VENTRICULAR SHUNT STUDY

Overview

- The Ventricular Shunt Study evaluates the patency of shunts by direct injection of the radiopharmaceutical into the shunt apparatus.

Indications

- Evaluation of ventricular shunt patency.

Examination Time

- 1 hour or more depending on whether the shunt is patent.

Patient Preparation

- Shave the hair over the shunt reservoir.

Equipment & Energy Windows

- Gamma camera: Large field of view; may use small field of view.
- Collimator: Low energy, high resolution, parallel hole.
- Energy window: 20% window centered at 140 keV.

Radiopharmaceutical, Dose, & Technique of Administration

- Radiopharmaceutical: Tc-99m-DTPA.
- Dose: 0.5 to 1 mCi (37 MBq) in a small volume, e.g. 0.1 mL or less.
- Technique of administration: Usually into shunt reservoir; the exact technique depends on the type of shunt. Qualified physician performs the injection.

Patient Position & Imaging Field

- Patient position: Supine.
- Imaging field: Head and shunt pathway; may include neck and chest or neck, chest, and abdomen.

Acquisition Protocol

- Acquire ANT images of head and entire distal length of shunt tubing immediately after injection and at 5, 10, and 20 minutes:
  1. Acquire each image for 1 minute.
  2. Expose the images so that background activity is just visible.

- Timing of delayed images, if any, will depend on the findings in the initial images. Show the images through 20 minutes to the nuclear medicine physician.

Data Processing

- None.

Optional Maneuvers

- Images in other projections: LAT images may be obtained to better define tracer position within the cranium.

- Quantitation of CSF flow: The flow of cerebrospinal fluid through the reservoir may be quantitated.

- Evaluation of other shunts: Flow in other shunt or drug delivery systems can be evaluated using the same techniques used for evaluation of ventricular-peritoneal shunts.