

Reverse Remodeling of the Right Side of the Heart Following Rhythm Control in a Patient with Severe Functional Tricuspid Regurgitation and Persistent Atrial Fibrillation

 Zrinka Planinić^{1,*},
 Haris Ahmić¹,
 Mirko Tomić¹,
 Jozica Šikić^{1,2}

¹University Hospital "Sveti Duh", Zagreb, Croatia

²University of Zagreb, School of Medicine, Zagreb, Croatia

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***ADDRESS FOR CORRESPONDENCE:** Zrinka Planinić, Klinička bolnica Sveti Duh, Sveti Duh 64, HR-10000 Zagreb, Croatia. / Phone: +385-91-3714-308 / E-mail: zrinkaplaninic@gmail.com

ORCID: Zrinka Planinić, <https://orcid.org/0000-0001-8664-3338> • Haris Ahmić, <https://orcid.org/0000-0002-8708-5902> Mirko Tomić, <https://orcid.org/0009-0000-3533-9985> • Jozica Šikić, <https://orcid.org/0000-0003-4488-0559>

Introduction: Functional tricuspid regurgitation (FTR) in the setting of atrial fibrillation (AF) is increasingly recognized as a distinct pathophysiological entity, in which longstanding AF leads to progressive right atrial remodeling, promoting tricuspid annular dilation, incomplete leaflet closure, and ultimately the development of severe regurgitation^{1,2}.

Case report: 72-year-old female patient with unremarkable previous medical history was admitted because of symptomatic persistent AF despite maximal dose bisoprolol therapy. The patient experienced exertional dyspnea and palpitations for at least six months prior to hospitalization. At the time of admission, the patient was hemodynamically stable with no clinical signs of congestion, but with elevated N-terminal pro-B-type natriuretic peptide (NT-proBNP) levels. Transthoracic echocardiography (TTE) showed significant enlargement of both atria and right ventricle that had reduced systolic function and consequently severe FTR (estimated regurgitant volume of 60 ml), while left ventricle was normal in size and function. After excluding the presence of thrombus in the left atrial appendage on transesophageal echocardiography (TOE), synchronized electrical cardioversion with previous amiodarone facilitation was performed, successfully restoring sinus rhythm. At one month follow-up the patient was symptom free, remained in sinus rhythm, without detected new episodes of AF, and with normal NT-proBNP levels. Repeated TTE showed notable reduction of both right atrial and ventricular dimensions, recovery of right ventricular systolic function and regression of tricuspid regurgitation to mild to moderate. Following positive right heart remodeling and heart failure symptoms improvement with rhythm control strategy, the patient was referred to electrophysiologist.

Conclusion: Despite the risk of AF recurrence this case illustrates that FTR secondary to AF can be partially reversed with timely rhythm control that can further prevent heart failure development. The observed improvement following sinus rhythm restoration is consistent with recently published evidence highlighting the potential for reverse remodeling of the tricuspid valve and right heart in selected patients³.

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LITERATURE

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