Standard ECG, Stress Testing

OPERATING TEST CHARACTERISTICS OF PEAK OXYGEN PULSE COMBINED WITH OXYGEN PULSE CURVE PATTERN IN DIAGNOSIS OF CARDIAC VERSUS NONCARDIAC CAUSES OF DYSPNEA

Moderated Poster Contributions
Hall C
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Background: Cardiopulmonary exercise testing (CPX) utilizes oxygen (O_2) pulse as a surrogate for stroke volume. In patients with cardiac causes of dyspnea, peak O_2 pulse, O_2 pulse curve pattern or both can be abnormal. The operating test characteristics (OTC) of the composite criterion (combining peak O_2 pulse with O_2 pulse curve pattern) are unknown, although it is widely used in clinical practice. This study was carried out to measure the OTC of the composite criterion in diagnosis of cardiac causes of dyspnea.

Methods: We studied 54 consecutive patients referred for CPX. Comprehensive CPX included measuring VO2, VCO2, breathing reserve, arterial blood gases at rest and at peak stress, exercise electrocardiography, and heart rate and blood pressure responses. CPX was blindly interpreted by an expert and patients categorized as: noncardiac group, normal patients or abnormal patients secondary to any noncardiac cause of dyspnea; or cardiac group, abnormal patients secondary to cardiac causes of dyspnea. The study population was then recategorized as: noncardiac group (n=18), normal patients according to the composite criterion; or cardiac group (n=13), abnormal patients according to the composite criterion. Patients who were normal by only one component of the composite criterion were categorized as borderline (n=23).

Results: With borderline patients excluded, the composite criterion had an accuracy of 87%, positive predictive value (PPV) of 77%, negative predictive value (NPV) of 94%, sensitivity (Sn) of 91% and specificity (Sp) of 85%. Including borderline patients in the cardiac group (n=36) improved Sn (94%) and maintained NPV (94%) but greatly decreased Sp (46%), PPV (44%) and accuracy (61%), whereas including these patients in the noncardiac group (n=41) improved Sp (92%) and maintained similar PPV (77%) and accuracy (81%) but decreased Sp (59%) and NPV (83%).

Conclusions: This is the first study to provide OTC for the common clinical practice of using a composite criterion to diagnose cardiac or noncardiac causes of dyspnea. Although the best results were seen by excluding borderline patients, a reasonable compromise is achieved by including them in the noncardiac group.