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.