Acute Liver Failure: A Rare Presentation of Small Cell Lung Carcinoma
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Introduction
- Small cell lung carcinoma (SCLC) is a malignant neuroendocrine tumor of the lung, accounting for less than 10% of lung cancers
- Despite the liver commonly being the site of metastatic disease, acute liver failure (ALF) is a rare presentation of this malignancy and is associated with high fatality
- We present a rare case of SCLC presenting as ALF, a complication which is often diagnosed at autopsy

Case Presentation
- Patient is a 60-year-old male who presented to the emergency department for evaluation of progressive shortness of breath and confusion for one month
- Chest x-ray and computed tomography (CT) head were unremarkable
- Contrast-enhanced CT chest revealed a 4.6 x 3.4 x 4.0 cm lingular mass with bulky left hilar and left paratracheal adenopathy
- CT incidentally noted enlargement and irregularity of the liver with suggestion of multiple metastases
- Trans-jugular liver biopsy revealed metastatic SCLC
- Fulminant hepatic failure was suspected given the constellation of encephalopathy, worsening liver function tests, and coagulopathy
- Palliative chemotherapy with dose-reduced carboplatin and etoposide was started within hours of tissue confirmation
- Allopurinol was started for tumor lysis syndrome (TLS) prophylaxis
- Despite rapid initiation of treatment, the patient quickly progressed into hepatic coma, and developed refractory hyperkalemia and renal failure concerning for TLS, ultimately expiring within hours after starting chemotherapy

Relevant Laboratory Data

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Lactic Acid</td>
<td>7.6 mmol/L</td>
</tr>
<tr>
<td>Sodium</td>
<td>128 mmol/L</td>
</tr>
<tr>
<td>Potassium</td>
<td>5.6 mmol/L</td>
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<tr>
<td>AST</td>
<td>664 U/L</td>
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<tr>
<td>Acetaminophen</td>
<td>&lt;10</td>
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<tr>
<td>Alk Phos</td>
<td>416 U/L</td>
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<tr>
<td>Salicylate</td>
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<tr>
<td>Total Bilirubin</td>
<td>1.4 mg/dL</td>
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<td>INR</td>
<td>1.6</td>
</tr>
<tr>
<td>Acute hepatitis</td>
<td>Negative</td>
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<tr>
<td>AMA</td>
<td>Negative</td>
</tr>
</tbody>
</table>

Figure 1. Relevant laboratory data on day of admission.

Discussion
- ALF is most commonly due to drug-induced injury or viral hepatitis, and rarely neoplastic disease
- Hematologic malignancies are the most common type of neoplasm to cause ALF
- In review of the literature, ALF at the time of presentation and subsequent diagnosis of SCLC has been reported less than a dozen times
- Most commonly, this association is diagnosed on autopsy. The course is often remarkable for rapid deterioration and death as a result of multi-system organ failure

Imaging

- Fulminant hepatic failure was suspected given the constellation of encephalopathy, worsening liver function tests, and coagulopathy
- Contrast-enhanced computed tomography of the chest. Axial contrast-enhanced computed tomography scans of the chest revealing severe narrowing of the left upper lobe bronchus and occlusion of the lingular bronchus due to a left hilar mass, approximated to be 4.6 x 3.4 x 4 cm.

Figure 2. Axial contrast-enhanced computed tomography scans of the chest revealing severe narrowing of the left upper lobe bronchus and occlusion of the lingular bronchus due to a left hilar mass, approximated to be 4.6 x 3.4 x 4 cm.

Conclusion
- Typically neoplastic invasion of the liver results in mild transaminitis, or may cause obstruction of bile ducts resulting in cholestatic injury. In this case, our patient presented with ALF as the first manifestation of SCLC
- Metastatic disease is thought to cause ALF by multiple mechanisms; infiltration of tumor which results in loss of the critical burden of hepatic cells and tumor thrombi in the vasculature leading to widespread infarction
- Despite the rarity of this presentation, this case highlights the importance of considering extrahepatic malignancy in the differential for ALF

References