Evaluation of the patient with a shunt

To rule out Cerebrospinal fluid shunt complications

Radiographic evaluation

1. “shunt series” (plain X-rays to visualize the entire shunt)

a) purpose: R/O shunt disconnection/breakage or migration of tip (NB: a disconnected shunt may continue to function by CSF flow through a subcutaneous fibrous tract)

b) for a VP shunt: AP & lateral skull, CXR, and abdominal X-ray

c) the following hardware may be radiolucent and can mimic shunt disconnection:

● the central silastic part of older Holter style valves

● connectors (“Y” & “T” as well as straight)

● antisiphon devices

● tumor filters

d) obtain most recent X-rays available to compare for breaks(essential for“complicated” shunts involving multiple ventricular or cyst ends or accessory hardware)

2. in infants with open fontanelles, ultrasound is the optimal method of evaluation (especially if previous U/S available)

3. brain CT required if fontanelles closed, may be desirable in complicated shunt systems (e.g. cyst shunts). Minimize the number of CTs in pediatric patients

4. brain MRI: best for assessing specific issues related to hydrocephalus (aqueductal stenosis, trans-ependymal absorption of CSF, loculations… Shunt hardware is difficult to see on MRI. Programmable valves must be evaluated and reprogrammed after an MRI

5. “shunt-o-gram” if it is still unclear if the shunt is functioning

a) radionuclide:

b) X-ray:using iodinated contrast:

6. abdominal CT or abdominal ultrasound: when undershunting is unexplained or if there is an index of suspicion of abdominal obstruction (e.g. abdominal symptoms such as pain or bloating)