

Cardiac Perfusion – Technetium Agents

Special Instructions For resting-only studies (e.g., as part of a PET viability examination), the resting images should be performed with the stress dose of radiopharmaceutical and should be gated.

Obtain patient height/weight for body surface area calculation.

To be performed at UNMH; to be performed at SRMC only if will be read by UNMH Radiologists. Otherwise, see separate SRMC protocol.

Radiopharmaceutical: Tc-99m tetrofosmin (Myoview) preferred. Sestamibi (Cardiolite) may be substituted if tetrofosmin is unavailable.

Dose (Adult/Pediatric): Refer to Nuclear Medicine Dose Chart

Route of Administration: Intravenous (preferred angiocatheter size at least 22 gauge). Ensure intravenous position of the catheter before radiopharmaceutical administration.

Patient Preparation: Please ensure the following:

- NPO for 4 hours when possible.
- Vasodilator stress patients (dipyridamole, adenosine, regadenoson) should preferably be off caffeine (chocolate or caffeinated coffee, tea, or sodas) for 24 hours prior to the stress procedure. Caffeine does not interfere with exercise or dobutamine stress; however, these patients should be instructed to stop caffeine in case the stress is changed to vasodilator stress.
- **If the patient had caffeine within the last 24 hours (for dipyridamole or adenosine) or within the last 12 hours (for regadenoson), consult with the radiologist about proceeding.**
- It is also preferable that vasodilator patients be off breathing medications (e.g, Theodure, theophylline) for 48 hours prior to study.
- Consult with the radiologist if there are questions/concerns about a patient's preparation.

Equipment Setup: Perform study on ECAM or SPECT-CT only

Collimator: High Resolution

Matrix size: 128x128

For rest (non-gated) and stress (gated) SPECT studies:

Protocol: #1 under Cardiac Profile (ECAM); Cardiac T2 rest (SPECT-CT)

- Noncircular orbit prescan
- Starting angle 45 degrees

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- **1.0 ZOOM**
- CCW (counter clockwise)
- 32 steps, 25 sec/step, step and shoot
- Det. reconfiguration 90 degrees

For gated (stress) SPECT study:

Protocol: #2 under Cardiac Profile (ECAM); Cardiac T2 stress (SPECT-CT)

ECAM:

- Profile on (to turn on attenuation correction)
- Set the R to R Histogram, intervals: 16, 20% window
- After beginning the acquisition, check that the histogram peak falls well within this window
- Reject PVCs
- Forward/backward by thirds
- Auto-tracking
- Auto-center primary window
- Step and Shoot/simultaneous

For gated and non-gated studies on the SPECT-CT: Do CT first, then SPECT

Patient Positioning: Supine, feet first

Procedure:

- Rest and stress portions are performed on the same day, with the rest portion first, followed by the stress portion. The stress portion may begin as soon as rest imaging is complete.
- Imaging should be performed a minimum of 30 minutes after injection for resting images and exercise stress. For pharmacologic stress, images should be performed a **minimum of 45 minutes after injection for tetrofosmin, or 60 minutes for sestamibi.**

Processing:

- For rest and stress portions, examine for motion before taking patient off bed; consider applying motion correction or repeating the examination if motion is excessive.
- Workflow automatically goes to Cardiac Processing after stress acquisition.
- Place region around heart under Auto-cardiac for both rest (p.1 on SPECT-CT, p. 2 on ECAM) and stress (p. 1 on both).

Slice Display:

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- Align slices under Flexible Display (Corrected slices 1 and 2), with black and white slices displayed on two pages. Adjust intensities so that the overall intensity of the heart matches on rest and stress (instead of bowel). Make savescreens and send.

QGS:

- Automatically launches after completion of slice display. Colors should be **prism** for polar maps. Display **Views** and **Results** tabs only.
 - Under Views, reorient the cardiac silhouettes. Ensure that the bottom row of images is set at end systole (maximum contraction of the ventricle). (See below.)
- Label Views with type of stress performed; resting/stress double product (for exercise) or dose of pharmacologic stress agent (for pharmacologic stress; prefer dobutamine rate rather than total amount, if available); IV site; patient body surface area (calculated from height/weight) as follows:

Dipyridamole/Exercise Cardiolute vs. Rest Cardiolute

xx.x mg Dipyridamole/Adenosine/Dobutamine or xx.x K → xx.x K

IV site

SA = X.XX m²

QPS:

