors of TR progression are mostly indicators of more advanced left heart disease. In addition, progression to significant TR is associated with a more acceleration course of left hear disease.

#### Independent Predictors of TR Progression

Characteristics	HR (95% CI)	P value
Age (per 10 years increase)	1.35 (1.31-1.50)	<0.0001
Female sex	1.50 (1.13-1.99)	<0.0001
Heart failure	2.76 (1.43-5.32)	0.002
LA enlargement $\geq$ Moderate	1.86 (1.29-2.67)	0.001
Atrial fibrillation	2.34 (1.57-3.49)	<0.0001
Pacemaker/ICD	2.93 (1.48-5.78)	0.002
Pulmonary artery pressure (per 10 mm Hg increase)	1.47 (1.29-1.69)	<0.0001
Valvular heart disease $\geq$ Moderate	1.50 (1.11-2.04)	0.009

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