Other CSF Sampling Procedures

CISTERNAL (S. SUBOCCIPITAL) PUNCTURE

- puncture to CISTERNAL MAGNA
  - neck is shaved from external occipital protuberance to mastoid process laterally.
  - patient in lateral decubitus position (sitting position can be used).
    - neck is flexed to chest.
    - pillow under head (to keep neck and vertebral axis in same plane).
  - patient is cleaned and anesthetized similar to LP.
  - spinal needle is placed in midline halfway between C2 spinous process and inferior occiput.
    - needle is angled cephalad through subcutaneous tissue until it comes in contact with bony occiput.
    - needle is then withdrawn and subsequently advanced at less acute angle with horizontal plane of cervical spine.
    - this is repeated until dural "pop" is felt.
  - N.B. stylet is removed frequently so that dura is not punctured unknowingly!
  - CSF is removed in usual manner.
  - contrast material may be injected into cisterna magna (to identify rostral extent of obstructing lesion identified by lumbar myelography).

COMPLICATIONS

- brain stem puncture (vomiting, apnea).
- upper cervical cord damage.
- cisterna magna hematoma.
- dural veins are less extensive - bloody taps are less common.
- subarachnoid pressure is lower and dural tear can heal faster - low-pressure headaches are less common.

LATERAL CERVICAL (C1-2) PUNCTURE

- puncture in C1-2 interspace from posterolateral approach:

  A. Fluoroscopic guidance:

  B. CT-guidance:
OTHER CSF SAMPLING PROCEDURES

- prone or supine position, fully sterilized and anesthetized.
- 20-22G spinal needle is inserted perpendicular to neck and parallel to bed under lateral fluoroscopy.
- point for insertion: 5-10 mm inferior and up to 5 mm anterior or posterior to tip of mastoid process.
- physician advances needle slowly and frequently removes stylet to check for fluid return.
  - if needle goes too deep and encounters paraspinous muscles, it is probably too deep posteriorly and should be repositioned more anteriorly.
  - if bone is encountered, more dorsal placement is needed.
- contraindications: lesion at foramen magnum (e.g. cerebellar ectopia), unreduced atlanto-axial subluxation.
- complications: cervical cord damage, vertebral artery injury, anomalous PICA injury

VENTRICULAR PUNCTURE

- similar to subdural tap: see p. T8H13 >>
- 23-25G ventricular needle with stylet (or AngioCath with automatically retractable needle) is placed in lateral border of anterior fontanel and is directed toward inner canthus of ipsilateral eye.
- needle is advanced slowly, and stylet is removed frequently to determine presence of CSF.
- ventricle is usually encountered = 4 cm from skin surface.
- aspirate 10 mL/kg of CSF.