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-thyroideectomy 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 1900 mg TID
- Physical Exam: positive Chvostek and Trousseau sign. Otherwise normal,

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
1. Intestinal lining damage
   a. Celiac Sprue & Crohn’s disease
2. Decreased fat malabsorption
   a. Pancreatic & gallbladder disease
3. Achlorhydria
   a. Pernicious anemia
4. Small intestine resections
   a. Roux-en-Y & gastric bypass

Electrolyte Abnormalities
1. Magnesium deficiency
2. Renal tubulopathies
   a. Gittelman’s disease

Medication-induced
1. Affect vit D absorption
   a. Phenytoin, phenobarbital, carbamazepine
2. Decrease stomach pH
   a. PPI and H2 blockers
3. Chelators of divalent cations
   a. Foscarnet
4. Bisphosphonates & denosumab

Hypocalcemia Work Up Results

<table>
<thead>
<tr>
<th></th>
<th>Initial Labs: Mg2+ 1.5</th>
<th>Ca2+ 6.7</th>
<th>Alb 4.1</th>
<th>Hemoglobin 10 MCV 68 iCa2+ 0.88</th>
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Selected References
8. Trousseau sign. Otherwise normal
9. Hospital Day
10. Serum Calcium
11. Ionized Calcium
12. Mg2+
13. Ca2+
14. Alb
15. Hemoglobin
16. MCV
17. iCa2+
18. Hospital Day
19. Mg2+: 1.5
20. Ca2+: 6.7
21. Alb: 4.1
22. Hemoglobin: 10
23. MCV: 68
24. iCa2+: 0.88

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 peminic anemia can have varied presentations

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