

Paraneoplastic Hypertension Associated With Renal Oncocytoma: Management With Cryoablation

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Paraneoplastic hypertension associated with a renal oncocytoma is an unreported syndrome. We report a unique case of a patient with multidrug-resistant hypertension who was found to have a solitary renal mass. Cryoablation was performed and resulted in an immediate and dramatic decrease in blood pressure. Histologic review of intraoperative biopsy specimens revealed findings consistent with renal oncocytoma. To our knowledge, this is the first report of hypertension in the setting of a renal oncocytoma, with subsequent improvement of this paraneoplastic syndrome after cryoablation. UROLOGY 73: 209.e9–209.e11, 2009. © 2009 Elsevier Inc.

Renal oncocytoma is a benign tumor of the kidney accounting for 3% to 7% of all solid renal neoplasms.¹ Paraneoplastic hypertension is a well-documented phenomenon in patients with renal cell carcinoma (RCC), with a reported incidence of 20%. A review of the published reports revealed no reports of paraneoplastic hypertension associated with renal oncocytoma.²

Standard treatment options for an enhancing renal mass include partial or radical nephrectomy.^{3,4} Partial nephrectomy is a technically challenging procedure with the potential for significant morbidity.⁵ Cryoablation is a minimally invasive technique that has emerged as an option for small renal masses with reduced morbidity compared with partial nephrectomy. This technology provides a nephron-sparing alternative that is curative by destruction, rather than excision, of the renal mass.⁶ We present a case of a patient with uncontrolled hypertension and a renal mass that was treated with cryoablation. After treatment, an immediate and sustained improvement in the patient's blood pressure was noted.

CASE REPORT

A 63-year-old man with multidrug-resistant hypertension was referred to us 2 weeks after admission to the hospital for an acute hypertensive episode. The patient had a history of coronary artery disease and had previously undergone coronary angioplasty, as well as coronary artery bypass graft surgery. Despite seven antihypertensive

medications, the patient's blood pressure remained elevated. A review of his systems was noncontributory, and his physical examination was significant for a blood pressure of 280/130 mm Hg.

Magnetic resonance angiography revealed a 2.5-cm left endophytic renal mass, and no evidence of renal artery stenosis (Fig. 1).

Because of the endophytic nature of the mass, an open approach was used for renal cryoablation. Multiple intraoperative ultrasound-guided core biopsies were performed and submitted for permanent histologic evaluation. A 5-mm cryoablation probe was placed into the mass under ultrasound guidance, and a single freeze-thaw cycle was completed. Temperature probes placed 1 cm beyond the margins of the mass allowed for verification of the iceball diameter and confirmed peripheral temperatures of -40°C . During the active thaw cycle, severe blood pressure elevation was noted and was difficult to stabilize. For this reason, the planned second freeze-thaw cycle was not performed. Histologic evaluation of the biopsy cores revealed a renal tumor with oncocytic features and low-grade nuclei consistent with oncocytoma (Fig. 2). External review of the specimens confirmed this diagnosis.

The patient had an uncomplicated postoperative course and was recurrence free at 3 years of follow-up according to surveillance, contrast-enhanced magnetic resonance imaging (Fig. 3). The patient's blood pressure had significantly improved by the 3-month follow-up visit. The patient's blood pressure has remained controlled, with the most recent blood pressure at 160/90 mmHg with three antihypertensive medications.

COMMENT

Renal oncocytoma is a benign tumor of the kidney accounting for 3% to 7% of all solid renal neoplasms.¹ Reports of paraneoplastic syndromes associated with renal tumors have been limited to RCC.⁷ Although only a

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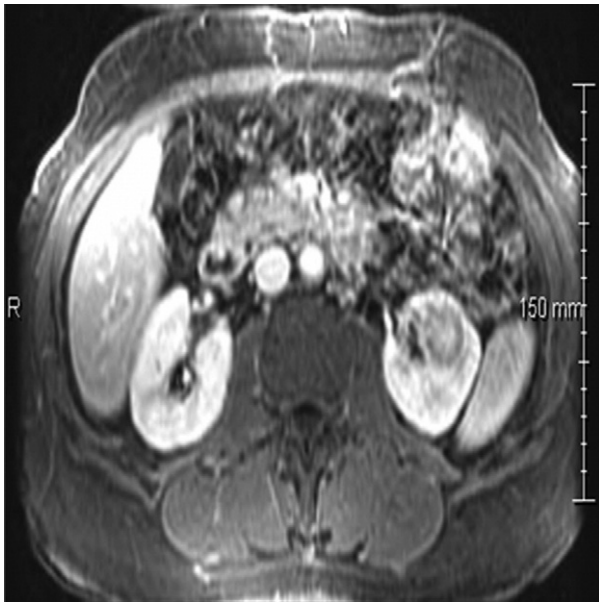


Figure 1. Preoperative magnetic resonance imaging demonstrating 2.5-cm left endophytic renal mass.

