

Dilated cardiomyopathy and aldosteronoma: a causal link?

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Abstract

The aim of this study is to reveal the causal relationship between dilated cardiomyopathy and aldosteronoma. A 44-year-old male dilated cardiomyopathy patient with aldosteronoma, who demonstrated a worse cardiac function after 1 year therapy with optimized dosage of sacubitril/valsartan, furosemide, metoprolol, and spironolactone. The patient shows a promising prognosis after aldosteronoma removal procedure. Aldosteronoma may cause dilated cardiomyopathy. We assume that the optimal treatment for aldosteronoma-induced dilated cardiomyopathy is surgical removal combined with drugs.

Keywords Dilated cardiomyopathy; Aldosteronoma; Sacubitril/valsartan

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Introduction

Primary hyperaldosteronism caused by aldosteronoma has not yet been reported as a cause of dilated cardiomyopathy. Dilated cardiomyopathy, characterized by left ventricular (LV) dilation and systolic dysfunction, is one of the common causes of heart failure with reduced ejection fraction (EF) with a prevalence of approximately 1:2500 in the general population^{1–3}. Aldosteronoma is a tumour generating excess aldosterone leading to primary aldosteronism, reported in more than 11% of involved hypertensive patients, causing severe high blood pressure, even an increased risk of heart attack, stroke, or an irregular heartbeat.^{4,5} Here, we report an aldosteronoma-induced case of dilated cardiomyopathy.

Case presentation

In September 2018, a 44-year-old male patient with a history of hypertension for 10 years, who started on

sacubitril/valsartan at the dosage of 100 mg bid 6 months ago, was referred to our hospital with typical signs of paroxysmal nocturnal dyspnoea. Echocardiography showed severe LV dilation [LV end-diastolic diameter (EDD) 72 mm] with an EF of 39% (Figure 1). Coronary artery disease was excluded by invasive coronary angiography. Serum aldosterone was 18.7 ng/dL, plasma renin activity was 0.06 ng/mL, which gave SA/PRA >20, and intravenous normal saline infusion test failed to suppress serum aldosterone, which confirmed the diagnosis of primary hyperaldosteronism.⁵ Contrast-enhanced abdominal CT confirmed a 20 mm left adrenal solid mass [Figure 2(A) and (B)]. Refractory hypokalemia (K⁺ 2.05 mmol/L) was difficult to correct by potassium supplementation and a high doses of spiro lactone. The patient opted for drug therapy at first. Six months later, due to worsening heart failure, the patient returned to our heart failure centre. His echocardiography showed a progression of LV dilation (LV-EDD 83 mm) and lower LV-EF (33%), with frequent episodes of atrial fibrillation. At this time, the patient agreed to surgical removal of the left-sided suspected aldosteronoma. Subsequent pathological examination

Table 1 Clinical information and medication regimen

	September 2018	March 2019	May 2019
BP	172/93 mmHg	101/62 mmHg	110/65 mmHg
P	74 bpm	61 bpm	71 bpm
LVEF	39%	33%	52%
LVD	72 mm	83 mm	40 mm
Aldosterone	18.0 ng/dL	20.2 ng/dL	2.3 ng/dL
e	0.06 ng/mL	0.05 ng/mL	0.9 ng/mL
Renin	12 577.2 pg/mL	15 160 pg/mL	203.0 pg/mL
Pro-BNP	2.05 mmol/L	2.74 mmol/L	4.2 mmol/L
K+ medication	Sacubitril/valsartan 100 mg b.i.d Furosemide 20 mg q.d Metoprolol 47.5 mg q.d Spirolactone 40 mg q.d	Sacubitril/valsartan 100 mg b.i.d Furosemide 20 mg q.d Metoprolol 47.5 mg q.d Spirolactone 200 mg q.d	Sacubitril/valsartan 100 mg b.i.d Furosemide 20 mg q.d Metoprolol 47.5 mg q.d Spirolactone 40 mg q.d

a rare cause for DCM. The initiated failed optimized drugs treatment and subsequent aldosteronoma removal and ongoing promising drug therapy provided evidence for possible causation between DCM and aldosteronoma.

function. There is a probable causal relationship between dilated cardiomyopathy and aldosteronoma, and in patients unresponsive to angiotensin receptor inhibitors or sacubitril/valsartan. Hyperaldosteronism should be excluded as a potential cause of DCM.

Conclusion

This case of aldosteronism-induced DCM confirms a key role for surgical removal of the aldosteronoma to improve LV

Conflict of interest

None declared.

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