

Stress Echocardiography with Transesophageal Atrial Pacing for Diagnosis of Coronary Artery Disease

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Background: We evaluated the feasibility and safety of transesophageal atrial pacing combined with transthoracic stress echocardiography (TAPSE) as a potential alternative to exercise or pharmacologic stress echocardiography in patients with suspected or known coronary artery disease (CAD).

Methods: TAPSE was performed in 45 consecutive patients (27 men, 18 women; age 60 ± 7 years, range 34-82 years) with suspected or known CAD. The oropharynx was anesthetized with 10% lidocaine aerosol, and the 10F (3.3 mm diameter) flexible pacing catheter was introduced orally by instructing the patient to swallow. Catheter position was optimized by maximizing the size of the esophageal P wave on the electrocardiogram. Pacing was initiated at 10 beats/min above the patient's baseline heart rate (HR) and at 3 to 5 mA above the threshold for stable atrial capture. HR was increased by 20 beats/min every two min until 100% of the age-predicted maximum HR or another end point was reached. If Wenckebach second-degree heart block occurred, atropine was administered intravenously in 0.5-mg increments, to a maximum dose of 1 mg. Small intravenous doses of midazolam were administered in 41 of the patients. The diagnostic end point for the detection of myocardial ischemia was induction of a transient worsening in regional wall motion during stress.

Results: All patients reached 100% of target HR. One patient developed paroxysmal atrial fibrillation, which terminated spontaneously after 20 minutes. Echocardiographic images were of high-quality and easily interpretable in all patients. Diastolic function was assessed as routinely. The rate-pressure product was greater than 20,000 in all patients. Development of new regional wall motion abnormalities was the end point for TAPSE in 7 patients.

Conclusions: TAPSE is a simple, rapid, safe, and diagnostically efficient procedure in patients with suspected or known CAD.