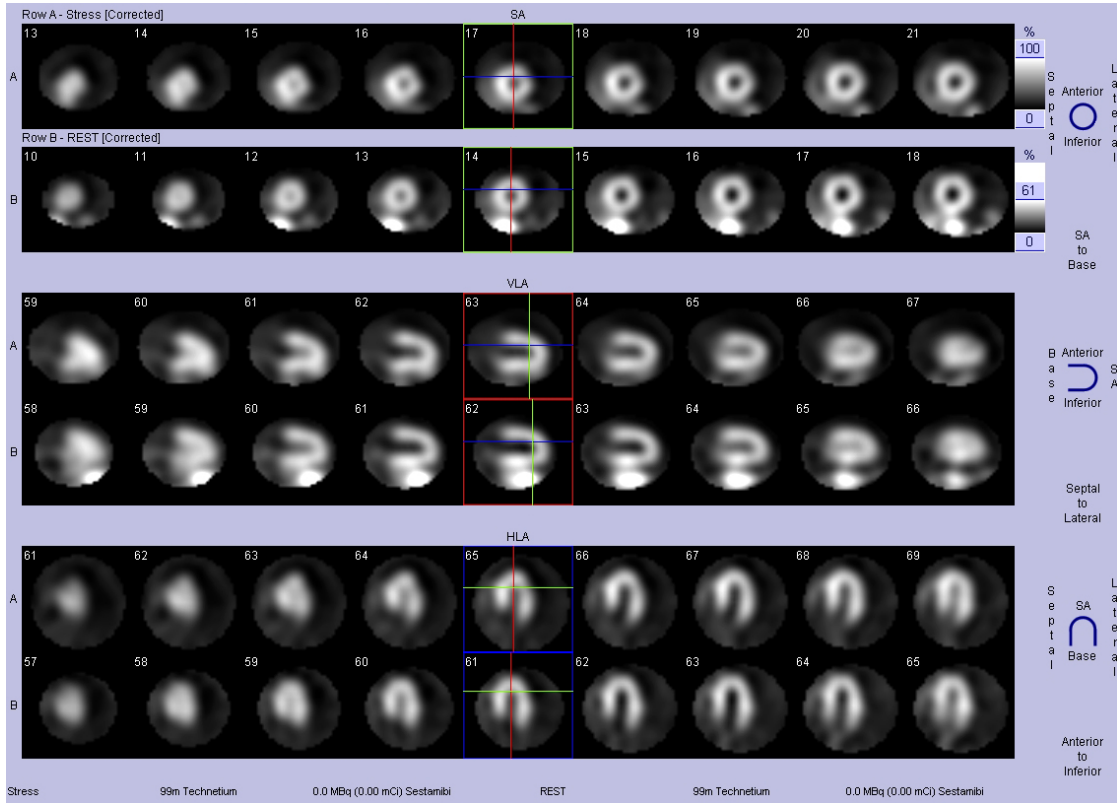
- After completing QGS workflow, QPS Workflow will automatically launch
 - Double click on Icon; it will automatically process data.
 - Go to the Results tab in upper center of page.
 - On movable cardiac view: Septal view (if pt has a defect, disregard septal view and make defect visible.)
 - **Ensure that the color portion of the plot fills the entire circle, so that there is little or no black rim around the edges.**
 - **Save both Attenuation Corrected and Uncorrected QPS images**
 - Print -> OK
 - Exit out of QPS. (no annotations are needed).
 - Complete as usual.
- Check the slices with the radiologist prior to releasing the patient to see if repeat delayed or prone imaging needs to be performed.

Items Required For Complete Study:

