

## Infectious Disease

### Basic CSF:

Cells  
Protein  
Glucose  
Xanthochromia  
Cytology  
Cryptococcal antigen  
VDRL  
IgG index  
IgG Synthesis rate  
Oligoclonal bands

### Other CSF:

Flow Cytometry  
Interleukin 10 (suggestive of lymphoma)  
Interleukin 6 (suggestive of infection, inflammation)  
(Elevated IL-10 with IL-10 : IL-6 ratio > 1.0 is strong predictor of presence of lymphoma cells in CSF)

Initial management:

Blood cultures

### Dexamethasone:

- Adults (10 mg q6h x 4d)- 10 mg IV load
  - Children (0.15 mg/kg/dose q6h x 4 d)
  - 15-20 minutes before the first dose of antibiotics or with first dose of antibiotics
- 3<sup>rd</sup> or 4<sup>th</sup> generation cephalosporin

- Ceftriaxone 2gm q12h
- Cefotaxime 3 gm q4h
- Cefepime 2 gm q12 h

Vancomycin (45-60 mg/kg/day divided tid)

Acyclovir (10 mg/kg q8h)

+/- Ampicillin

- For coverage of *Listeria M* for age >50, chronic illness, organ transpl, pregnancy, malignancy, immunosuppression

## Bacterial:

CSF: Cells, Protein, Glucose, Xanthochromia, Cytology, oligoclonal band and IgG synthesis rate and index

CSF Gram Stain, CSF bacterial cultures

CSF Bacterial antigen screen/latex particle agglutination

CSF Bacterial PCR screen: broad range PCR, Specific bacterial PCR

*Borrelia burgdorferi* IgM and IgG (serum and CSF) and antibody index

Serum: Blood cultures

## Viral:

CSF Cells, Protein, Glucose, Xanthochromia, Cytology

CSF PCR: HSV-1, HSV-2, West-Nile Virus, EBV, VZV, HIV RNA, Rabies Virus,  
Reverse transcriptase PCR for enteroviruses

CSF Viral Culture

IgM and IgG (serum and CSF): St. Louis encephalitis virus, West Nile encephalitis virus,  
Eastern equine encephalitis virus, Western equine encephalitis virus, Japanese  
encephalitis virus, Dengue virus, EBV, HSV-1, Rabies virus, HIV

VZV:

- CSF PCR low sensitivity;
- Best diagnostic test is detection of CSF IgM antibodies and antibody index, which is ratio of (anti-VZV IgG in CSF/antiVZV IgG in serum) to (total IgG in CSF/total IgG in serum); Value  $\geq 1.5$  indicates intrathecal antibody synthesis
- 40% no rash

HSV:

- 90% FLAIR and DWI temporal lobe changes
- CSF HSV PCR may be negative in first 72 hours
- Diagnostic of recent infection: CSF antibody ratio of  $< 20:1$

West Nile Virus:

- CSF PCR insensitive
  - CSF IgM: best test, indicator of intrathecal antibody production, since it does not cross BBB, may take several weeks to become positive
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**Fungal:**

CSF:

CSF Cells, Protein, Glucose, Xanthochromia, Cytology, oligoclonal banding, IgG index and synthesis rate.

CSF India ink

CSF Fungal culture

CSF Histoplasma antigen, CSF cryptococcal polysaccharide antigen

CSF and Serum Fungal Antibody testing : *Coccidioides immitis* complement fixation antibodies, *blastomyces dermatitidis*, *Histoplasma capsulatum*, *sporothrix schenckii* antibodies

Other testing:

Chest X ray or CT chest



**TB:**

CSF: CSF Acid fast stain, CSF MTB cultures, CSF mycobacterium tuberculosis PCR,

Tuberculin skin test

**Syphilis:**

CSF FTA-ABS (Fluorescent treponemal antibody absorption), CSF VDRL