COMPARISON OF EXERCISE STRESS NUCLEAR CARDIAC IMAGING VERSUS PHARMACOLOGICAL STRESS NUCLEAR CARDIAC IMAGING IN WOMEN PRESENTING WITH CHEST PAIN IN A COMMUNITY HOSPITAL.

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Background: Exercise stress testing for diagnosis of coronary artery disease in women has limitations because of poor effort tolerance in some and false positive electocardiographic results in others. We compared the sensitivity and specificity of pharmacological nuclear testing to that of exercise nuclear testing to see if these limitations could be minimized. 

Methods: The study is a retrospective review of the medical records of 180 women who presented with chest pain to a community teaching hospital in New York City, either to the primary care clinic or emergency department. They were divided into two groups: group A - exercise nuclear testing (n=108) and group B - pharmacological nuclear testing (n=72). Exercise testing was performed on treadmill using Bruce or modified Bruce protocol. Intra-venous dipyridamole was used for pharmacological testing. Nuclear imaging was performed using Technetium 99M Sestamibi at rest and at peak exercise or following intravenous dipyridamole infusion. Perfusion abnormalities noted on stress which reperfused at rest were considered as positive for ischemia. Patients were followed for a mean of 9 months to look for cardiac events defined as unstable angina, acute myocardial infarction, sudden cardiac death, coronary angioplasty or coronary artery bypass surgery. Test results of the two groups were compared for cardiac events. Sensitivity, specificity, and predictive values of exercise and pharmacological nuclear testing were calculated.

Results: In group A, 9 had a positive test, 7 of whom later developed a cardiac event (77.7%). In group B, 16 had a positive test, 13 of whom later developed a cardiac event (81.2%). The sensitivity and specificity of predicting a cardiac event was 23.3% and 93.4% for exercise stress testing and 48.1% and 93.3% for pharmacological stress testing respectively. The positive predictive values of exercise nuclear testing and pharmacological nuclear testing were 77.8% and 81.3% respectively.

Conclusions: 1. Exercise nuclear testing and pharmacological nuclear testing both have high specificity in predicting cardiac events in women with chest pain, 93.4% and 93.3% respectively. 2. There is no statistically significant difference between exercise nuclear imaging and pharmacological nuclear imaging in predicting cardiac event.