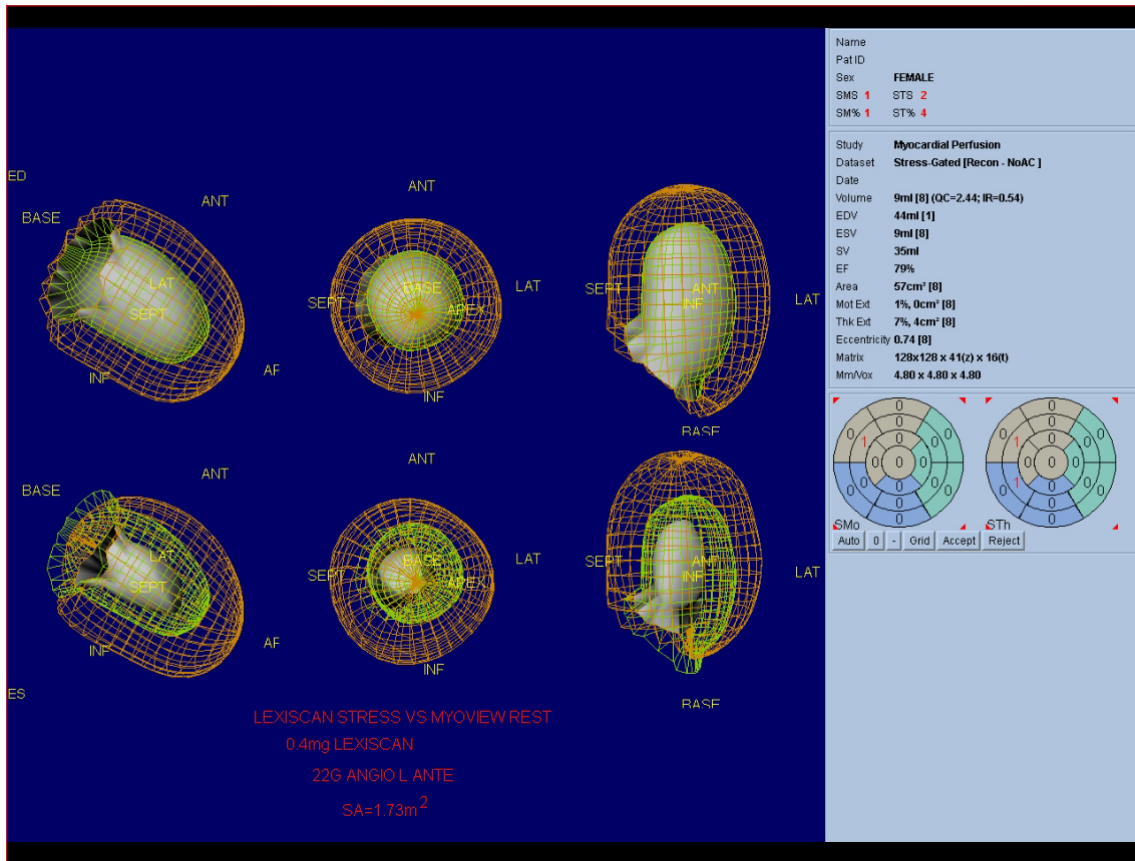
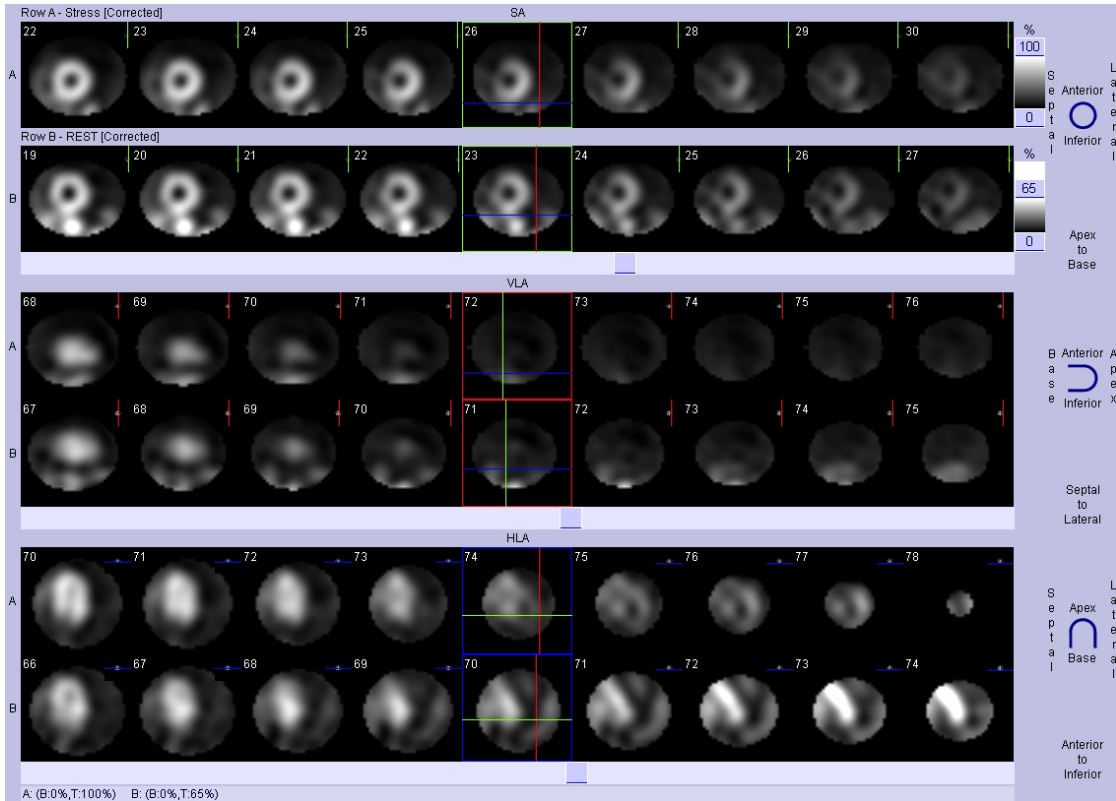
- Raw data to PACS
- Stress over rest slices
- QGS images (Views and Results)
- **QPS images (corrected and uncorrected)**
- Transfer of all digital images to PACS

