

# **Misfit Clinical Dilemma-Keep Looking**

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## **Introduction:**

Cushing's disease (CD) causes chronic elevation of cortisol levels and is responsible for metabolic abnormalities like hyperglycemia and hyperlipidemia. Cardiac manifestations of CD includes hypertension and cardiomegaly, and rarely systolic heart failure (HF). We present a case of HF associated with CD.

## **Case:**

A 45 year old female with past medical history of diabetes mellitus, hypertension, hyperlipidemia, obesity and obstructive sleep apnea presented to the emergency department with dyspnea on exertion and cough for 2 weeks, along with orthopnea and paroxysmal nocturnal dyspnea. Examination revealed a BMI of 40, blood pressure of 150/101 mm Hg, and heart rate 129. Physical examination showed bibasilar crackles. Chest X-ray revealed pulmonary edema and enlarged cardiomeastinal silhouette. Electrocardiogram showed sinus tachycardia, and labs were significant for a BNP of 533 and troponin of 0.14. Echocardiogram (TTE) revealed ejection fraction (EF) of 25-30%, moderate to severe mitral regurgitation and elevated right ventricular systolic pressure at 49mm Hg. Coronary angiography showed no evidence of coronary artery disease.

Patient was then started on diuretics, beta blocker and ACE inhibitor, uptitrated over the subsequent two to three months. Autoimmune workup was negative. A repeat TTE in four months showed improvement of the LVEF to 55%. However, patient continued to be persistently tachycardic despite being on high dose beta blockers, was edematous and had worsening kidney function. Work up of her persistent tachycardia and edema revealed normal 5-HIAA and urine metanephrines levels but elevated 24 hour urine cortisol and AM plasma cortisol and ACTH levels. MRI of the pituitary fossa did not show any macroadenoma, however inferior petrosal sinus sampling was positive for elevated ACTH. A subsequent subtotal hypophysectomy showed pituitary origin of CD.

## **Discussion:**

Cardiovascular involvement is less common in CD, and can include hypertension and left ventricular hypertrophy. HF secondary to CD is rarely reported. Excess cortisol can lead to cardiac dysfunction due to effects of noradrenaline, direct activation of the renin-angiotensin-aldosterone system, and through direct action on cardiac glucocorticoid and mineralocorticoid receptors. The reversibility of cardiac dysfunction has been reported, and provides rationale for early diagnosis and treatment. Our patient presented with HF that improved with optimal heart failure therapy. Her persistent sinus tachycardia and edema prompted investigation into secondary causes. Our case highlights an unusual association of HF and Cushing's disease. Thorough history and physical evaluation and close monitoring of HF patients can shed light into unusual presentation of rare diseases, especially in clinical dilemmas that present as a misfit.