



## Confusing-calcemia: Hypocalcemia as one of the Many Guises of Pernicious Anemia

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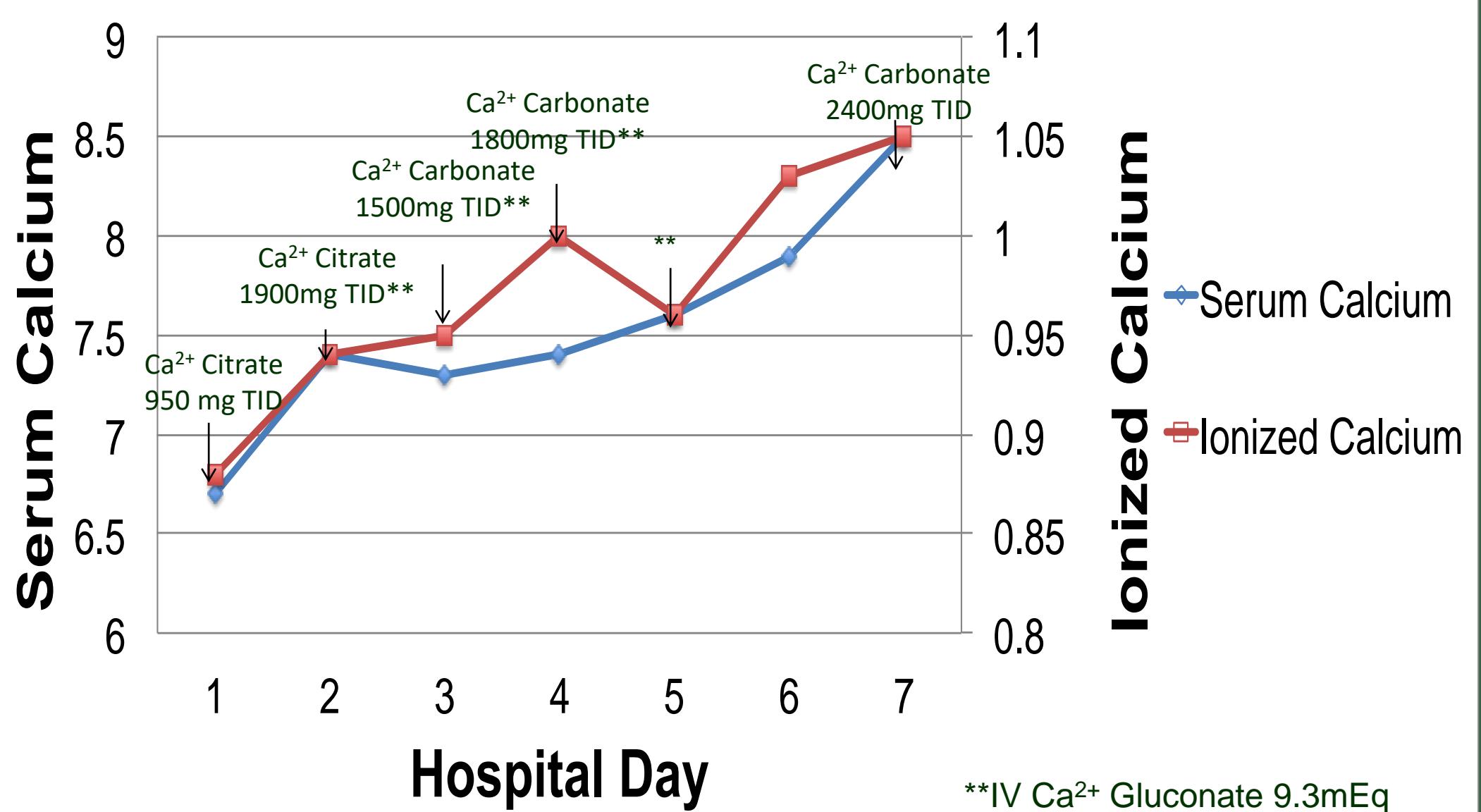
### Learning Objectives

- List causes of hypocalcemia
- Formulate a workup for refractory hypocalcemia

### Case Presentation

44 year old Caucasian female with Graves' disease

- 1-year history of refractory hypocalcemia post-thyroidectomy and inadvertent parathyroidectomy
- Acral numbness and tingling, tetany of upper extremities, and new-onset seizures
- Compliant with teriparatide SC 100 mcg, calcitriol PO 1 mcg TID, and calcium carbonate PO 1000mg TID
- Physical Exam: positive Chvostek and Trousseau sign. Otherwise normal.



### Initial Labs:

Mg<sup>2+</sup> 1.5  
Ca<sup>2+</sup> 6.7  
Alb 4.1  
Hemoglobin 10  
MCV 68  
iCa<sup>2+</sup> 0.88

### Proposed Algorithm for Refractory Hypocalcemia

Check iPTH to r/o hypoparathyroidism

Treat easily identifiable cause (renal failure, hypopara, vit D def, etc)

Hypocalcemia despite appropriate supplementation?

#### GI Malabsorption

- Intestinal lining damage
  - Celiac Sprue & Crohn's disease
- Decreased fat malabsorption
  - Pancreatic & gallbladder disease
- Achlorhydria
  - Pernicious anemia
- Small intestine resections
  - Roux-en-Y & gastric bypass

#### Electrolyte Abnormalities

- Magnesium deficiency
  - Gittelman's disease

20

**Ca**

Calcium  
40.078

#### Medication-induced

- Affect vit D absorption
  - Phenytoin, phenobarbital, carbamezepine
- Decrease stomach pH
  - PPI and H2 blockers
- Chelators of divalent cations
  - Foscarnet
- Bisphosphonates & denosumab

### Malabsorption Work Up Results

|                                |                                    |
|--------------------------------|------------------------------------|
| EGD with Duodenal Biopsies     | Negative                           |
| Anti-Transglutaminase Antibody | Negative                           |
| Intrinsic Factor Antibody      | Positive                           |
| Anti-Parietal Cell Antibody    | 73.4 (normal <20)                  |
| Vitamin B12 Level              | 212 pg/mL (normal 211-911 pg/mL)   |
| Ferritin, Iron Level, TIBC     | 5 ng/mL (low), 18 mcg/dL(low), 449 |
| Gastrin Level                  | 1264 pg/mL (normal 13-154 pg/mL)   |

### Take Home Points

- Ensure compliance with vitamin D and calcium supplementation in patients with hypoparathyroidism
- Explore other etiologies exacerbating hypocalcemia in symptomatic patients on appropriate supplements
- Consider pernicious anemia in patients with refractory hypocalcemia
- Recall that pernicious anemia can have varied presentations

### Selected References

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