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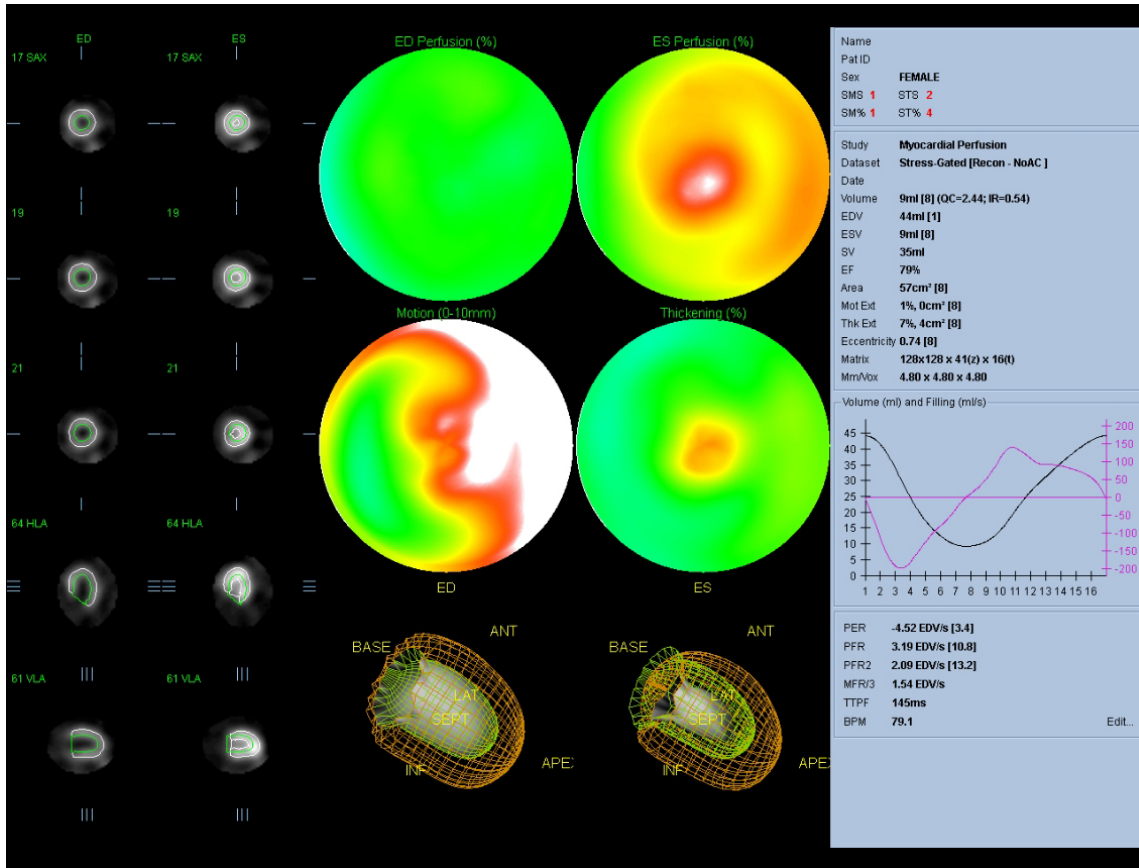
- Complete the examination in RIS



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