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Malignant Perivascular Epithelioid Cell Neoplasm (PEComa) of the Pelvis: A Case Report

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ABSTRACT

Perivascular epithelioid cell neoplasms (PEComa) are rare mesenchymal tumors that can occur in any part of the body and have unpredictable pathological behavior. They are usually benign, but may be malignant. We present a case of malignant PEComa of the pelvic retroperitoneum treated with radical surgery.

Introduction

Perivascular epithelioid cell neoplasms (PEComas) are defined by the World Health Organisation Classification of Tumors of Soft Tissue and Bone as mesenchymal tumors composed of perivascular epithelioid cells with unique histological properties and immunophenotypes.[1] Their rarity renders diagnosis difficult, and standardized treatment protocols are not available as yet.

Case presentation

A 70-year-old man presented to the urologist with a 1-month history of flank pain. No sweating, weight loss or other complaints were reported. Ultrasonography revealed hydronephrosis of the right kidney and an ipsilateral solid pelvic mass. Cystoscopy was unremarkable. Computed tomography (CT) identified a hypodense (15–50 Hounsfield units), partially solid and partially cystic tumor, with moderate contrast uptake (Fig. 1).

The histological examination of a CT-guided biopsy showed large, polymorphic cells with eosinophilic cytoplasm and nucleoli with some mitosis. Upon immunohistochemical staining, the cells were positive for vimentin and EMA, and negative for cytokeratin (CAM 5.2), AE1/AE3, 7, melan-A, S-100, chromogranin, parvalbumin, smooth muscle actin, desmin and CD30. CD138 showed an active plasmocellular component.

Open surgery was subsequently performed, in which a periureteral growth without infiltration was observed. The distal ureter was resected and re-implanted into the bladder. A complete resection of the neoplasm with negative margins was achieved.

Routine H&E staining and immunohistochemistry were performed on the formalin-fixed, paraffin-embedded tissue section using a panel of the following antibodies: inhibin, SF1, SMA, HMB45, desmin, caldesmon, CAM 5.2, CD34, S-100, BCL-2, cytokeratin AE1/AE3 and vimentin.

Discussion

PEComas represent an unusual family of tumors, characterized by immunohistochemical evidence of dual myomelanocytic differentiation.

Renal angiomyolipoma (AML) is the most common PEComa, with a prevalence of 0.13%. PEComas at other sites, such as soft

Abbreviations: AML, Angiomyolipoma; PEComa, Perivascular Epitheloid Cell neoplasm; GIST, Gastrointestinal Stromal Tumor.

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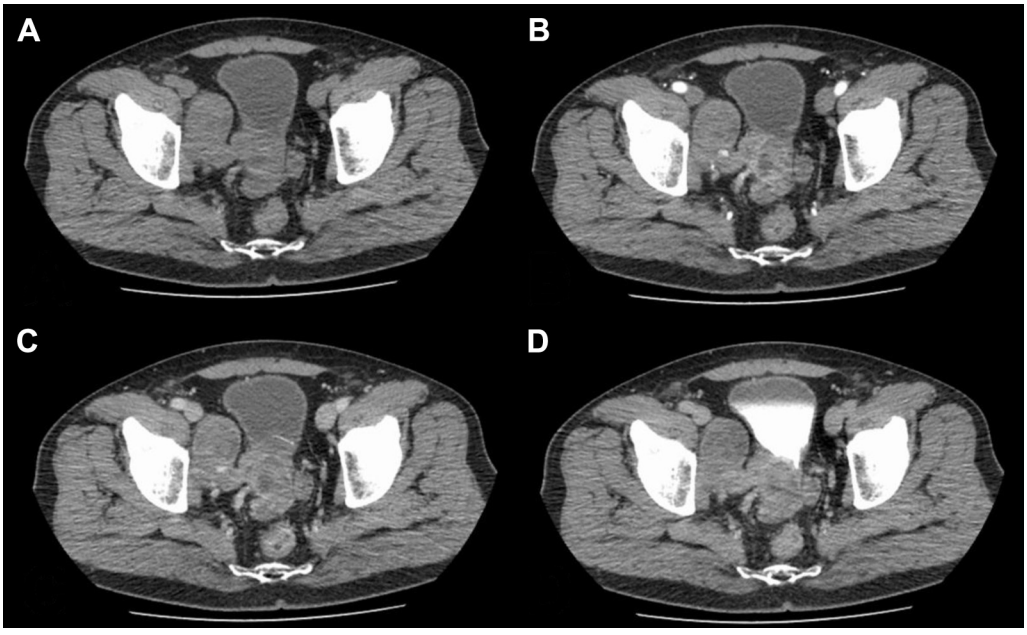

