Adult Community–Acquired Meningitis

MOST COMMON MICROORGANISMS

- *Streptococcus pneumoniae*
- *Neisseria meningitidis*
- *Listeria monocytogenes* (age >50 years, excessive alcohol consumption, pregnant, immunocompromised)
- *Haemophilus influenzae* (now very rare)
- Viruses: Enteroviruses most common

RESISTANCE PATTERNS

- Local ceftriaxone resistance in *S. pneumoniae* is estimated to be ≤ 3%

DIAGNOSTIC CONSIDERATIONS

- Collect 2 sets of blood cultures
- Head CT prior to lumbar puncture if focal neurological signs, papilledema, altered mentation, new onset seizures, impaired cellular immunity
- Lumbar puncture
  - Defer if high bleeding risk (INR >1.4, platelets < 50 x 10⁹/L )
  - Cell count, glucose, protein, Gram stain, culture, opening pressure
  - Negative Gram stain does not exclude bacterial meningitis: sensitivity 60-90%, lower for *Listeria* (<50%)
  - Typical CSF findings: elevated WBC (predominately neutrophils; may be predominantly lymphocytes and/or monocytes with *Listeria*), elevated protein, low glucose
    - Predictors of bacterial infection: WBC ≥500 x 10⁶/L, CSF-blood glucose ratio ≤ 0.4
  - CSF PCR if suspect viral causes (e.g. Enteroviruses)

MANAGEMENT CONSIDERATIONS

- Delay of antibiotics increases mortality. Do not delay antibiotics if neuroimaging and/or LP is delayed.
- Initiate droplet and contact precautions and notify Infection Prevention and Control
- Contact Public Health
- Repeat LP if poor clinical response after 48 hours OR resistant *S. pneumoniae* confirmed
EMPIRIC TREATMENT

- Dexamethasone 10 mg IV q6h should be started with or immediately before the FIRST dose of antibiotic and continued for 4 days if the causative agent is found to be S. pneumoniae.
- Ceftriaxone 2 g IV q12h + vancomycin 25 mg/kg total body weight (TBW) IV loading dose followed by 15 mg/kg IV q8-12h (adjust for renal function)
  o Vancomycin should be discontinued for S. pneumoniae if susceptibility to ceftriaxone is confirmed (using CNS minimum inhibitory concentration (MIC) breakpoints).
- Add ampicillin 2 g IV q4h (adjust for renal function) for Listeria coverage if age > 50 or risk factors (excessive alcohol consumption, immunocompromised, pregnant)

ALTERNATIVES

- For allergies to any first line agents consult Infectious Diseases

DURATION

- Neisseria meningitidis 7 days
- Haemophilus influenzae 7 days
- Streptococcus pneumoniae 10–14 days
- Listeria monocytogenes ≥ 21 days

SPECIAL CONSIDERATIONS

- Immunocompromised (steroids, transplant patients, those with HIV) may may be at risk for fungal meningitis (e.g. Cryptococcus)
- For S. pneumoniae CNS infections, the minimum inhibitory concentration (MIC) breakpoints for penicillin and ceftriaxone differ from non-CNS infections. Consult microbiology for interpretation of susceptibility results if necessary.

REFERENCES