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The Silent Culprit Behind Labile Hypertension and Cardiac Arrhythmias: A Case of Adrenal Pheochromocytoma

THE SILENT CULPRIT THAT MADE THE MIND AND HEART RACE

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Abstract

Background:

Pheochromocytoma is a rare catecholamine-secreting tumour arising from chromaffin cells of the adrenal medulla. It accounts for less than 0.2% of cases of hypertension, yet carries significant morbidity due to cardiovascular complications and delayed diagnosis. Classical manifestations include episodic headache, palpitations, and sweating, although many patients present with atypical or nonspecific symptoms.

Case Presentation:

We report the case of a 55-year-old woman with a history of diabetes mellitus and hypertension who presented with recurrent syncopal episodes, paroxysmal arrhythmias, and fluctuating blood pressure. She was initially treated for presumed sepsis and myocarditis on multiple admissions, with transient clinical improvement. Persistent labile hypertension and catecholamine-related symptoms raised suspicion of a secondary cause. Imaging studies revealed a left adrenal mass, and biochemical evaluation confirmed markedly elevated urinary fractionated metanephrines and normetanephrines, consistent with a catecholamine-secreting adrenal tumour. The patient was optimized preoperatively with alpha- and beta-adrenergic blockade and underwent successful laparoscopic adrenalectomy. Her postoperative recovery was uneventful, with normalization of blood pressure and resolution of symptoms.

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Discussion:
This case highlights the diagnostic challenges of pheochromocytoma, which often masquerades as common cardiovascular or psychiatric conditions.
Life-threatening side effects like arrhythmias, myocarditis, and stress cardiomyopathy can be brought on by catecholamine spikes. For a diagnosis, prompt imaging, biochemical confirmation, and a high index of suspicion are essential. In order to reduce perioperative risk, surgical resection must be performed first, followed by sufficient adrenergic inhibition.

Conclusion
Patients with labile hypertension, recurrent cardiac signs, and unexplained paroxysmal symptoms should be evaluated for pheochromocytoma. In order to lower morbidity and mortality, early detection and suitable treatment are essential.

Keywords: Pheochromocytoma, Catecholamine-secreting tumour, Hypertension, Arrhythmia, Myocarditis, Adrenalectomy

Introduction

Less than 0.2% of people with hypertension have pheochromocytoma, an uncommon catecholamine-secreting tumour that develops from the adrenal medulla's chromaffin cells [1]. Clinical signs and symptoms vary from headache, palpitations, sweating excessively, and sustained or paroxysmal hypertension to more unusual presentations like syncope, anxiety, or cardiac arrhythmia [2]. Myocardial damage, arrhythmias, and cardiomyopathy are among the potentially fatal consequences that might result from a delayed diagnosis due to its episodic nature and comorbidity with prevalent illnesses like essential hypertension or panic disorder. [3]

While the "rule of 10s"—10% bilateral, 10% extra-adrenal, and 10% malignant—has historically been used to characterize pheochromocytoma, new genetic discoveries have shown that up to 30–40% may be linked to hereditary syndromes like multiple endocrine neoplasia type 2, von Hippel–Lindau disease, and neurofibromatosis type [4]. Since surgical excision after proper preoperative medical preparation is still the only proven cure, prompt detection and treatment are essential.

We describe the case of a 55-year-old lady who was diagnosed with an adrenal pheochromocytoma after experiencing frequent syncopal episodes, blood pressure fluctuations, and cardiac arrhythmias.
This case highlights the importance of maintaining a high index of suspicion in patients with labile hypertension and atypical cardiovascular presentations.

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Case Report

Patient Information

A 55-year-old female homemaker from Ernakulam, with a history of diabetes mellitus and hypertension diagnosed five years earlier, presented with recurrent syncopal episodes and profuse sweating over the past three years. She had discontinued her prescribed medications after one month, claiming normalization of blood pressure and blood sugar levels, and had not pursued further medical follow-up.

Clinical Presentation

She reported to the emergency department with fever, myalgia, and headache for two days. She appeared apprehensive, was sweating profusely, and had a pulse rate of 120/min and blood pressure variation of systolic blood pressure was 170-200mmHg. She has fluctuating blood pressure. She experienced paroxysmal atrial fibrillation which spontaneously reverted to sinus rhythm. Initial evaluation suggested a urinary tract infection, and she was managed with empirical antibiotics. She was discharged in stable condition, without anti-hypertensives, and advised to review after one week.

Two weeks later, she returned with nocturnal palpitations, headache, decreased sleep, and fluctuating blood pressure (100–200 mmHg). ECG showed sinus tachycardia, and she was started on amlodipine. However, she did not return for follow-up.

After 3 months, she again presented with fever, nausea, vomiting, chest discomfort, abdominal pain, and profuse sweating. She developed atrial fibrillation with fast ventricular response, which reverted with amiodarone. Due to hypotension, she required MICU admission with noradrenaline infusion. Cardiology evaluation initially suggested myocarditis secondary to sepsis. During admission, persistent hypertension required three oral antihypertensives. Echocardiography later showed improved left ventricular function (EF 50%).

Investigations

MRI of the abdomen revealed a 3.6 × 2.4 cm hypoechoic lesion in the left paraaortic region. Contrast-enhanced CT demonstrated a 2.9 × 2.2 cm moderately enhancing lesion in the left adrenal gland with central necrosis and delayed washout.

