Disseminated Cryptococcal Disease in Liver Cirrhosis

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DISSEMINATED CRYPTOCOCCAL DISEASE IN LIVER CIRRHOSIS: Is it more common than reported in the literature?

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Introduction

- Cryptococcus is an environmental yeast that is typically associated with human immunodeficiency virus (HIV), and transplant recipients
- Invasive disease has been described in patients with liver disease, however it is not a common occurrence.
- We describe a case of disseminated Cryptococcus neoformans infection in a patient with liver cirrhosis

Case presentation

- 53-year-old male, with history of Hepatitis C infection, liver cirrhosis, Sjogren’s syndrome, venous thromboembolism (VTE), was admitted to the hospital for worsening debility and weakness
- In a recent hospital admission for acute kidney injury (AKI), he was found to have spontaneous bacterial peritonitis secondary to Klebsiella pneumoniae and E. coli, and bacteremia with the latter organism. Patient was treated with IV Ertapenem
- On latest admission, patient’s model for end-stage liver disease (MELD)-Na was 25. Physical exam was significant for abdominal distention with mild diffuse tenderness, shifting dullness, positive fluid-wave sign, and bilateral 1+ edema to the knee
- Peritoneal fluid was positive for Cryptococcus, and multiple blood cultures (total of 6 different days) were positive for Cryptococcus. Lumbar puncture (LP) showed pleocytosis with monocytes predominance, CSF culture positive for Cryptococcus and an elevated CSF Cryptococcal antigen (Crypto Ag)
- Patient was treated with Liposomal Amphotericin B and Fluconosine.
- Repeated LPs showed persistently elevated opening pressures, requiring ventricular-pleural shunt
- He finished a course of 4 weeks of induction therapy, followed by transition to oral Fluconazole for consolidation

Laboratory data

<table>
<thead>
<tr>
<th>Lumbar puncture</th>
<th>Opening pressure (cm H₂O)</th>
<th>Closing pressure (cm H₂O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/10/18</td>
<td>31</td>
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<tr>
<td>7/22/18</td>
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<td>32</td>
<td>14</td>
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</tbody>
</table>

Table 1. Lumbar punctures with opening and closing pressures. *UO: Unable to obtain closing pressure

Discussion

- Cryptococcus neoformans is an encapsulated, ubiquitous, opportunistic yeast traditionally associated with HIV, solid organ transplant patients
- In the past 25 years, an epidemiology shift has been observed to HIV negative patients
- Liver cirrhosis, diabetes mellitus, autoimmune disease, and malignancy is now more commonly reported with cryptococcal disease (CD)
- Disseminated disease is defined as: POS culture from ≥ 2 sites or POS blood culture

- Invasive CD is a rare but highly morbid infection in patients with liver disease. Peritonitis is common in these patients, especially with high MELD-Na scores
- Challenges in diagnosis are due to atypical presentation, mild-moderate fluid pleocytosis, and slow culture turnaround time
- Meningitis with Cryptococcus poses a high morbidity condition, especially if complications like elevated intracranial pressure arises. Multiple sites of seeding of Cryptococcus neoformans in an immunocompetent patient is rare
- Prompt initiation of adequate therapy and close monitoring of complications are key for improvement in patient’s survival
- Treatment is prolonged and challenging

Conclusion

- Cryptococcal invasive disease in non-HIV patients has a high morbidity and mortality rate, especially in liver disease
- Presentation is atypical and diagnosis is challenging, high degree of suspicion is required in these patients

References