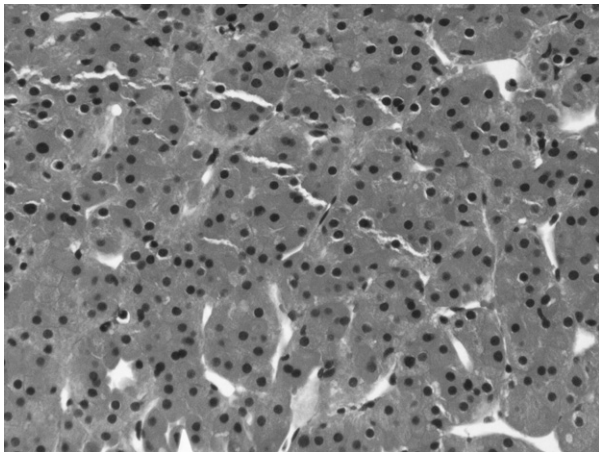


Figure 2. Histologic examination of needle biopsies demonstrated low-grade nuclei with oncocytic features.

few case reports have been published of various paraneoplastic syndromes related to oncocytoma, paraneoplastic hypertension, defined as either new-onset or worsening of preexisting hypertension because of a tumor, has only been reported with RCC.^{8,9}

Cryoablation is becoming an increasingly popular minimally invasive technique for treating RCC and has been shown to effectively treat benign renal and adrenal masses.^{10,11} This technique is safe and efficacious, with recurrence rates reported as low as 6.7% and a 5-year cancer-specific survival rate of 100% for patients with RCC.¹²⁻¹⁴

Cryoablation was used in this patient to avoid the potential complications related to his history of coronary artery disease and uncontrolled hypertension. Additionally, the endophytic nature of the lesion made cryoablation more appealing than partial nephrectomy. Although it has been shown that 85% of patients with paraneo-

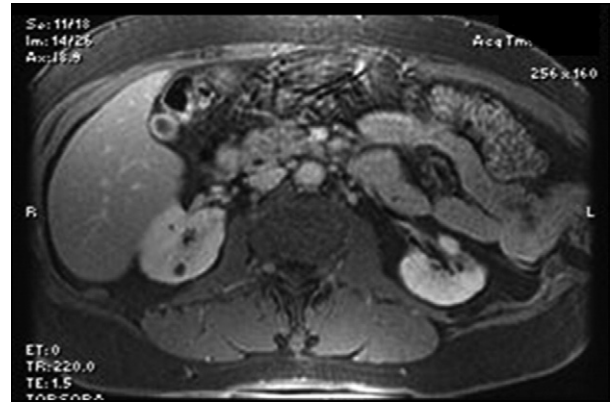


Figure 3. Contrast-enhanced magnetic resonance imaging, 3 years after cryoablation, demonstrating cryoablative defect without presence of contrast enhancement in treated area.

plastic hypertension become normotensive after tumor resection, the resolution of hypertension after cryoablation has not been reported.¹⁵ Despite several biopsies of the mass, as well as a second-opinion review, the pathologic diagnosis revealed renal oncocytoma.

At a recent follow-up visit, the patient's blood pressure remained stable with only three antihypertensive medications compared with his blood pressure lability with seven medications preoperatively. A potential explanation for the patient's continued, albeit improved, blood pressure elevation is the presence of baseline essential hypertension unrelated to the paraneoplastic syndrome caused by the oncocytoma. Alternatively, residual or recurrent oncocytoma could be the cause of the patient's hypertension. Surveillance contrast-enhanced magnetic resonance imaging revealed the cryoablative defect without the presence of contrast enhancement in the treated area. A percutaneous biopsy can be performed to evaluate the presence of residual tissue, if necessary.

The treatment of paraneoplastic syndromes with cryoablation has not been adequately studied. In addition to describing a unique case, this case report underscores the ever-growing therapeutic potential for cryoablation.

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