Benign Pheochromocytoma Presented 6 Years After Kidney Transplantation

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Hypertension is very common in kidney transplant patients; however, severe and resistant cases should raise suspicion of secondary causes. Pheochromocytomas are rare but serious tumors because of their lethal hypertensive and possible malignant nature. The diagnosis is occasionally elusive, but prompt diagnosis and localization is essential for definitive surgical management. We report a case of a patient with benign pheochromocytoma presenting largely asymptomatically, but with severe resistant hypertension, 6 years after kidney transplantation. To the best of our knowledge, this is the first case report of this type of tumor after kidney transplantation.

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INTRODUCTION

The prevalence of hypertension is very high in kidney transplantation patients; however, secondary causes, particularly renovascular causes, should be excluded.[1] Pheochromocytomas are a rare but serious cause of secondary hypertension, which is occasionally difficult to diagnose.[2] We here present the case of a patient with benign pheochromocytoma with severe resistant hypertension diagnosed 6 years after successful kidney transplantation. To the best of our knowledge, this is the first case report of pheochromocytoma occurrence after kidney transplantation.

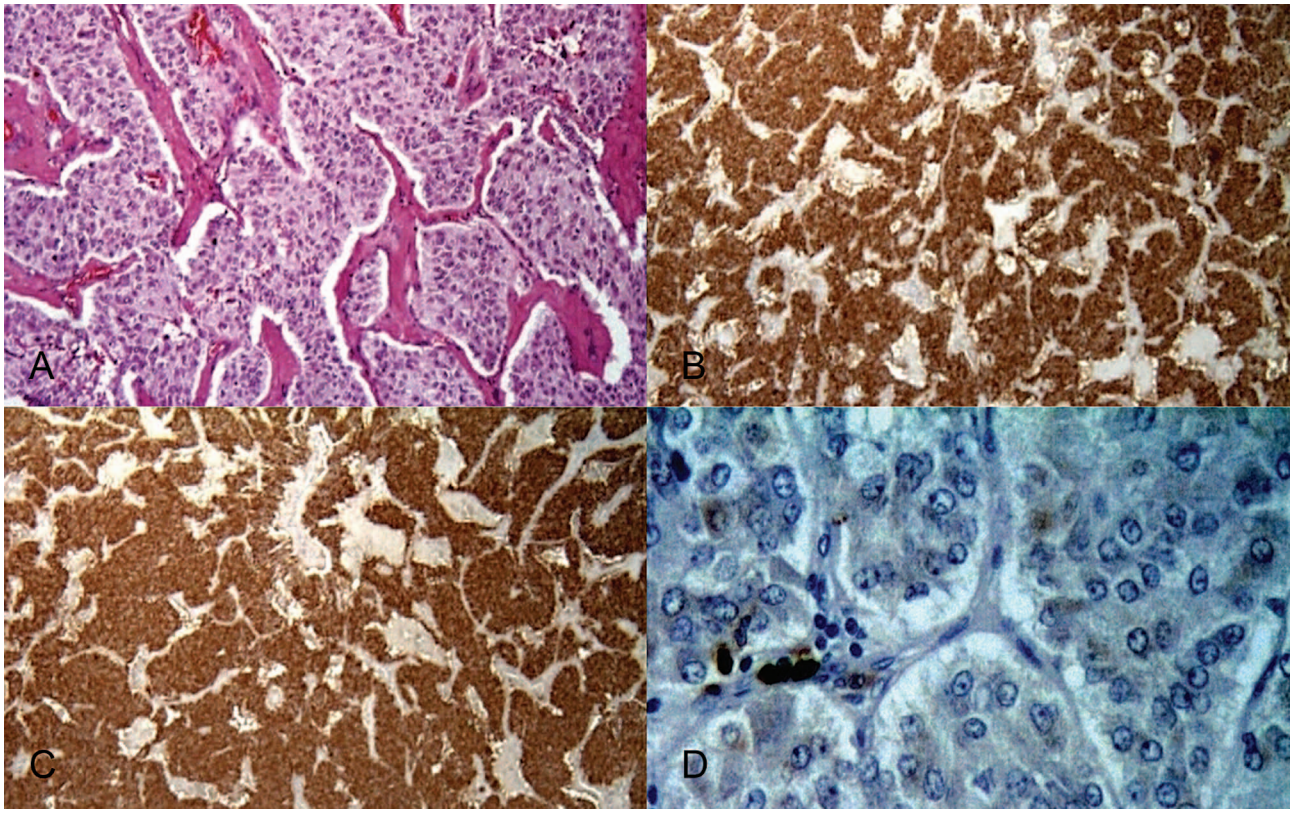
CASE REPORT

A 22-year-old woman with end-stage renal disease of unidentified etiology underwent living donor kidney transplantation in December 2003. Her posttransplantation course was smooth, and she maintained easily controlled hypertension and normal kidney function tests 3 years after transplantation when she moved to another clinic for follow-up. In December 2009, she presented to resume follow-up at our clinic. On presentation, her blood pressure was 240/120 mm Hg. The patient denied regular home blood pressure measurements and stated that it was rarely measured in the past 2 years.

