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A Rare Case of Cardiomyopathy Due to Pheochromocytoma Attack Triggered by Herbal Slimming Tea in a Young Patient

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Abstract

Pheochromocytoma (PHEO) is a rare catecholamine-secreting neuroendocrine tumor arising from the chromaffin cells of the adrenal medulla. PHEO can occur at any age, but it is most common in people in their 3th and 5th decades. The rule of 10s for PHEO still holds true: 10% are familial, 10% are bilateral, 10% are extra-adrenal, 10% occur in children, and 10% are malignant. The exact number of PHEO patients is unknown because most individuals with PHEO are asymptomatic. With the increase and advancement of imaging methods today, the diagnosis rate has increased, but despite technological advances, only a very small percentage (<1%) of people with high blood pressure are diagnosed with PHEO. Catecholamine-induced cardiomyopathy in PHEO is a comparatively rare but very difficult to manage complication of PHEO. We present a case of cardiomyopathy due to a PHEO attack triggered by herbal slimming tea in a young female patient.

Keywords: Pheochromocytoma, cardiomyopathies, herbal teas

Introduction

Pheochromocytoma (PHEO) is a rare tumor that develops in the adrenal medulla, a region of the adrenal glands. Approximately 30% of PHEO patients have a hereditary syndrome. The clinical picture may vary depending on the amount of hormone secretion and differences in catecholamine sensitivity among individuals. Classic findings include resistant hypertension, palpitations, headaches, and episodes of sweating. Although it is well known today that some

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substances: opiates, metoclopramide, flu medications, tricyclic antidepressants, and cocaine can trigger PHEO attacks, there is not enough information about herbal slimming teas. Recognition of PHEO is important because it can show familial transmission as a component of genetic syndromes, it can lead to potentially fatal cardiac complications, and surgical resection of the tumor can provide a cure in most cases.

Case Presentation

A 39-year-old woman presented to our cardiology department with dyspnea on exertion and palpitations. The patient had no known history of any disease or drug use. However, she indicated that she presented to the emergency department with a hypertensive attack three days ago, and stated that her blood pressure was difficult to lower during her presentation. When we deepened the anamnesis, we learnt that the patient had been using herbal slimming tea for the last five days (Figure 1). On her physical examination, arterial blood pressure was measured at 90/60 mmHg, and her pulse was tachycardic. Bilateral crackles were auscultated. Diffuse pulmonary edema was observed on chest radiography (Figure 2). Sinus tachycardia was identified on the patient's resting electrocardiogram.

- Chitosan
- Echinacea
- Birch
- Rosemary
- Blueberry
- Rice Husk
- Yogurt
- Saw Palmetto
- Goji Berry
- Broccoli
- Guarana
- Stevia Herbs
- Raspberry.

L-carnitine

Figure 1. Content of mixed herbal slimming tea

Transthoracic echocardiography (TTE) revealed global hypokinesia in the left ventricle with an left ventricular ejection fraction (LVEF) calculated at 25%. Biochemical baseline investigations revealed a creatinine level of 1.87 mg/dL (eGFR: 33) and an hs troponin I level of 8486 pg/nL, both found to be very high. Treatment for heart failure was initiated, and when the creatinine level improved the next day, multislice computed tomography coronary angiography was performed to rule out possible coronary artery disease. Coronary arteries were found to be normal (Figure 3); however, cardiac computed tomography angiography revealed an incidental 37x30 mm hypervascular lesion in the right adrenal gland with contrast enhancement (Figure 4). When the patient's age, absence

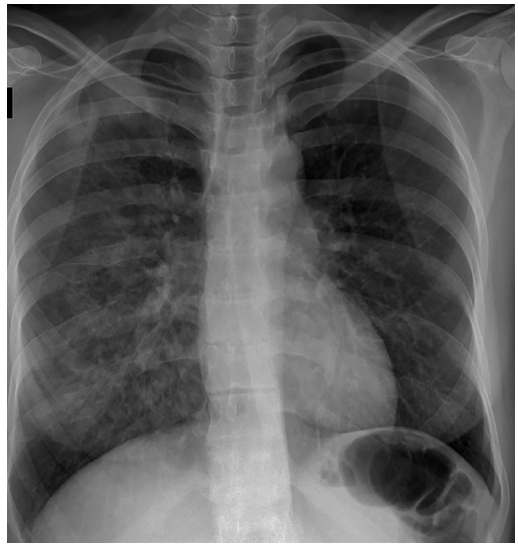

Figure 2. Diffuse pulmonary edema on chest radiography

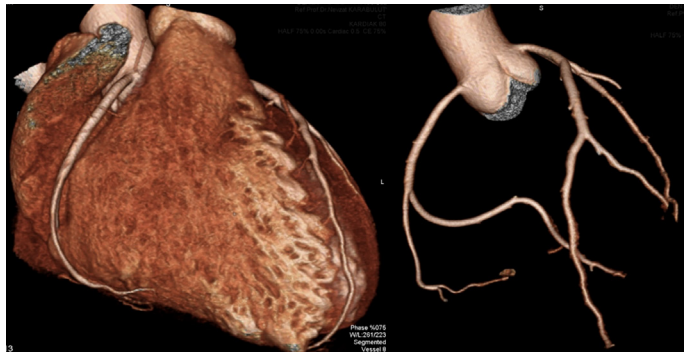

Figure 3. Cardiac CT angiography showed normal coronary arteries
CT: Computed tomography

