Bacterial Meningitis: Bugs, drugs and steroids

Key Points:
- Do not delay antibiotic treatment for diagnostic tests
- For empiric therapy, add ampicillin to ceftriaxone and vanco for elderly and immunosuppressed.
- Use steroids when S. Pneumoniae meningitis suspected in adults.

Mortality: Untreated approaches 100%.

Risk factors for death/ neurologic deficits at presentation:¹
1) Altered mental status
2) Hypotension
3) Seizures
4) Delay in ABX resulting in development of the above risk factors

Bugs and Drugs:
- Empiric coverage – Ceftriaxone 2gm, Vanco 1gm. **For elderly and immunosuppressed**, add ampicillin 2gm to cover listeria.
- S. pneumoniae – CTX and Vanco. Add rifampin to vanco if pen-resistant strain.
  - **SFGH high level pen-resistant rate is 2%, but rarely(never?) in CSF isolates.**²
- H. influenzae – CTX for 5 days
- N. meningitides – CTX for 5 days
- Listeria – Ampicillin 2gm Q4-6 +/- gentamicin for synergy
- Enteric gram negatives – In newborns and hospitalized patients. Treat with CTX.
- Staph. Aureus – Can occur in neurosurgical patients. Treat with CTX and Vanco.

Head CT before LP?: Mass lesion can be ruled out clinically if 1) Overall clinic impression is against it 2) No papilledema 3) No focal signs AND 4) No AMS.³

Steroids for bacterial meningitis:⁴
Eligibility:
- Adults with suspected meningitis AND cloudy CSF, bacteria on Gram Stain or CSF WBC of >100.

Intervention:
- Adjunctive dexamethasone 10 mg IV given 20 minutes before or at the time of antibiotics and then Q6 hours for 4 days or placebo.

Results:
- Overall mortality reduction at 8 weeks reduced from 15 to 7%; 34 to 14% in the S. pneumo group
- Unfavorable outcome at 8 weeks reduced from 25 to 15%; 52 to 26% for s. pneumo group.
- Differences in neurologic deficits, including hearing loss were not significant at 8 weeks.

Concerns:
- No pen-resistant strains in this population. Steroids may reduce the efficacy of vancomycin against pen-resistant strep pneumo by decreasing CSF vanco levels by reducing inflammation.

Prophylaxis in contacts: Call infection control. Indicated only for N. Meningitidis to prevent further cases and to eradicate pharyngeal carriage in close contacts (household members and people with prolonged contact). Brief contacts do not need prophylaxis, such as those in the emergency room. Regimens include Rifampin 600mg Q12 x 4 doses and Cipro 500mg once.

² Lisa Winston, MD
⁴ de Gans and van de Beek. NEJM 2002