

## RIGHT VENTRICULAR FUNCTION IN PATIENTS WITH SEVERE INTERSTITIAL LUNG DISEASES: A TISSUE DOPPLER IMAGING STUDY

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**Introduction:** Pulmonary diseases cause right ventricular (RV) dysfunction. Tissue Doppler Imaging (TDI) can be useful in the evaluation of RV deformation. The aim of the study was to assess RV dysfunction in patients with interstitial severe lung diseases (ILD) using TDI echocardiography. **Methods:** The study group consisted of 40 patients with end-stage ILD referred for lung transplantation (LT). Eighteen of them fulfilled the ATS/ERS criteria for LT (Group I: 11 M and 7 F, mean age 46.6±12 years, mean forced vital capacity (FVC) 1.37±0.76 l, mean diffusing capacity for carbon dioxide (DLCO) <50% of predicted) and 22 patients who did not fulfill the criteria for LT and were placed on a waiting list (Group II: 14 M and 8 F, mean age 48.5±12 years, mean FVC 2.76±0.96 l, mean DLCO >50% predicted). The transthoracic echocardiography examination (TTE) was performed in all patients and it included RV dimension in the long parasternal axis (RVD1) and in the apical axis (RVD2), RV diastolic area (RVAd) and systolic area (RVAs), fraction area change of RV (FAC), tricuspid annulus plane systolic excursion (TAPSE), pulmonary artery acceleration time (AT), RV systolic pressure (RVSP). Longitudinal TDI parameters included maximal velocity of myocardium (VEL), time to maximal velocity (TV), maximal strain (S) and strain rate (SR) and they were evaluated for the inflow and outflow RV tract and for the medial and apical segments of interventricular septum (IVS) during the ejection period. **Results:** Among the TDI parameters, SR of the RV outflow tract and TV in the medial segment of IVS were significantly different between both groups. The maximum SR in Group I was significantly lower compared with Group II (-1.1±0.3 vs. -3.2±1.2 s<sup>-1</sup>, p=0.03) and TV in the medial segment of IVS was significantly longer in Group I in comparison with Group II (159.2±38.1 vs. 129.9±47.9 ms, p=0.01). The patients in Group I had significantly lower values of TAPSE (14.3±3.3 vs. 20.6±6.2 mm, p=0.01) and AT (70.3±23.3 vs. 96.9±12.4 ms, p=0.01). No differences were found for other parameters of RV function such as RV area, FAC or RVSP between the examined groups. **Conclusions:** The severity of the disease in patients with ILD correlates with the RV systolic dysfunction, which was reflected by the lower values of SR in RV outflow tract and by a delay of IVS motion in the medial segment. Among conventional echocardiographic parameters only the TAPSE and AT related with the severity of the lung disease.