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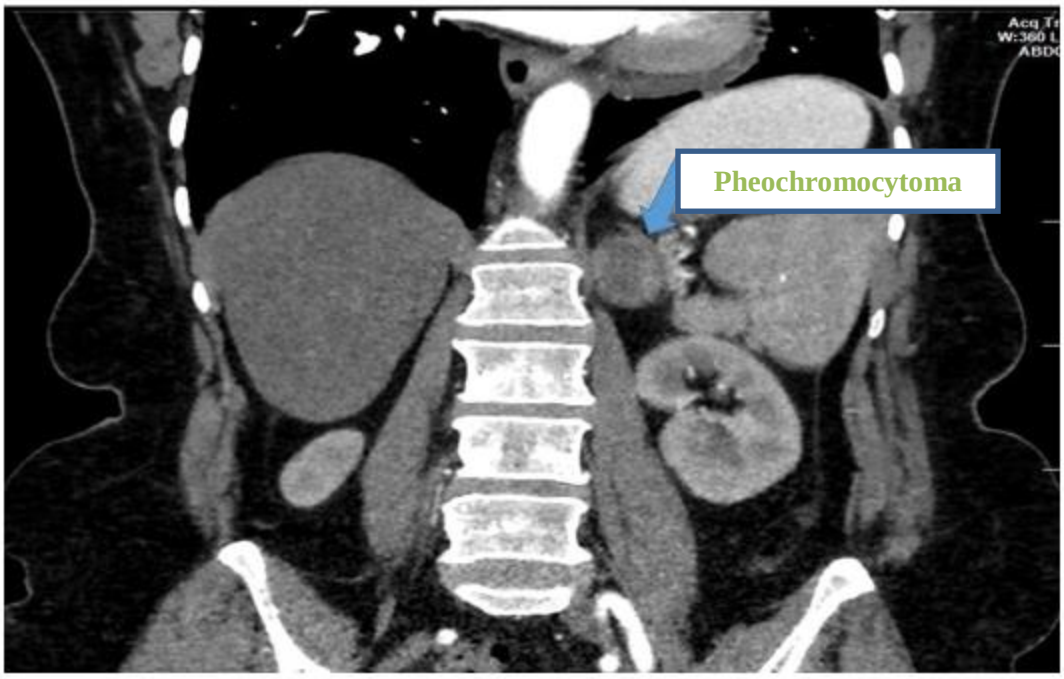

Figure 1 MRI of Pheochromocytoma

Biochemical work-up confirmed elevated urinary fractionated metanephrines (1395.83; normal 74–297) and normetanephrines (1544; normal 73–808), consistent with a catecholamine-secreting adrenal tumour. Other endocrine evaluations (renin, aldosterone, cortisol) were within normal limits.

Management and Outcome

Preoperative optimization included prazosin (5 mg) initiated seven days before surgery and metoprolol (25 mg) three days prior, with adequate blood pressure control and fluid repletion. The patient underwent laparoscopic adrenalectomy. The intraoperative and postoperative course was uneventful, and she recovered.

Discussion

Pheochromocytomas are uncommon tumours with an estimated annual incidence of 0.8 per 100,000 person-years [1]. Although classically presenting with the triad of episodic headache, palpitations, and profuse sweating [2], the clinical spectrum is wide. Many patients may instead present with nonspecific symptoms such as fatigue, anxiety, syncope, or fluctuating blood pressure, which often delays diagnosis. [3]

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Our patient's recurrent syncopal episodes, paroxysmal arrhythmias, and labile hypertension illustrate these diagnostic challenges. Cardiovascular manifestations are particularly important; catecholamine excess can cause tachyarrhythmias, myocarditis, stress-induced cardiomyopathy, and even sudden cardiac death [6]. In our case, the episodes of atrial fibrillation with rapid ventricular response and transient myocarditis were likely driven by catecholamine surges. Similar cases of pheochromocytoma-induced myocarditis and cardiomyopathy have been described, emphasizing the need for clinicians to consider this tumour in patients with unexplained cardiac dysfunction. [7]

The gold standard for diagnosis is still biochemical confirmation with increased plasma or urinary fractionated metanephrines [5]. The diagnosis was validated in this patient by significantly higher urine metanephrines and normetanephrines. Localization is provided by CT and MRI imaging, whereas functional imaging, such as PET or MIBG scintigraphy, is saved for instances that are unclear or have spread. [8] Although surgical resection is necessary for definitive therapy, perioperative hypertensive crises can be avoided with proper preoperative preparation that includes alpha-adrenergic blockade and beta-blockade [9]. Prazosin and metoprolol were used to optimize our patient prior to a successful laparoscopic adrenalectomy. This strategy is in line with the most recent recommendations, which state that adrenergic blockade and volume expansion are crucial preoperative measures. [10]

Conclusion

Even though phenochromocytoma is uncommon, patients who experience recurring paroxysmal symptoms, labile hypertension, or unexplained cardiovascular events should always be evaluated for it. Our case demonstrates how catecholamine surges can cause a delay in diagnosis by mimicking common illnesses like panic disorder, myocarditis, or sepsis. To avoid life-threatening complications and guarantee positive results, early detection, biochemical confirmation, suitable preoperative optimization, and prompt surgical resection are crucial.

Take-Home Message

- One potentially lethal but curable cause of secondary hypertension is phenochromocytoma.
- The classic trio includes sweating, palpitations, and headaches that occur in episodes, however, presentations might vary.
- Among the most dangerous symptoms are cardiovascular complications, such as arrhythmias and catecholamine-induced myocarditis.
- The foundation of diagnosis is biochemical confirmation using plasma or urine metanephrines, followed by imaging.
- Adequate preoperative adrenergic inhibition and volume expansion are needed for safe operation.
- Because of the possibility of recurrence or hereditary syndromes, lifetime follow-up is recommended.

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