Cerebrospinal Fluid leaks

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• DISCLAIMER
  • No medications available that have an FDA indication for CRS  
  • All medications and any medical management described in this lecture are OFF LABEL

• Presentation-Diagnosis
  • Watery rhinorrhea  
  • Reproduced by leaning forward or Valsava (Tandy test)  
  • Distinguish from rhinitis  
  • Beta (Tau)-transferrin: highly specific for human CSF  
    • Only need a small amount of fluid: <1cc  
    • No special handling (refrigeration)
GHSU-MCG protocol
- Endoscopy in the office
- Intrathecal Iohexol (Omnipaque 300, Withrop Pharmaceuticals, New York, NY)
- Intrathecal Fluorescein
- CT cysternogram
- Return for endoscopy same day
- Use fluorescent ophthalmology light

Fluorescein protocol
- Lumbar drain
- Fluorescein 10%, dilute down to 1%. Mix 1 cc with 10 cc CSF (Final concentration <=0.1%) and very slowly inject
- Trendelenberg
- Dye should leak from defect in 20-60 min
Fluorescein suctioned 3 min after suctioning.

Skull base defect covered with scar tissue.

3 min after suctioning.
• **Management**

  • **Conservative – trauma patients**
    • **(acute setting)**
      • Reclined sitting, no straining, avoid constipation, no bending over, avoid coughing, sneezing, nose blowing
      • Lumbar CSF decompression
      • Steroids, diuretics: controversial (ICP patients)
      • Prophylactic antibiotics: controversial

• **Management**

  • **Surgical indications**
    • Failure of cons management
    • Persistent leak
    • Recurrent meningitis
    • Pneumocephalus
    • Intraoperative CSF leak – repair in same setting

Small defect
Skull base
Fat
Mucosal Flap
Gelfoam
Surgicel

Small defect
Fat
Mucosal Flap
Gelfoam
Surgicel
65-year-old man with spontaneous CSF leak

Surgery video
Postoperative management

- Lumbar drain x 2-3 days only in ICP patients
- Bed rest with HOB elevated x 24 hours
- Discharge 1-2 days if no lumbar drain
- Avoid exertion
- Stool softeners
- Antibiotics
- Normal saline
- Endoscopic debridement over one month

Success rates: upper 90s
- Skull base defects with increased ICP
  - Schlosser and Bolger
    - ICP (Lumbar drain) < 25 cm: low salt diet/diuretics
    - ICP > 35 cm or multiple defects: consider shunting
    - Weight loss

Thank you!