A Case of Streptococcus Pneumoniae Meningitis

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A Case of Streptococcus Pneumoniae Meningitis

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**Introduction**

This is a case of streptococcus pneumoniae meningitis in an immunocompromised patient. This case discusses the presentation, management, and complications of a 57-year-old female with past medical history significant for Hodgkin's lymphoma in remission and rheumatoid arthritis on immunosuppressive therapy who presented to the emergency department with altered mental status. Streptococcus pneumoniae is the most frequent cause of bacterial meningitis in the United States. Meningitis should always be considered in the differential in a patient with fever and altered mental status. As physicians, it is vital to act early by initiating empirical antibiotics and performing a lumbar puncture to identify this disease process.

**Presentation**

In the emergency department patient was brought in for altered mental status by sister. Sister states that the last time she spoke to patient was over 24 hours ago on the phone. The next day, she was concerned that she was not answering her phone, so she went to her house and found patient on the floor unresponsive. Patient was found barely opening his eyes and not following commands. Patient has rheumatoid arthritis and is currently on remission. In the ED, patient was unresponsive. Patient had a fever of 39.5 °C, tachycardia 140s, and hypotensive at 73/40. Laboratory studies were significant for leukocytosis of 879 white blood cells, protein 591, lactate acid 16.2, and glucose <10. Cerebral spinal fluid was positive for gram positive cocci in pairs within the hour. By the next day both blood cultures and cerebral spinal fluid grew streptococcus pneumoniae.

**Management and Complications**

Patient was empirically started on antibiotic coverage for possible meningitis that included vancomycin, ceftriaxone, ampicillin, and acyclovir, prior to lumbar puncture. While patient remained intubated in the intensive care unit, she was continued on vancomycin, ceftriaxone, and placed on dexamethasone for 4 days. Neurologically, Pt would open her eyes, not follow commands, but withdraw to pain with her left upper and lower extremities. EEG was indicative of moderate to severe degree of cerebral dysfunction. 2 days after presentation, patient had an MRI that showed a devastating acute infarct of left insular cortex and left parietal lobe with findings of ventriculitis. Patient was ultimately extubated day 6, but remains severely aphasic with near complete hemiparesis of her right upper and lower extremity.

**Lumbar Puncture and antimicrobial therapy**

- According to Infectious Diseases Society of American guidelines, CT scan before LP should be performed in adult patients with suspected bacterial meningitis who have one or more of the following risk factors (4):
  - Immunocompromised state
  - History of CNS disease
  - New onset seizure
  - Papilledema
  - Abnormal level of consciousness
  - Focal neurological deficit
- If LP is delayed, blood cultures should be obtained and antimicrobial therapy should be initiated empirically.
- No absolute contraindications to performing LP

**References**


**Table 1 – Lumbar puncture findings**

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Cranial bacterial pathogens</th>
<th>Ultramicrobial therapy</th>
<th>Adjunctive dexamethasone</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 2 months</td>
<td>Strepococcus pneumoniae, Enterobacillus coli, Listeria monocytogenes</td>
<td>Vancomycin + third generation cephalosporins</td>
<td>Early IV administration has been shown to decrease rate of hearing loss, other neurological complications, meningitis</td>
</tr>
<tr>
<td>1-2 years old</td>
<td>Strepococcus pneumoniae, Neisseria meningitidis, A. aphrophilus, Haemophilus influenzae, E. coli</td>
<td>Vancomycin + third generation cephalosporins</td>
<td>Main indication is in adults with prior or suspected pneumococcal meningitis. Once confirmed continue 10 mg q 6 hours for at least 7-10 mg/kg q 6 for 4 days (1)</td>
</tr>
<tr>
<td>2-10 years</td>
<td>Strepococcus pneumoniae, Neisseria meningitidis, Listeria monocytogenes, aerobic gram (±)</td>
<td>Vancomycin + third generation cephalosporins + ampicillin</td>
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</tr>
<tr>
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**Table 2 – Empirical antimicrobial therapy recommendations (4)**

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**Conclusion**

This case presents an immunocompromised woman who presented to the emergency department with fever and altered mental status. Early diagnosis and treatment is most important in suspected meningitis. Unfortunately, it was discovered that this patient did not receive pneumococcal vaccine, which is indicated for immunocompromised patients. Whether or not this disease may have been prevented is unknown. Still, pneumococcus meningitis is the number one cause of bacterial meningitis in the United States, and neurological sequelae are common among those that survive.