

# Measurements of exercise gas exchange during quantitative stress echocardiography in patient with coronary microvascular disease: a case report

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**Aim:** As coronary flow reserve is diminished in both coronary micro and macrovascular disease<sup>1,2</sup>, we investigated whether there is a difference in exercise gas exchange between those two derangements.

**Case report:** 62-year-old man with the history of the arterial hypertension and type 2 diabetes quantitative exercise stress echocardiography was done due to significant number of premature ventricular contractions and nonsustained ventricular tachycardia in the 24-hour ECG monitoring and chest pain. Significant immediate postpeak color Doppler derived strain rate decrease is registered in midanteroseptal, basal inferolateral and midinferior segment without significant hemodynamic derangements and without ST-segment depression. Coronary angiogram has revealed no organic stenosis of the main epicardial coronary arteries, but diffuse tightening of the lowest segments of the coronary macrocirculation, which might be related to the diffuse microvascular disease. After one year, the exercise gas exchange measurement during quantitative stress echocardiography showed normal parameters of oxygen consumption: peak $VO_2$  28.6ml/kg/min, AT $VO_2$  20.9ml/kg/min,  $dVO_2/dWR$  16.64 ml/min/W, peak  $O_2$  pulse 19,8ml/beat with normal linear curve. There was significant segmental decrease in delta SR, slight WMSI and electrocardiographic derangements, without hemodynamic changes.

**Conclusion:** As opposed to macrovascular derangements, oxygen consumption might still be normal in patients with coronary microvascular disease. Changes in dSR without metabolic and hemodynamic derangements /alternative ischemic cascade/ in cardiopulmonary echocardiography exercise test might signify microvascular disease.

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## LITERATURE

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