

Assessment of right ventricular adaptability to loading conditions can improve the timing of listing to transplantation in patients with pulmonary arterial hypertension. (Dandel M et al, The Journal of Heart and Lung Transplantation, Volume 34, Issue 3, March 2015, pp319-328)
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Right ventricular (RV) adaptation to pressure overload is a strong determinant of survival in patients with pulmonary arterial hypertension (PAH). Predicting RV failure (RVF) in these patients remains challenging. Considering that a reduction of RV adaptation to load precedes the development of RVF, Dandel et al hypothesized that assessment of RV remodeling may improve the timing of listing PAH patients to lung transplantation.

In the present study the authors considered 79 PAH patients who were all potential candidates for transplantation. They used echocardiography to investigate the performance of the overloaded right ventricle. As previously reported by the authors [1], they defined echo variables combining the velocity of myocardial shortening, RV geometry and load (Load Adaptation Index, RV load-corrected peak global systolic longitudinal strain rate, RV systolic synchronicity index).

Dandel et al highlighted that the Load Adaptation Index (LAI_{rv}) was the most relevant indices to predict RV failure in candidates for lung transplantation. The main interest of the study is that significant changes of the LAI_{rv} over time seemed particularly to be sensitive to quantify the impaired adaptability of the right ventricle to face the elevated afterload. These findings underscore the importance to assess not only RV function but also RV structural remodeling in response to the chronic pressure overload condition. A moderately altered RV geometry despite elevated afterload means a compensated right ventricle and an optimal ventricular-arterial coupling. Further studies are needed to validate the prognostic value of this composite indices in PAH patients, since measurement of RV dimensions using 2D-cardiac echo imaging may not be easily reproducible.

References:

1. Dandel M, Potapov E, Krabatsch T, Stepanenko A, Löw A, Vierecke J, Knosalla C, Hetzer R. Load dependency of right ventricular performance is a major factor to be considered in decision making before ventricular assist device implantation. *Circulation*. 2013 Sep 10;128(11 Suppl 1):S14-23.

Elie Fadel, MD, PhD is currently a Professor of Thoracic and Cardio-Vascular Surgery at Paris-Sud University and the Head of the Department of Thoracic and Vascular Surgery and Heart-Lung Transplantation at Marie Lannelongue Hospital. Dr. Fadel's surgical expertise focuses on surgery for locally extended (T4) lung cancer, mediastinal tumors, tumors involving vessels or spine (sarcoma, germ cell tumors), aortic surgery and surgery for pulmonary hypertension such as lung and heart-lung transplantation as well as pulmonary endarterectomy for chronic thromboembolic pulmonary hypertension. Since November 2013, Dr Fadel is the Head of the Department of Thoracic and Vascular Surgery and Heart-Lung Transplantation at Marie Lannelongue Hospital. He also leads the Laboratory Of Surgical Research, INSERM U999 mainly involved in basic science research on pulmonary vascular disease and right heart failure.