

Nuclear Medicine Lymphangioscintigraphy

Re:

Patient: Nina Allen

DOB: 1969-10-24

Patient Address: 4950 Hackberry Lane #1, Sacramento, CA, 95841

Patient Phone: 714-213-9329

Please image both legs to assess for lymphedema. Please image the lymph nodes but also the lymphatic trunks to assess for loss of linearity and abnormal structure or thickness. Please also assess for dermal backflow.

Lymphoscintigraphy, complete CPT Code 78195

LYMPHANGIOSCINTIGRAPHY PROTOCOL

Indications:

To evaluate lymphatic tracer flow from feet and/or hands to trunk and central circulation. Evaluation includes lymphatic channels, nodes, existence of site(s) of "dermal diffusion" from obstructed channels, and sites of leakage (chylous or non-chylous in the trunk or extremities). Both legs and/or arms should be evaluated whether the extremity swelling is unilateral or not.

Radiopharmaceutical:

Filtered (0.22um) 99mTc sulfur colloid. ImCi/0.05ml-0.1 ml (unit dose) drawn into an insulin syringe, one dose for each extremity. Four markers for whole body imaging are made using a drop of 99mTc on a small square of filter paper attached to waterproof tape, which is then folded over the filter paper to make a small square (0.5x0.5 inch that assays to no more than 10uCi each.)

Procedure:

Lower Extremity -Position the patient supine on the whole body imaging table, with shoes, socks, compression hose, removed. Imaging begins as soon as the injections are given so have the camera and acquisition protocol ready to go.

Injections are placed between the second and third toes in the webbing of the foot. The injection is intradermal similar to a TB skin test. Inspect the area to avoid areas adjacent to veins (venous entry can ruin the assessment for channels) and inject just under the skin until a weal is raised. Using dry gauze, press on the injection site for 10-30 sec. to enhance uptake and staunch any bleeding. The symptomatic side is injected first, then immediately inject the other foot.

Upper Extremity- Position the patient supine on the whole body imaging table with the hands close together over the pelvis. Pillows or a loosely fitting strap can be used to help support the arms with the object being to include the elbows in the field of view. The injections are administered into the webbing of the fingers between the second and third finger, using the same technique as for the feet.

Note: In rare circumstances, upper and lower flow must be assessed. In this situation, complete

the lower extremities first up through the 3rd whole body (post massage) before injecting the hands and assessing the upper extremity flow. Alternatively, inject the patient on two separate days to assess lower and upper extremity flow.

Data Acquisition:

Immediately after bilateral intradermal injections, start a dynamic collection of one frame per minute for 15 minutes. The camera should be positioned such that the field of view starts just above the injection sites but does not include the injection sites (to remove oversaturation from the injection sites). All imaging is done from the anterior. The dynamic acquisition provides an early assessment of the tracer flow through the channels just above the injection sites as a diagnostic standard.

A 10 second period of light exercise (flex the ankles or open and close hands) every three minutes, starting three minutes after the injections, promotes lymph transport. This should be continued every three minutes until the conclusion of the second whole body image.

Immediately after the dynamic collection, place a marker in a piece of tape centered between the kneecaps, on the pubis bone, on the xiphoid, and at the sternal notch. Then the 1st whole body sweep from the toes or the fingertips to the shoulder level. Repeat this for a 2nd whole body scan as before and continue with the light exercise until the second scan is completed. Scan speed for the whole body sweeps is 15 cm / minute.

4. A one-minute period of light massage is performed on the calves or forearms followed by the 3rd whole body sweep. All exercise may be discontinued at this time.

5. A delayed sweep at 3 to 6 hours post injection should be performed on every patient to define the extent, if any, of dermal diffusion and possible chylous or non-chylous leakage. It is after this 4th whole body scan that the upper extremities can be injected for the one-day protocol of upper and lower extremities. Have the patient void prior to this image.

Additional Acquisitions for Specific Patients:

1. A transmission source may be used to outline areas of the body of interest.

2. In patients with suspected leakage of tracer due to pathological conditions, SPECT imaging can be used to better anatomically define the locations of leakage in 3-D. In some patients lateral views can also be used to better define the anterior-posterior location of nodes, channels, and sites of leakage. Magnified images of area(s) of leakage are often of value for reading.

COMMENTS:

The dynamic collection provides data that can separate primary from secondary lymphedema. Migration of tracer from the injection site, in apparent channels, suggests that a diagnosis of primary lymphedema is less likely than that of secondary lymphedema. In patients with aplastic or hypoplastic lymphatic systems, there may be no flow from a correctly administered injection reflecting the pathological condition.

When evaluating both upper and lower extremity flow on a patient on the same day, inject the lower extremities first. Complete evaluation of lower extremities (out to 90 minutes-through the post-massage stage) before proceeding with the evaluation of the upper extremities.

There are methods such as the C-Scan to quantitatively assess whole body lymphangioscintigrams using characteristics of the image including speed of tracer flow and time to highlight nodes, the number of nodes and channels, presence or absence of dermal diffusion, and clearance of the tracer from the channels in the later films.

NOTE: This protocol is based on the assumption that you will use a gamma camera that is whole body capable. If your camera is not whole body capable similar results can be obtained by doing consecutive three minute spots in the order suggested for the whole body sweeps. The resultant images will not be of equal quality to the whole body images but most of the same information should be captured.

ICD-10:

Pain in the right leg M79.604

Pain in the left leg M79.605

Lipedema R60.9

Lymphedema secondary to lipedema I89.0

G 89.4 Chronic pain

Electronically signed by Karen L. Herbst, MD, PhD Friday, August 13th, 2021

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