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Mixed Beri's: High Output Heart Failure from Severe Anemia and Thiamine Deficiency

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Mixed Beri's: High Output Heart Failure in the Setting of Severe Anemia and Thiamine Deficiency

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BACKGROUND

- Severe anemia and thiamine deficiency can independently result in high output heart failure (HOHF) through different mechanisms.
- Whole blood thiamine levels and iron studies are not routinely performed in patients with alcohol dependence at risk of heart failure.

CASE PRESENTATION

- HPI: 63-year-old male with alcohol use disorder consuming 18 drinks/week presented with progressive shortness of breath and lower extremity edema for the past several months.
- Vitals: BP 146/77, HR 97, T 97.4◦F, SpO2 98% RA
- Physical Exam: Anasarca, JVD, Lancisi's sign, midsystolic murmur.
- Labs:

134	105	13	99
3.9	22	1.39	

	3.0	
4.3		86
	10	

PT 17.7 s, INR 1.5, PTT 440.4 s
Lactate 3.4 mmol/L
Ferritin 5 ng/mL, Iron 14 ug/dL
TIBC 448, Transferrin 320 mg/dL
Thiamine 26 nmol/L
Hemoccult positive stool

- TTE: LVEF 30-35%, mildly dilated LV, SV 103 ml, CI 4.3 L/min/m2 (Figure 1)
- Cardiac Catheterization: no significant obstructive coronary disease. (Figure 2)
- Colonoscopy: bleeding diverticulosis and hemorrhoids.
- Diagnosis: critical iron deficiency anemia due to lower GI bleed and severe thiamine deficiency.
- Treatment: parenteral thiamine infusions, intravenous iron sucrose, and blood transfusions.

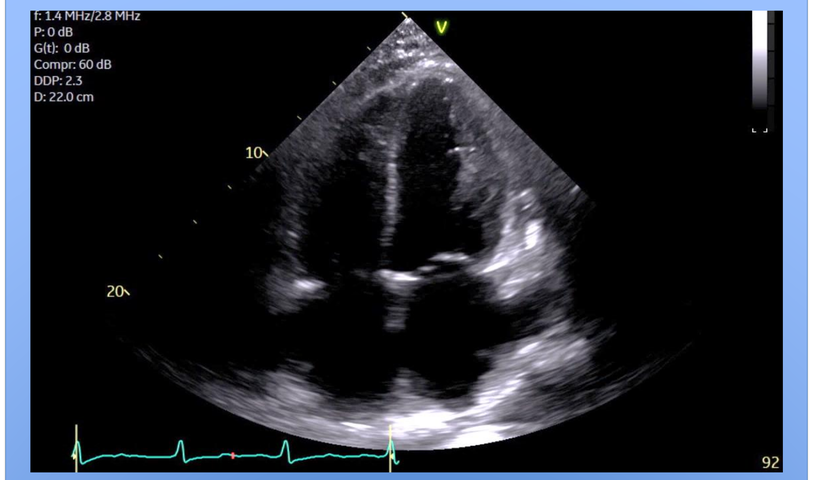

Figure 1. Mild LV dilation and reduced LVEF of 30-35%.

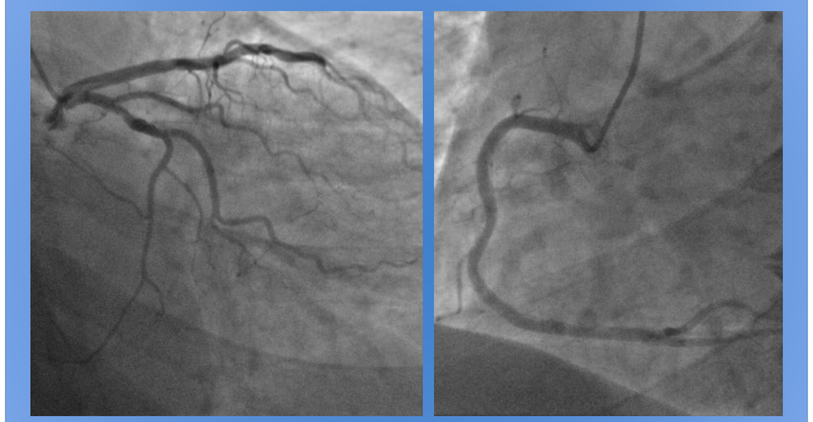

Figure 2. Coronary angiogram showing no obstructive disease.

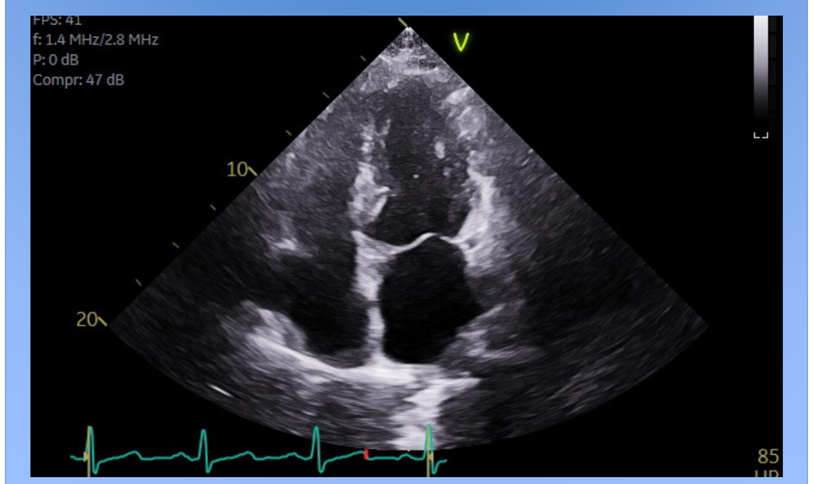

Figure 3. LVEF recovered to 50-55% at 5 month follow up.

DISCUSSION

- Severe alcoholism can cause myelosuppression and increase bleeding risk contributing to both thiamine deficiency and anemia. This in turn can precipitate heart failure.
- Cardiac catheterization excluded ischemic etiology of new onset cardiomyopathy prompting further investigation into alternative causes.
- Iron studies and whole blood thiamine levels can elucidate underlying pathophysiology to direct medical therapy.
- The diagnosis of HOHF is supported in the setting of severe anemia and concomitant cardiac Beri Beri.
- Repeat echocardiogram at 5 months demonstrated recovered LVEF to 50-55% and improvement in both LV dilation and diastolic dysfunction (Figure 3).

CONCLUSION

- HOHF is generally reversible with etiology-directed medical therapy.
- In patients with chronic alcohol use, routine testing of whole blood thiamine to assess for occult vitamin deficiency should be considered.
- Threshold levels and potential synergistic effects of iron deficiency and thiamine deficiency on HOHF remains to be determined.

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