



# LUMBAR PUNCTURE AND TB DIAGNOSTICS IN ADULTS

Dr. Wamala David  
Internal medicine physician



# Outline

- Indications of lumbar puncture
- Contraindications
- Technique
- Complications
- Life saving interventions
- TB diagnostics in adults

# Indications



## 1. Diagnostic

- Meningitis
- Encephalitis
- Myelitis
- Inflammatory disease e.g. GBS
- Evaluation for subarachnoid hemorrhage after a normal brain CT

## 2. Therapeutic

- Intra thecal chemotherapy
- Relieve increased intra cranial pressure
- Spinal and epidural anesthesia

# Contraindications

- Skin infection near site of lumbar puncture
- CNS lesion causing increased intracranial pressure or spinal mass
- Platelet count  $<20,000$  is absolute contraindication
- $\text{INR} \geq 1.5$
- Administration of unfractionated heparin or LMWH in past 24 hours
- Hemophilia, von Willebrands disease
- Trauma to lumbar vertebrae



# How to perform lumbar puncture

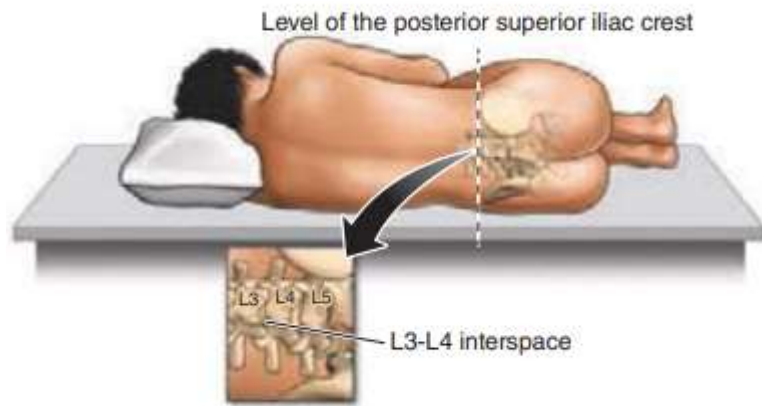
## 1. Preparation

- Explain procedure to patient and address their concerns
- Obtain written informed consent
- Arrange what you will need
- Anxiolytic incase its necessary

## 2. Proper technique

- Sterile procedure
- Advance needle slowly
- Aim towards umbilicus
- Don't aspirate CSF
- Replace stylet before removing needle

# Proper positioning of patient



Cutting  
needle  
(Quincke)



Atraumatic(sprötte or  
Whitacre)

(From RP Simon et al [eds]: Clinical Neurology, 7th ed. New York, McGraw-Hill, 2009.)



# Complications

## **1. Major complications (uncommon)**

- Cerebral herniation
- Injury to the spinal cord or nerve roots
- Hemorrhage (spinal hematoma), or infection.

## **2. Minor complications (more common)**

- Post-LP headache (most common)
- Backache
- Radicular pain or numbness



# Life saving interventions

- Elevation of patient head to 30-45 degrees and maintain head in midline position
- Intubation and hyperventilation( $\text{PaCO}_2$  25-30)
- Mannitol 25% or hypertonic saline 3%
- Monitor serum sodium to detect SIADH, cerebral salt wasting
- Avoid hypotonic fluids like 5% dextrose
- Avoid hypoxia, hypoglycemia or hyperglycemia
- Treat fever, seizures, vomiting etc.
- Give empirical antibiotics, steroids when indicated
- Blood pressure control, vasospasm control in case of SAH





# Normal CSF

Parameter	value
Opening pressure	50-170mmH <sub>2</sub> O
Appearance	Clear(can be clear with up to 400cells/mm <sup>3</sup> )
Xanthochromia	none
Red blood cells	<5/mm <sup>3</sup>
WBCs	<5/mm <sup>3</sup> (60-70% lymphocytes, 30-50% monocytes, no polymophonuclear leucocytes)
glucose level	>40mg/dl or 60-70% serum glucose
Protein level	<50mg/dl
Gram stain & culture	negative



# TB diagnostics

- Specimen (sputum, CSF, biopsy specimen, pleural fluid, urine)
- Microscopy (ZN stain, auramine stain)
- Gene Xpert
- Culture (solid media and liquid media)
- Urine LAM
- Morphological e.g. histology
- Radiological e.g. cavitation, military pattern

ASANTENI SANA  
THANK YOU ALL

