

New data show cardiac respiratory stress test can quickly detect significant coronary artery disease

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Testing a patient's cardiac respiratory stress response (RSR) can quickly and accurately detect the presence of significant coronary artery disease (S-CAD), according to new research published in the current issue of *Cardiovascular Revascularization Medicine*. The results found patients with S-CAD had a significantly lower RSR compared to patients without (6.7% vs. 17.4%, respectively) suggesting RSR is a strong indicator for the disease.

To determine cardiac respiratory [stress response](#) (RSR), Washington Hospital Center researchers used a new innovative respiratory stress test. The test uses a Pulse Oximeter (PPG) to measure blood flow in the finger in response to paced breathing over a 90 second time period. The PPG data are immediately captured and analyzed using a proprietary algorithm that determines the RSR. All findings were confirmed using Quantitative Coronary Angiography (QCA). In comparison to QCA, the test results were highly accurate, with a sensitivity and specificity of 86% and 81%, respectively. No adverse events were reported.

"It is always challenging to detect significant [coronary artery](#) disease in patients at the physician's office and often required a physical stress test, including nuclear imaging and often [cardiac catheterization](#)" said lead investigator Ron Waksman, MD, Associate Director, Division of Cardiology, Washington Hospital Center and professor of medicine (cardiology) at Georgetown University in Washington DC. "The RSR

test is simple and fast to perform in a doctor's office without the need for significant expense and hardship to the patient, and the results of the study support its accuracy to detect significant [coronary artery disease](#). We believe it could be a useful diagnostic option."

The test is not yet cleared for use in the US. The safety and efficacy of the test compared to stress electrocardiography in detecting S-CAD is currently the subject of the pivotal 1,000-patient SCORE (Spirocor Coronary Outcome by Respiratory stress Examination) study. Dr. Waksman is a co-primary investigator of the study, which is being conducted in over 25 cardiology clinics across the US.

Study Methodology and Findings

In this prospective observational cohort study, the RSR test was performed on 153 consecutive patients referred for coronary angiography with symptoms or signs suggestive of CAD. The RSR tests were conducted in a holding area of the catheterization laboratory by a single examiner blinded to the patient's clinical data. Coronary angiography was performed on all subjects and analyzed by one cardiologist blinded to the subject's clinical data and RSR using a validated QCA algorithm. In accordance with American Heart Association guidelines, S-CAD was defined as at least a 70% narrowing of at least 1 epicardial artery or at least a 50% narrowing of the left main coronary artery.

A valid RSR was obtained in 150 patients (98%). Thirty-six patients (24%) were found to have S-CAD, 31 had single-vessel disease, and 5 had multi-vessel disease. The mean age of patients was 58.7, and the majority were male (67%). The clinical characteristics of the 150 analyzed patients were similar except for a higher rate of statin and antiplatelet therapy in patients with S-CAD. The mean RSR was significantly reduced in patients with S-CAD, regardless of age, gender,

the existence of risk factors, and medical treatment.

Using a receiver operating characteristic curve analysis, the results suggest that an RSR of

Additional multicenter, community-based studies under varying clinical settings and patient populations are warranted to rigorously assess the value of this test for the detection of S-CAD.

Provided by Edelman Public Relations

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