Radiopharmaceutical: Tc^{99m}- UltraTag red blood cells
Dose: 20 mCi
T ½ : 6 hrs.
Energy: 140 keV
CPT: 78472

Indications

Clinical indications for gated equilibrium radionuclide ventriculography include, but are not limited to:

1. Known, or suspected, coronary artery disease (CAD) with or without myocardial infarction.
2. 2. Congestive heart failure (CHF)
3. Evaluation of cardiac function in patients undergoing chemotherapy
4. Assessment of ventricular function in patients with valvular heart disease.

Patient Instruction

- Notify the patient that the scan time is approximately 1 to 1 ½ hrs.
- Upon scheduling, if the patient has any pertinent studies, please instruct the patient or the office to make those available for correlation

Equipment

1. Philips Skylight (VXUR collimator)
2. Philips Forte (VXUR collimator)
3. Philips Vertex Plus (VXUR collimator)

Procedure

- For patient receiving chemotherapy, acquire LAO and LPO projections for approximately 600 beats
- For cardiac indications, acquire LAO, ANT and LPO views. Acquire approximately 600 beats.

Acquisition Parameters

- Dual detectors in 90 degree orientation
- Matrix: 64 x 64
- Zoom: 2.19
- Arrhythmia rejection: On
- Allowable variance: 40%
- R-R interval: 90%

Processing

1. Using the Pegasys workstation, on the PROCESS MENU, left-click on PLANAR CARDIAC button
2. Left-click on GATED ANALYSIS
3. Select proper patient, and then left-click on PROCEED. The computer will automatically select the LAO projection, if that is the name of the data.
4. Ensure that the following study fields are selected:
    a. Mode: Manual ED/ES
    b. Analysis: Left (if right ventricle is needed, choose Right)
    c. Curve Smoothing: On
    d. Background subtraction: On
    e. Filter Name: SPATIAL-5x5
    f. Threshold for Amplitude/Phase: 15
5. Left-click on PROCEED
6. Select the largest image by left clicking on it, and change the color to ISOCONTOUR

7. Create your end diastole ROI by using the middle mouse button to draw around the edge of the black and yellow areas and through the septum
8. Do this again for the end systole ROI
9. Draw the background ROI below and to the left slightly , in the black background area of the image
10. If you are satisfied with all ROIs, left click on PROCEED
11. Make note of frame number for end systole (this is needed for later step)
12. Annotate largest image by left clicking on pencil annotation tool
13. Middle click on largest image, then right click on CREATE/DELETE
14. Left click on USER DEFINABLE 6
15. Type “LAO” and press RETURN
16. Right click on FONT and choose COUR B 16
17. Middle click and hold on LAO text to drag to appropriate area on image for annotation
18. Locate ejection fraction in the information provided on the bottom left of the entire image. Follow the preceding procedure to also annotate the EF on the largest image.
19. Left click on CANCEL
20. Left click on the SNAPSHOT button
21. Left click on QUIT
22. Left click on PROCEED WITHOUT SAVING
23. Right click in the blue background…display/review menu…GATED DISPLAYS…2 VIEW (OR 4 VIEW)
24. Enter the ES frame number and hit ENTER
25. Left click on the CINE button on the bottom right of the screen
26. PAUSE the cine loop of the images and set the image number to frame 1
27. Right click on the snapshot tool and choose SNAPSHOT AREA IN A BOX
28. Middle click at the space just up and to the left of the amplitude and phase images and drag down and to the right to include all four images
29. Left click on PROCEED
30. Left click on the snapshot tool and capture the frame 1, then left click on the right arrow in the cine control box to advance to the next frame. SNAPSHOT this image
31. Repeat this for all 16 frames of R-R cycle
32. Left click on QUIT
33. Left click on IMAGE MANIPULATION…IMAGE APPEND
34. Choose the 16 snapshots, starting with the frame 1 and in order to frame 16. Then left click on PROCEED
35. The images will load in a cine loop. Life click on QUIT
36. Change the name to read “EF DYNAMIC” A
37. Left click on SAVE SELECTED AND PROCEED
38. Left click on the camera icon at the top of the main screen; choose the snapshots of the EF curve image that you created earlier, and the amplitude and phase image. Left click on PROCEED
39. Use the snapshot tool on the right to create a “double snapshot” of each image.
40. Left click on QUIT
41. DICOM send the EF DYNAMIC in the DEFAULT GREY color scale to PACS
42. DICOM send the double snapshots in the RGB ISOCONTOUR color scale to PACS
43. Place images in the correct order on PACS and release for radiologist interpretation.