Figure 1. Contrast enhanced computer tomography of the pelvis. Transverse plane of the pelvis shows the PEComa in very close contact with the prostate and the posterior wall of the bladder. The native scan (A) shows a hypodense tumor 15–50 Hounsfield Units with a partially solid and partially cystic configuration. The uptake in the arterial-phase (B) is uneven. In the venous (C) and delayed-phase (D) a progressive enhancement of the solid part is demonstrated.

tissue, bone, visceral and gynecological sites, are very rare, and occur mainly in middle aged females (1:7 M:F).[2]

Immunohistochemical stains play a major role in the diagnosis of PEComas. These tumors almost always co-express SMA and HMB45; over 50% of them stain for melan-A (sometimes in the absence of HMB45), and around 25% are desmin positive. A subset of cases stain for S-100 protein (allowing possible confusion with melanoma) and TFE3.[2,3]

Our case presented a strikingly biphasic appearance. Large areas of the tumor consisted of sheets of pleomorphic polygonal or epithelioid cells with pale eosinophilic cytoplasm and large, irregular vesicular nuclei with variably prominent nucleoli. Scattered mitotic figures were observed. Elsewhere, the tumor cells had a more epithelioid morphology with clear cytoplasm and were arranged in nests (Fig. 2). While stains for inhibin and SF1 were negative, helping to exclude adrenocortical carcinoma, multifocal positivity for HMB45 and SMA was present (Fig. 2) along with more diffuse positivity for melan-A. Staining for desmin was negative.

Table 1
Proposed classification of PEComas[2]

	Criteria
Benign	<5 cm in diameter
	Non-infiltrative
	Non-high nuclear grade and cellularity
	Mitotic rate ≤1/50 HPF
	No necrosis
	No vascular invasion
Uncertain malignant potential	One or both of the following features:
	Nuclear pleomorphism/multinucleated giant cells
	>5 cm in diameter
Malignant	Two or more of the following features:
	>5 cm in diameter
	Infiltrative
	High nuclear grade and cellularity
	Mitotic rate ≥1/50 HPF
	Necrosis
	Vascular invasion

The differential diagnosis of PEComas is fairly broad, and depends on the morphology (epithelioid vs spindled) and location of the neoplasm. Above all, PEComas must be distinguished from conventional melanoma and clear cell sarcoma, but gastrointestinal stromal tumor (GIST) and carcinoma (especially clear cell carcinoma) may also be confused with epithelioid PEComas. Smooth muscle neoplasm (with epithelioid and spindled morphology) is another tumor for which PEComas may be mistaken.[2]

Clear criteria for malignancy in PEComas have yet to be formulated. Folpe et al proposed the categorization of PEComas into three groups based on tumor diameter, nuclear grade and cellularity, mitotic rate, necrosis, vascular invasion and infiltrative growth (Table 1).[2]

According to the above criteria, our patient had a malignant, infiltrative growth, >5 cm in diameter, of high nuclear grade showing evidence of necrosis, but not of metastasis. The benefits of chemotherapy or radiation in the treatment of PEComa have not been established thus far, and what little data is available originates from small case series. Wagner reported on the clinical outcomes of three consecutive patients with advanced PEComa treated with Sirolimus. All three had surgery and subsequently developed either retroperitoneal or lung metastases. After 1 year of follow-up from the inception of Sirolimus treatment, the disease was under control in the two patients who had suffered retroperitoneal recurrence. Conversely, control of the tumor was not achieved in the patient with lung recurrence, who died after 8 months of therapy.[4]

Based on the available evidence, an adjuvant treatment with Sirolimus may be considered in our patient in the event of recurrence.[4]

