Abstract 31

Primary Author: Shahriar Dadkhah, MD

Hospital Affiliation: Presence Saint Francis Hospital, Evanston, IL

Co-Authors: Suliman S. MD; Almuwaqqat Z. MD; Nguyen Q. MD;
Sargsyan M. MD; and Shaheryar S. MD

Title: Factors Affecting Positive Predictive Value of Non-invasive Stress Testing with Coronary Angiography in a Community Hospital

Background:
The gold standard for diagnosing CAD is coronary angiography. Non-invasive stress testing (NIST) is often used as the initial assessment of patients with coronary artery disease (CAD). However, the positive predictive value (PPV) of NIST in a community hospital is not well known. The primary goal of this study was to determine the PPV and correlation between NIST and obstructive CAD. The secondary goal was finding cardiac risk factors that predict a true positive stress test.

Methods:
This retrospective study included all consecutive patients (N=355) who underwent invasive coronary angiography (ICA) following a positive NIST (exercise treadmill testing, myocardial perfusion imaging (MPI) stress test, or stress echo). Ultimately, 324 patients met inclusion criteria after exclusion of 31 patients who had a history of CABG. The study sample was separated into three groups based on results of the ICA and treatment modality. Group 1 patients had a non-obstructive lesion (<50% luminal stenosis). Group 2 patients had an obstructive lesion or had a percutaneous coronary intervention (PCI). Group 3 patients reported to have an obstructive lesion on ICA but who were not treated with PCI. Angiography images of patients in group 3 were reviewed by 2 senior board certified interventional cardiologist who were blinded to any patient or performer data. Subsequently, this group was reclassified to group 1 or 2.

Results:
60% of the patients were female and the mean age was 63.2 years. 95% had MPI, 4had stress echo and 1% had treadmill stress test. Overall, the positive predictive value of NIST was 36.4%. Compared to patients with a false positive NIST, those with true positive NIST were notably older (68 vs 60.5, P < 0.001), Male (55.1% vs 31.1%, P < 0.001), and had a lower BMI (28.4 vs 31.8, P < 0.001). Stress Echo had a significantly higher PPV compared to MPI stress test (71% vs 35%, P < 0.005). In-hospital testing vs outpatient testing or specialty of interpreting physician (cardiologist vs radiologist ) did not significantly impact PPV. Multi-variable logistic regression analysis revealed that older age, male sex, and total number of cardiac risk factors were significant determinants of higher PPV.
Conclusion:
Our single center community hospital study revealed that the PPV of NIST is poor (36.4%), especially in patients who are younger, female, or obese.