

Occam's Razor or Hickam's dictum? *Use PRN!*

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The Case

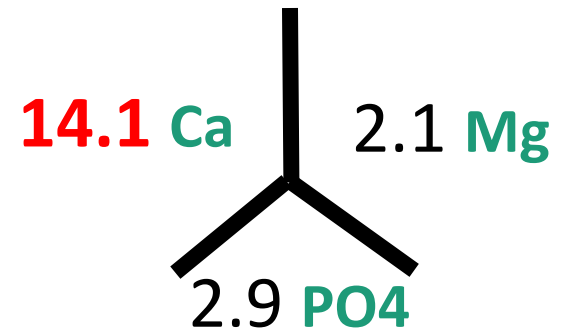
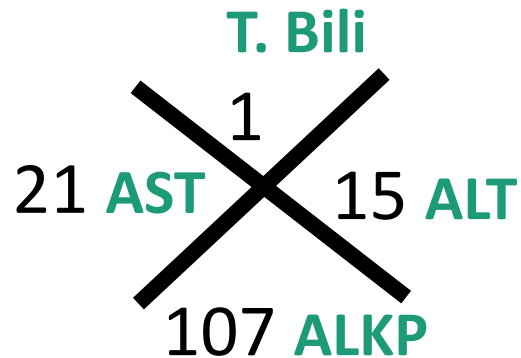
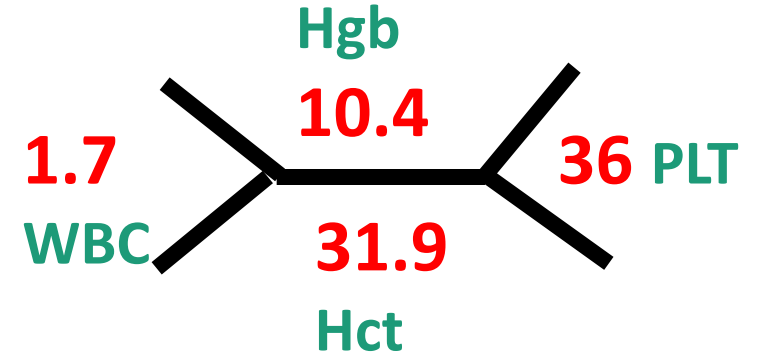
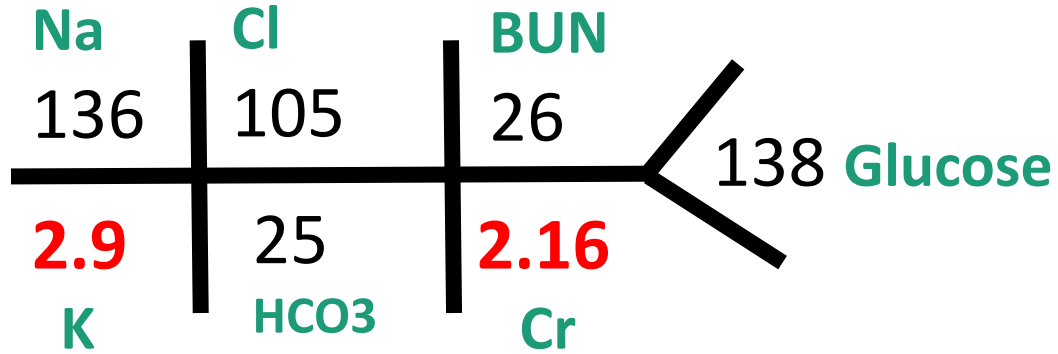
63 yo F, Hx of esophageal varices, alcoholic Cirrhosis

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



Labwork

pH	PaCo2	HCO3	PaO2	O2 sat
7.45	36	25.2	73	95%

NH3	TSH	CPK	Trop I	ETOH
76 (18-72)	1.62	11	0.006	<10

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

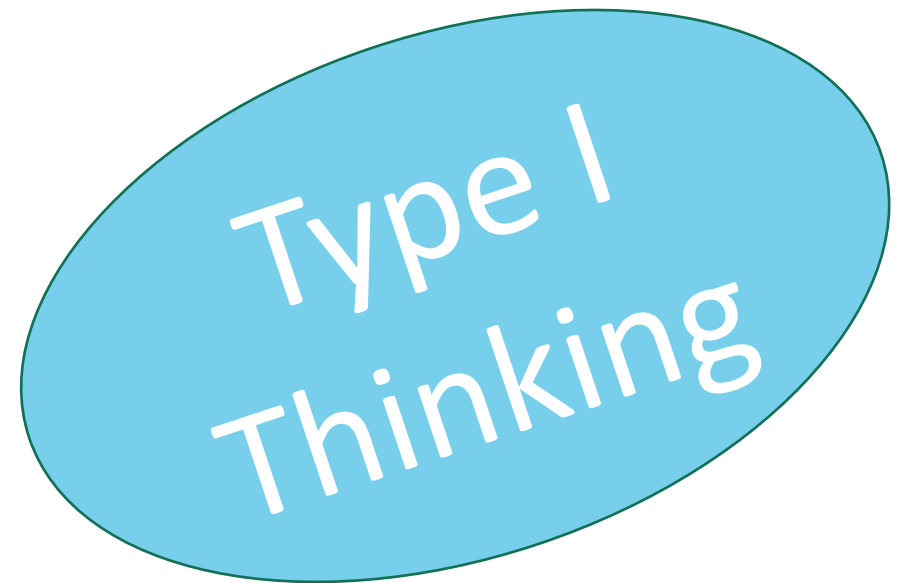
Acute Kidney Injury

Pancytopenia

Hypokalemia

Weakness

?Malignancy



Outside ER

- Given IVF + Calcitonin + Zoledronic Acid prior to transfer
- Transferred to GHS for further Management.

Further Evaluation

Differential Diagnosis	Evaluation	Results
Multiple Myeloma	SPEP + Fixation, Free light chains	Negative
Hypercalcemia of Malignancy	PTH, PTHrp. Continue IVF.	Negative
Primary Hyperparathyroidism	PTH	Negative
Hypervitaminosis D	25 OH Vit D , 1,25 OH ₂ Vit D	Negative

Type II Thinking

Further Evaluation

Hospitalist: Cognitive analysis

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

Consulted Hematology.

Question: Concern for underlying Neoplasm and
?BM biopsy.



Occam's
Razor

Further Evaluation

Hematology Consultant: Cognitive Analysis

1. Polyclonal Gammopathy + NI FLC ratio → No clonal disorder, likely due to Alcoholic liver cirrhosis.
2. Mental status changes → Hyper Ca and Hyper NH₃.
3. Hypercalcemia → ?Liver cancer, check α-FP, Hep
4. Pancytopenia → Likely due to Portal HTN, Liver dis

Hickam's
Dictum

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

Learning Points

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

Gubatan, John, Xiaohui Wang, Abner Louissaint, Anuj Mahindra, and John Vanderpool. 2016. Hypercalcemia Associated with Isolated Bone Marrow Sarcoidosis in a Patient with Underlying Monoclonal Gammopathy of Undetermined Significance: Case Report and Review of Literature. Biomarker Research. Forthcoming.

Thank You for Listening

Questions.....Comments ?