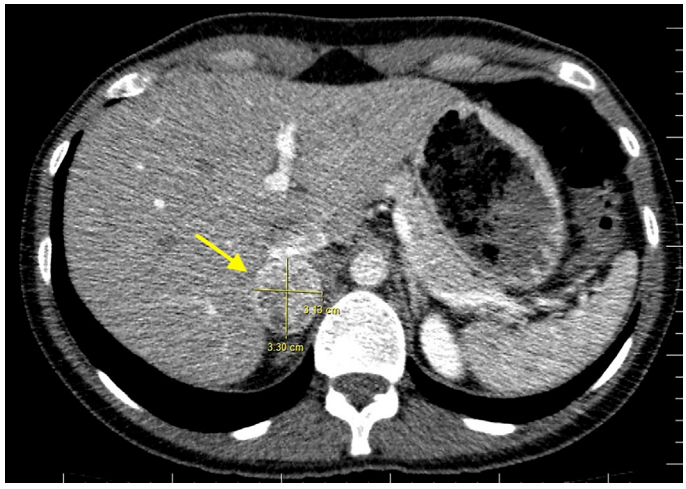

Figure 4. CT angiography additionally showed a 37x30 mm hypervascular lesion (yellow arrow) in the right adrenal gland with contrast enhancement
CT: Computed tomography

of comorbidities, hypertensive attack three days ago, and subsequent heart failure were evaluated in conjunction with the hypervascular right adrenal mass detected on imaging, cardiomyopathy due to possible PHEO was considered. After an endocrinology consultation, the patient was recommended to undergo an abdominal magnetic resonance imaging (MRI) and have plasma metanephrine levels measured. Abdominal contrast-enhanced MRI revealed a right adrenal mass compatible with phaeochromocytoma and very high metanephrine levels of 746.1 ng/L (<90) and normetanephrine levels of 2173.1 ng/L (<190) detected in plasma. An alpha blocker (doxazosin 4 mg) was added to the treatment of the patient who was receiving heart failure treatment (carvedilol, perindopril, torasemide, ivabradine), when LVEF was calculated as 45% in the control TTE performed one week later. Additional investigations and examinations performed for PHEO syndromes did not reveal any extra pathology in the patient. One month later, LVEF was completely normalized, and the patient was successfully operated with laparoscopic surgery. In the pathological examination, diffuse chromogranin positivity compatible with PHEO was detected, and the pheochromocytoma of the adrenal gland scaled score was calculated to be 11. All medications were discontinued after three months of postoperative follow-up. Informed consent was obtained from the patient.

Discussion

PHEOs are uncommon neuroendocrine tumors; clinical manifestations include various cardiovascular signs and symptoms, which are caused by excessive secretion of catecholamines[1]. The annual incidence of PHEOS ranges from 3 to 8 cases per million individuals[2]. Catecholamine-induced cardiomyopathy (CICMPP) is a dreaded complication of PHEO. During a hypertensive crisis, serious cardiovascular complications occur due to sudden and profound catecholamine excess[3]. Acute or chronic hypertension can induce myocardial hypoxia, which may lead to cardiac impairment, such as cardiomyopathy, broken heart syndrome, myocarditis, and acute coronary syndrome[4]. Managing CICMPP is a challenging task because there are no definitive guidelines for managing this complication; nevertheless, there are recommendations based on the principles of managing patients with hypertensive crises, heart failure, and cardiogenic shock[5]. PHEO, although infrequent, should be considered a differential diagnosis, particularly in young patients with unexplained hypertension and cardiac dysfunction[6]. The 2014 Clinical Practice Guidelines established by the Endocrine Society recommend surgical management for the treatment of PHEO[7]. We suggested surgical intervention to remove the mass according to guideline recommendations, after the LVEF and the general condition of our patient had improved.

Conclusion

We thought that the severe PHEO attack and subsequent cardiomyopathy in this patient were triggered by the herbal slimming tea she had recently started consuming. The contents of products purchased from the internet should be thoroughly investigated for health implications and should not be used unconsciously.

Ethics

Informed Consent: Informed consent was obtained from the patient.

Footnotes

Authorship Contributions

Concept: Demir M, Design: Demir M, Karabulut N, Data Collection and/or Processing: Yerlikaya E, Analysis and/or Interpretation: Yerlikaya E, Karabulut N, Literature Search: Demir M, Yerlikaya E, Writing: Demir M, Yerlikaya E.

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