

Total isovolumic time predict limited exercise capacity in male patients with heart failure, but not in female

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Aim: The aim of this study was to investigate the impact of gender on the prediction of limited exercise capacity in heart failure (HF) patients assessed by 6 minute walk test (6-MWT).

Methods: In 147 HF patients (mean age 61 ±11 years, 50.3% male), a 6-MWT and a Doppler echocardiographic study were performed on the same day. Conventional cardiac measurements were obtained as well as global LV dyssynchrony was indirectly assessed using total isovolumic time — t-IVT [in s/min; calculated as: 60 - (total ejection time — total filling time)] and Tei index (t-IVT/ejection time). Patients were divided into two groups according to gender, which were again divided into two subgroups based on the 6-MWT distance (Group I: 300m, and Group II: >300m).

Results: Female patients were younger (p=0.02), and had higher left ventricular (LV) ejection fraction - EF (p=0.007) but with similar 6 MWT distance to male patients (p=0.68). Group I male patients had lower hemoglobin level (p=0.02) and lower EF (p=0.03), compared with Group II, but none of the clinical or echocardiographic variables differed between groups in female patients. In multivariate analysis, only t-IVT [0.699 (0.552-0.886), p=0.003], and LV EF [0.908 (0.835-0.987), p=0.02] in males, and NYHA functional class [4.439

(2.213-16.24), p=0.02] in females independently predicted poor 6-MWT distance (<300m).

Conclusion: Despite similar limited exercise capacity, gender determines the pattern of underlying cardiac disturbances; ventricular dysfunction in males and subjective NYHA class in female heart failure patients.

KEYWORDS: six-minute walk test, Doppler echocardiography, left ventricular function and dyssynchrony, gender.

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Literature

1. Allemann Y, Sartori C, Lepori M, Pierre S, Mélot C, Naeije R, et al. Echocardiographic and invasive measurements of pulmonary artery pressure correlate closely at high altitude. *Am J Physiol Heart Circ Physiol.* 2000;279:H2013-6.
2. Bajraktari G, Elezi S, Berisha V, Lindqvist P, Rexhepaj N, Henein MY. Left ventricular asynchrony and raised filling pressure predict limited exercise performance assessed by 6 minute walk test. *Int J Cardiol.* 2011;146:385-9.
3. Bajraktari G, Batalli A, Poniku A, Ahmeti A, Olloni R, Hyseni V, et al. Left ventricular markers of global dyssynchrony predict limited exercise capacity in heart failure, but not in patients with preserved ejection fraction. *Cardiovasc Ultrasound.* 2012;10:36.
4. Crapo RO, Casaburi R, Coates AL, Enright PL, MacIntyre NR, McKay RT, et al. ATS Statement: Guidelines for the six-minute walk test. *Am J Respir Crit Care Med.* 2002;166:1111-7.