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 her eyes and not following commands. Patient has rheumatoid arthritis and is currently on immunosuppressive therapy who presented to the emergency department with fever and altered mental status. Early diagnosis and treatment is most important in suspected meningitis. Early IV administration has been found to diminish rate of hearing loss, other neurological complications, and mortality. While patient remained intubated in the intensive care unit, she was continued on vancomycin, ceftriaxone, and acyclovir, prior to lumbar puncture. 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. Early IV administration has been found to diminish rate of hearing loss, other neurological complications, and mortality.

**Management and Complications**

Patient was empirically started on antibiotic coverage for possible meningitis that included vancomycin, ceftriaxone, ampicillin, and acyclovir. Once CSF cultures and cerebral spinal fluid grew streptococcus pneumoniae. This is a case of streptococcus pneumoniae meningitis in an immunocompromised patient. It is vital to act early by initiating empirical antibiotics and performing a lumbar puncture to identify this disease process.

**Lumbar Puncture and antimicrobial therapy**

• According to Infectious Diseases Society of America 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

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**Table 1 – Lumbar puncture findings**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Common Bacterial Pathogens</th>
<th>Antibacterial therapy</th>
<th>Adjunctive dexamethasone</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 month</td>
<td>Streptococcus pneumoniae, Escherichia coli, Listeria monocytogenes, Neisseria meningitidis</td>
<td>Amoxicillin or clindamycin + ampicillin</td>
<td>Early IV administration has been found to diminish rate of hearing loss, other neurological complications, and mortality.</td>
</tr>
<tr>
<td>1-23 months</td>
<td>Streptococcus pneumoniae, Neisseria meningitidis, A. aerogenes, Haemophilus influenzae, K. pneumoniae</td>
<td>Vancomycin + third generation cephalosporins</td>
<td>Main indication is in adults with known or suspected pneumococcal meningitis. Once cerebral spinal fluid is sterile, add vancomycin and ampicillin.</td>
</tr>
<tr>
<td>2-59 years</td>
<td>Streptococcus pneumoniae, Neisseria meningitidis</td>
<td>Vancomycin + third generation cephalosporins</td>
<td>Main indication is in adults with known or suspected pneumococcal meningitis. Once cerebral spinal fluid is sterile, add vancomycin and ampicillin.</td>
</tr>
<tr>
<td>&gt;50 years</td>
<td>Streptococcus pneumoniae, Neisseria meningitidis, Listeria monocytogenes, aerobic gram (+) bacilli</td>
<td>Vancomycin + third generation cephalosporins</td>
<td>Main indication is in adults with known or suspected pneumococcal meningitis. Once cerebral spinal fluid is sterile, add vancomycin and ampicillin.</td>
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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, pneumococcal meningitis is the number one cause of bacterial meningitis in the United States, and neurological sequelae are common among those that survive.

**References**