

# Right ventricular function as a predictor of exercise tolerance in patients with chronic left ventricular failure

*Salah Zaghoul*

## **BACKGROUND:**

Few clinical studies suggested an important role for the pulmonary circulation and right ventricular functions in determining the exercise capacity in patients with chronic left ventricular failure (CHF). No correlation has been found between resting left ventricular ejection fraction (LVEF) and exercise capacity in these patients.

## **OBJECTIVES:**

Our aim was to delineate the role of the right ventricular function in determining of the exercise capacity in such patients.

## **PATIENTS AND METHODS:**

Forty subjects were included in this study; thirty male patients with CHF secondary to ischemic cardiomyopathy (16 patients) or dilated cardiomyopathy (14 patients) fulfilled the inclusion criteria for this study and ten normal subjects matched for age and weight.

Following thorough history and clinical examination; the patients underwent first pass radionuclide study for the determination of the resting right ventricular ejection fraction (RVEF), two-dimensional echocardiography and Doppler study to study both left and right ventricular systolic and diastolic function, and a progressive multi-stage breath by breath cardiopulmonary exercise test using treadmill with incremental increase in the workload to a symptom limited point, to determine the maximal exercise capacity and maximal cardiopulmonary exercise test parameters.

## **RESULTS:**

It was found that the LVEF did not correlate at all with any of the exercise capacity predictive parameters, whereas the RVEF correlated significantly to these parameters. There were however a striking abnormalities of the ventilatory response to exercise, in the form of increased ventilation in response to given rate of CO<sub>2</sub> production, and this excessive ventilation correlated significantly with the increase in dead space ventilation in the affected patients. While the VE/VCO<sub>2</sub> and the VD/VT max correlated significantly with VO<sub>2max</sub>, they also correlated significantly with RVEF. The correlation between RVEF and exercise capacity may be explained by the perfusion/ventilation mismatch resulting from chronic pulmonary changes.

## **CONCLUSIONS:**

The study showed that the exercise capacity in CHF is not related either to etiology, NYHA functional class or exercise end point.