

CASE REPORT**88. Reversible Hypocalcaemic Dilated Cardiomyopathy causing Decompensated Heart Failure- A Case Report**Shlok Bhardwaj¹, Bhupinder Singh¹¹ All India Institute of Medical Sciences, Bathinda

Background: Hypocalcaemia induced heart failure, commonly seen in children due to Vitamin D deficiency, is a rare clinical syndrome in adults. These patients are refractory to routine treatment, but the timely diagnosis of the underlying etiology and correction of calcium promptly restores myocardial function.

The Case A 55-year-old non-alcoholic and non-smoker female, previously diagnosed as a case of dilated cardiomyopathy, presented with complaints of progressive dyspnoea on exertion from NYHA-II to NYHA-IV over a span of 1 week. At admission the patient was conscious, afebrile; having respiratory distress, peripheral oxygen saturation of 93% at room air, blood pressure of 92/56 mmHg equal in both arms, regular pulse rate of 100 beats per minute, audible left ventricular S₃, mild peripheral edema, and bilateral basal crepitations. She was diagnosed to have decompensated heart failure. Chest X-Ray revealed cardiomegaly. Electrocardiogram showed sinus tachycardia (90 beats/minute), QRS axis of -20°, prolonged QTc of 574 milliseconds. Laboratory analysis at admission revealed minimally deranged liver and renal functions, and highly elevated BNP. Relevant biochemical parameters are shown in the given table. Transthoracic echocardiogram revealed dilated left chambers (left ventricle end-diastolic diameter: 61 mm, left ventricle end-systolic diameter: 52 mm), left ventricle (LV) severe global systolic dysfunction (LVEF=22%) due to diffuse hypokinesia, restrictive type of diastolic dysfunction with elevated filling pressure indexes (E/E' = 19), mild functional mitral regurgitation, mild tricuspid regurgitation, moderate pulmonary hypertension (systolic pulmonary artery pressure of 50 mmHg). Normal coronary angiography ruled out underlying ischemia. Patient was initially started on furosemide as decongestive therapy. Subsequent investigations conducted due to prolonged QTc revealed severe hypocalcaemia (corrected calcium of 4.38 mg/dL), inappropriately normal PTH, and presence of basal ganglia calcification on CT head was highly suggestive of primary hypoparathyroidism. Parenteral treatment with Gluconic Calcium was started: 950 mg of calcium (1 ampoule) at 6 hours, followed by oral treatment- high dose of calcium (1g TDS) and alfacalcidol (0.25µg TDS) along with management of heart failure. The patient had progressive clinical improvement and was discharged in NYHA class II on Day 10. Patient's serum calcium progressively improved during course of stay and was within normal limits at the time of discharge. Treatment at discharge included loop diuretic, ACE inhibitor, Calcium, alfacalcidol. Patient was followed up regularly; and NYHA class, renal functions, serum calcium level, and ECG were assessed. At follow up after 3 months, patients had significant improvement in LV function and normalised LV function after 6 months.

Conclusion: Considering the rarity of hypocalcemia induced dilated cardiomyopathy in adults, this etiology must be suspected in a cardiac patient with ECG changes suggestive of hypocalcaemia (as in

our case). Early calcium supplementation, usually along with vitamin D, reduces and even reverses ventricular hypertrophy and dilatation as well as conduction abnormalities, as it was in our case.

Table1. Biochemical and Cardiac Laboratory Parameters

Biochemical Parameter	Observed Value	Normal Range
Serum Calcium	4.38 mg/dL	8.5-10.5 mg/dL
PTH	19.12 pg/mL	10-55 pg/mL
Serum Magnesium	1.6 mg/dL	1.7-2.2 mg/dL
Vitamin D	36.2 ng/mL	40-60 ng/mL
Serum Phosphate	10.8 mg/dL	3.0-4.5 mg/dL
Serum Sodium	135 mmol/L	135-145 mmol/L
Serum Potassium	3.8 mmol/L	3.5-5.0 mmol/L
CK-MB	22 U/L	<25 U/L
Troponin T	0.03 ng/mL	<0.04 ng/mL
BNP	582 pg/mL	<100 pg/mL
SGOT	120 U/L	5-40 U/L
SGPT	100 U/L	5-40 U/L
Serum Bilirubin	1.1 mg/dL	0.3-1.2 mg/dL
Total Protein	7.1 g/dL	6-8 g/dL
Serum Albumin	3.9 g/dL	3.5-5.0 g/dL

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