Occam’s Razor or Hickam’s dictum?

*Use PRN!*

Hari Raman Pokhrel, MD
Rachel M Hawker, MD, FACP
The Case

63 yo F, Hx of esophageal varices, alcoholic Cirrhosis

CC: ↓ cognition and inability to do ADLs

Physical Exam: 36.8 C, 162/70, 60, 16, 98% on room air

Disoriented, slow speech, poor memory, No focal neurological deficits.
## Labwork

<table>
<thead>
<tr>
<th>pH</th>
<th>PaCo2</th>
<th>HCO3</th>
<th>PaO2</th>
<th>O2 sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.45</td>
<td>36</td>
<td>25.2</td>
<td>73</td>
<td>95%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NH3</th>
<th>TSH</th>
<th>CPK</th>
<th>Trop I</th>
<th>ETOH</th>
</tr>
</thead>
<tbody>
<tr>
<td>76</td>
<td>1.62</td>
<td>11</td>
<td>0.006</td>
<td>&lt;10</td>
</tr>
<tr>
<td>(18-72)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **EKG**: No acute abnormalities
- **CXR**: No acute abnormalities
- **CT head w/o contrast**: No acute abnormalities
PMH

• Alcoholism
• Liver cirrhosis
• Peptic Ulcer disease
• Portal Hypertensive Gastropathy
• Esophageal varices
• Hypertension, Depression
PSH

• Surgery- Gastroduodenal artery embolization

• Surgery- inferior pancreatico-duodenal artery arcade embolization

• Tubal ligation
Medications

- Amlodipine 7.5mg daily
- Calcium 1500mg + Cholecalciferol 200 U daily
- Cholecalciferol D3 -2000U daily
- Fluoxetine 40mg daily
- Omeprazole 20mg daily
Other History

• Social: Married, 2 children, living in assisted living facility

• Current Smoker: 1-3 cigarettes daily, 13 pack years.

• Alcoholic in the past.

• No other drug abuse, supplements, herbals.
Assessment

63 Yo Female, hx Alcoholic Cirrhosis:
Hypercalcemia
Acute Kidney Injury
Pancytopenia
Hypokalemia
Weakness

?Malignancy
Outside ER

• Given IVF + Calcitonin + Zoledronic Acid prior to transfer

• Transferred to GHS for further Management.
# Further Evaluation

<table>
<thead>
<tr>
<th>Differential Diagnosis</th>
<th>Evaluation</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Myeloma</td>
<td>SPEP + Fixation, Free light chains</td>
<td>Negative</td>
</tr>
<tr>
<td>Hypercalcemia of Malignancy</td>
<td>PTH, PTHrp. Continue IVF.</td>
<td>Negative</td>
</tr>
<tr>
<td>Primary Hyperparathyroidism</td>
<td>PTH</td>
<td></td>
</tr>
<tr>
<td>Hypervitaminosis D</td>
<td>25 OH Vit D, 1,25 OH2 Vit D</td>
<td>Negative</td>
</tr>
</tbody>
</table>
Further Evaluation

Hospitalist: Cognitive analysis

Elderly+ HyperCa + Pancytopenia + AKI → ? Malignancy → Likely involves bone marrow

Consulted Hematology.

Question: Concern for underlying Neoplasm and ?BM biopsy.
Further Evaluation

Hematology Consultant: Cognitive Analysis

1. Polyclonal Gammopathy + NI FLC ratio $\rightarrow$ No clonal disorder, likely due to Alcoholic liver cirrhosis.

2. Mental status changes $\rightarrow$ Hyper Ca and Hyper NH3.

3. Hypercalcemia $\rightarrow$ ?Liver cancer, check $\alpha$-FP, Hep B&C, Liver US.

4. Pancytopenia $\rightarrow$ Likely due to Portal HTN, Liver disease, acute illness.
Further Evaluation

Hepatitis B & C Panel ➔ Negative

α-FP : Normal

US RUQ: Cirrhotic liver. No concern for HCC.

Mental status clear. Stable for discharge.
Re- Evaluation

New Hematologist.

Bone Marrow biopsy with cytogenetics/ Lymphoma panel.

Patient discharged, f/u with PCP.
Non caseating Granulomas

Negative for Malignancy

Normal trilineage Hematopoiesis
Follow up

CT chest: No concern for Pulmonary sarcoidosis

F/u Rheumatology

Started on Prednisone with improvement.
Final Diagnosis

Bone Marrow Sarcoidosis

Hugo et al., Granulomatous lesions in bone marrow: Clinicopathologic findings and significance in a study of 48 cases: European Journal of Internal Medicine, 2013.
Learning Points

1. Occam’s razor and Hickam’s dictum both are useful Heuristics but NOT infallible. So always keep asking **WHY**?

2. Be aware of the common diagnostic errors.

   - Premature Closure & “Rush for Discharge”
   - Overconfidence Bias
   - Confirmation bias

- Croskerry P, The importance of cognitive errors in diagnosis and strategies to minimize them, Acad Medicine, 2003 Aug;78(8):775-80.
Learning Points

3. Recognize Bone marrow sarcoidosis as an atypical cause of Hypercalcemia.

Thank You for Listening

Questions........................................Comments ?