On admission, she was asymptomatic, she indicated experiencing occasional mild spells of headache, sweating, and palpitations, as well as a panic attack on 1 occasion a few months earlier. Her clinical examination was normal, apart from persistently severe hypertension, grade 3 retinal hypertensive changes, and a faint renal allograft bruit. She had no family history of multiple endocrine neoplastic syndromes or any evidence thereof. Her elevated blood pressure was resistant to 5 antihypertensive drug combinations, including diuretics.

The initial workup of the patient, using kidney allograft Doppler ultrasonography and magnetic resonance angiography, erroneously suggested a diagnosis of allograft renal artery stenosis[3,4]; however, kidney allograft catheterization angiography was normal. The native kidney ultrasonography and computed tomography scan showed a 5-cm large hypervascular oval-shaped mass originating in the right suprarenal gland, suggestive of a pheochromocytoma. Repeated 24-hour urine metanephrine levels were normal, necessitating other diagnostic modalities.

Case Report



Histopathology of the resected adrenal adenoma. **A**, Nests of tumor cells sepatated by fibrovascular stroma, a typical Zellballen pattern (hemaoxylin-eosin); **B**, Positive chromogranin stain; **C**, Positive synaptophysin stain; and **D**, negative S-100 protein stain.

Metaiodobenzylguanidine scintigraphy was positive for a right suprarenal adenoma, consistent with the diagnosis of pheochromocytoma. After appropriate preparation, right surgical adrenalectomy was performed in January 2010. Her blood pressure decreased abruptly to 125/85 mm Hg and could be controlled after the surgery using a single calcium channel blocker (amlodipine, 5 mg/d). Histopathology and cytoimmiune examinations of the resected tumor were consistent with a diagnosis of pheochromocytoma (Figure), showing nests of tumor cells sepatated by fibrovascular stroma, positive cytoimmune chemical stains for chromogranin A, and synaptophysin. The S-100 protein was negative. Two years after presentation, her blood pressure was well controlled using the same dose of amlodipine, with no evidence of recurrence.

DISCUSSION

The diagnosis of pheochromocytoma should always be considered when evaluating patients with severe and resistant hypertension.[5] The typical clinical presentation with attacks (spells) of palpitations, headaches, and sweating may not be often evident as in our presented patient. The diagnosis is usually established on the basis of radiological and laboratory investigations. The Table shows the sensitivity and specificity of different chemical and radiologic investigations

Utility of Biochemical and Imaging Methods Used for Diagnosis of Pheochromocytoma[9]

Diagnostic Method	Sensitivity	Specificity
24-h urinary tests		
Vanillylmandelic acid	++	++++
Catecholamines	+++	+++
Fractionated metanephrines	++++	++
Total metanephrines	+++	++++
Plasma tests		
Catecholamines	+++	++
Free metanephrines	++++	+++
Imaging investigations		
Computed tomography	++++	+++
Magnetic resonance imaging	++++	+++
Metaiodobenzylguanidine scintigraphy	+++	++++
Somatostatin receptor scintigraphy	++	++
Dopa (dopamine) positron emission tomography	+++	++++

for the diagnosis of a pheochromocytoma.[6]

Pheochromocytomas are rare tumors presenting in the majority of cases as secondary hypertension.[5,7] These catecholamine-secreting tumors originate in the medulla of the adrenal glands in 90% of cases. The classic clinical presentation of paroxysmal hypertension, tachycardia, excessive sweating, headache, and flushing may be absent or mild, as in the present patient; hence, a high index of suspension is essential to pursue and establish the diagnosis.[8] Excessive catecholamine production in the peripheral blood and 24-hour urine collection are the cornerstones to establishing the correct diagnosis. In one study by Witteles and colleagues, total urine metanephrine level was 100% sensitive in diagnosing pheochromocytomas[9]; however, in our patient this test was normal. Radiologic localization of the tumor is essential for definitive surgical management, with best results achieved using magnetic resonance imaging and metaiodobenzylguanidine scintigraphy isotope scan, while positron emission tomography scanning is still not widely available (Table).[6]

In our patient, histopathology specimens of the removed tumor were consistent with the diagnosis of a benign pheochromocytoma (Figure), as it showed a classical Zellballen pattern (Figure A), positive cytoimmune chemical stains for chromogranin A (Figure B), and synaptophysin (Figure C). The clinical course of the patient after surgery was smooth, and the patient's blood pressure decreased substantially, enabling control using a single antihypertensive calcium channel blocker. Although malignant tumors are considerably more common posttransplantation, particularly with prolonged immunosuppression as in this case, the tumor identified 6 years after surgery in the present patient fortunately proved to be benign, with no evidence of recurrence.[10]

In conclusion, pheochromocytomas are rare causes of hypertension and have not previously been reported after kidney transplantation. Occasionally, the diagnosis of a pheochromocytoma is elusive, but correct diagnosis is very important for definitive surgical management.

CONFLICT OF INTEREST

None declared.

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