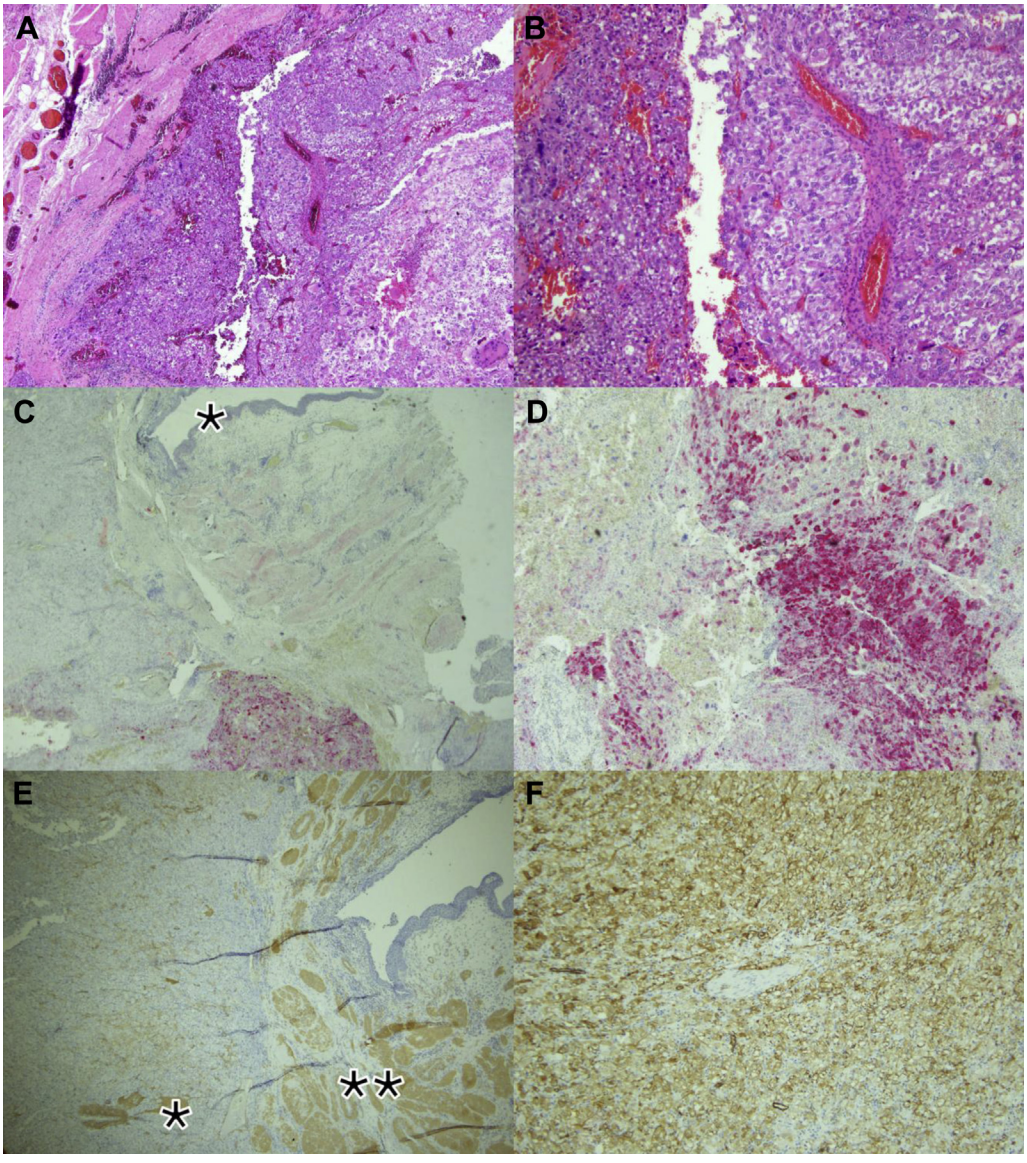

Figure 2. Pathological and immunohistochemical analysis. (A) PEComa with epithelioid architecture, the tumor cells have nuclear and eosinophilic cytoplasm with marked pleomorphism (hematoxylin and eosin staining; magnification 4 × 10). (B) Magnification of a (metaoxylin and eosin magnification 10 × 10). (C) Focal positive reaction with anti-HMB45 of the neoplasm confinating with the bladder. On the top evidence of lamina propria and tunica muscularis * (magnification 2 × 10). (D) Magnification of A (magnification 10 × 10). (E) Focal positive reaction with anti-SMA on the left side * with positive intern control of the tunica muscularis on the right side** (magnification 2 × 10). (F) Magnification of A (magnification 10 × 10).

Conclusion

We removed the tumor surgically. Thus far, in the course of the subsequent 9 months of follow-up, no signs of recurrence have been observed. Close clinical surveillance accompanied by radiological imaging is mandatory.

Conflict of interest statement

All the authors declare that there are no financial or personal conflicts of interest.

References

1. Folpe AL, McKenney JK, Li Z, Smith SJ, Weiss SW. Clear cell myomelanocytic tumor of the thigh. *Am J Surg Pathol*. 2002;26(6):809–812. http://dx.doi.org/10.1097/00000478-200206000-00018.
2. Folpe AL, Mentzel T, Lehr H-A, Fisher C, Balzer BL, Weiss SW. Perivascular epithelioid cell neoplasms of soft tissue and gynecologic origin. *Am J Surg Pathol*. 2005;29(12):1558–1575. http://dx.doi.org/10.1097/01.pas.0000173232.22117.37.
3. Hornick JL, Fletcher CDM. PEComa: what do we know so far? *Histopathology*. 2006;48(1):75–82. http://dx.doi.org/10.1111/j.1365-2559.2005.02316.x.
4. Wagner AJ, Malinowska-Kolodziej I, Morgan JA, et al. Clinical activity of mTOR inhibition with sirolimus in malignant perivascular epithelioid cell tumors: targeting the pathogenic activation of mTORC1 in tumors. *J Clin Oncol*. 2010;28(5):835–840. http://dx.doi.org/10.1200/JCO.2009.25.2981.