PEDIATRIC EMERGENCY DEPARTMENT CLINICAL GUIDELINE:
SHUNT MALFUNCTION/INFECTION

Population:
Children of any age with CSF shunts (ventriculoperitoneal, lumboperitoneal, ventriculoatrial, ventriculopleural, subdural-peritoneal) and complaints of headache, abdominal pain, nausea and/or vomiting, lethargy or decreased level of activity/consciousness, and fever.

History:
• Headache – severe, progressive, and/or unrelenting
• Abdominal pain
• Nausea and vomiting
• Decrease in level of activity – ↑ sleepiness or lethargy
• Change in level of consciousness
• Irritability
• Fever – with shunt infection
• “Sunsetting” eyes
• Seizure activity – new onset or ↑

***If recent surgery – Drainage/odor from incision sites
Tenderness or bogginess at incision sites

Physical Examination:
• General appearance and vital signs
• Rapid cardiopulmonary assessment
• Rapid neurological assessment
  o LOC
  o Cranial nerve function
  o Gait – if ambulatory
  o Strength
  o Characteristics of speech
  o Affect
• Assessment of hydration
• Assessment of head
  o Evidence of swelling at shunt site
  o Fontanels
• Assessment of eyes
  o Visual fields/acuity
  o Fundal exam for papilledema
• Abdominal examination
  o Tenderness
  o Distention
• Assessment of skin
  o Evidence of local infection at surgical sites and along shunt tract

Diagnostic Evaluation:
• Shunt series – Lateral skull, AP chest, AP abdomen (essentially all patients)
• Head CT (essentially all patients)
• Peripheral blood
  o CBC w/differential, ESR, CRP, Blood Cx (if fever or recent shunt placement/revision)
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- ER 1 (as indicated)
  - Lumbar puncture/Shunt tap (only after discussion with Neurosurgery)
    - Perform in L lateral recumbent position
    - Obtain and document opening pressure
    - CSF for:
      - Culture & Gram stain
      - Cell count
      - Glucose
      - Protein

Management:
- Maintain HOB @ 30°
- NPO
- IV access
- In cases of suspected shunt failure, remember that ICP may be elevated. Therefore, IV fluids should be used with appropriate caution.
- Notify Pediatric Neurosurgery Service

** If high suspicion for a shunt infection, child will require admission and IV antibiotic therapy (Vancomycin for gram positive cocci, Rocephin for gram negative rods).

REFERENCES:


DISCLAIMER:
This clinical guideline has been developed for the purpose of unifying the general emergency care of children with possible shunt malfunction/infection. It is intended to aid, rather than substitute for,

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professional judgment. It is not intended to serve as a rigid protocol or a written proxy for the standard of care. Failure to comply with this guideline does not represent a breach of the standard of care.