Rancho Los Amigos National Rehabilitation Center
CARDIOLOGY SERVICE POLICY AND PROCEDURE

SUBJECT: CARDIAC NUCLEAR STRESS TEST WITH LEXISCAN (REGADENOSON)

Policy No.: Cardiology 9
Supersedes: 01/17/18

PURPOSE:

1. To outline the process for performing an nuclear stress test with Lexiscan.
2. To coordinate the roles and responsibilities of the ECG technician, nuclear medicine personnel, and cardiologist in the performance of a nuclear stress test with Lexiscan.

POLICY:

1. A nuclear stress test with Lexiscan must be performed under the direct supervision of a cardiologist.
2. A nuclear stress test with Lexiscan is performed under the direct supervision of a cardiologist.
3. Patient Selection:
    a. Patients unable to achieve an adequate degree of exercise (either from physical limitations or from beta-blocker medications).
    b. Baseline EGG abnormalities: LBBB, ventricular preexcitation (W-P-W) and permanent ventricular pacing.
    c. Suspected coronary artery disease.
    d. Known coronary artery disease to define the ischemic reaction before and after interventional or operative revascularization
    e. Known coronary artery disease to assess the area of ischemia
    f. Risk stratification: before major surgery, post myocardial infarction
    g. Detection of myocardial viability
4. **Absolute Contraindications:**
    a. Patients with active bronchospasm or being treated for reactive airway disease.

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b. Patients with more than first-degree heart block (without a ventricular-demand pacemaker).

c. Patients using dipyridamole or methylxanthines (eg, caffeine and aminophylline) In general, patients should refrain from ingesting caffeine for at least 24 hours prior to adenosine administration. Patients should avoid decaffeinated products, which typically contain some caffeine, as opposed to caffeine-free products, which do not.

d. Patients with severe unstable angina pectoris or recent myocardial infarction (<1 week).

e. Abdominal aortic aneurysm.

f. Critical aortic stenosis.

g. Resting angina.

h. Severe uncontrolled hypertension.

i. Obstructive hypertrophic cardiomyopathy.

j. Malignant arrhythmias.

k. Severe decompensated congestive heart failure.

l. Known relevant left main stem stenosis

m. Patients with an SBP less than 90 mm Hg

5. **Relative Contraindications:**

a. Controlled asthma or current medical treatment inhalers (at physicians direction)*

b. History of mild COPD or emphysema*

c. Severe sinus bradycardia (heart rate < 40 bpm), unstable angina dysfunction, hypovolemia, left main coronary artery stenosis, stenotic valvular heart disease, pericarditis or pericardial effusions, or stenotic carotid artery disease with cerebrovascular insufficiency.

PROCEDURE

Patient Identification:

a. The nuclear medicine technologist will identify the patient according to the "Patient ID" policy and assess all females for pregnancy and/or breast-feeding.

b. The procedure is explained to the patient and, after all questions have been addressed, an **"Informed Consent for Heart - Stress Test Regadenoson MPI"** will be signed by the patient.

c. The appropriateness of exam will be assessed according to the physician order.

Patient Preparation:

a. Patients are held NPO for 4-6 hours prior to testing.

b. Dipyridamole is held for at least 2 days prior to testing.

c. Caffeine is held for 12 hours prior to testing. Xanthene derivatives should be held at least 12 hours prior to test day. Aggrenox is to be held 2-3 days prior to test day.

d. Insulin dependent diabetic patients are instructed to take ½ of their normal insulin dose and eat a light breakfast prior to arrival for test (this excludes Lantus long-acting insulin, which can be taken as usual).

Lexiscan Stress Procedure:

a. The Lexiscan stress procedure is explained to the patient.

b. An IV is started, preferably in an antecubital vein with a 20-22g catheter using aseptic technique. If IV access has already been established, the IV line is flushed and checked for patency. An extension tube with stopcock is attached to the heparin well.

c. The skin is prepped and electrodes are placed on the chest per ACC/AHA guidelines.

d. A resting EKG is obtained.

e. Resting blood pressure is also taken

Injection Criteria:

a. The standard recommended intravenous dose of Lexiscan is 5ml (0.4 mg). Lexiscan, which comes in a prefilled 5 ml syringe containing 0.4 mg of regadenoson, is administered as a rapid (approximately 10-15 seconds) injection into peripheral vein using a 22 gauge or larger catheter or needle, followed immediately by 5 ml saline flush. 30 mCi of 99 mTc Cardiolite/Myoview is injected approximately 10-20 seconds after Lexiscan has been flushed with saline (can be administered through the same catheter as the Lexiscan) and is followed by another 5 cc saline flush. SPECT imaging is performed as per protocol 15-60 min post injection.

b. A 12-lead EKG is printed immediately after the Lexiscan has been injected, immediately after the radiotracer has been injected, anytime any significant changes occur, and every minute during the recovery phase and are recorded along with the patient's heart rate. Blood pressure should be monitored every minute during infusion and 3-5 minutes into recovery. Symptoms should be monitored every minute during the infusion and every minute during recovery.

Post-stress monitoring:

a. In the recovery phase, the patient is monitored for a minimum of 5 minutes and until symptoms, blood pressure, and/or ischemic EKG changes are resolved per physician's discretion.

Early termination or reversal of the Lexiscan infusion:

a. Severe hypotension (systolic blood pressure < 80 mm Hg).

b. Development of symptomatic, persistent second-degree or complete heart block.

c. Wheezing.

d. Severe chest pain associated with ST depression of 2 mm or greater.

e. Signs of poor perfusion (pallor, cyanosis, cold skin).

f. Technical problems with the monitoring equipment.

g. Patient's request to stop.

Side effects of Lexiscan (regadenoson):

a. The most common reactions to administration of regadenoson during MPI are shortness of breath, headache and flushing.

b. Less common reactions are chest discomfort, angina pectoris or ST, dizziness, chest pain, nausea, abdominal discomfort, dysgeusia, and feeling hot.

c. Most adverse reactions begin soon after dosing and generally resolve within approximately 15 minutes, except for headache which resolves in most patients within 30 minutes.

d. Aminopylline may be administered in doses ranging from 50 mg to 250 mg by slow intravenous injection (50 mg to 100 mg over 30-60 seconds) to attenuate severe and/or persistent adverse reactions to regadenoson. Physician should be present until Aminophylline is administered and available for 15 minutes thereafter.

References:
Henzlova MJ et al. ASNC Imaging Guidelines for Nuclear Cardiology Procedures: Stress protocols and tracers. J Nuclear Cardiology 2009