

# A Rare Case of Malignant Perivascular Epithelioid Cell Tumor Mimicking Ovarian Cancer

© Sami Acar, © Çağıl Karaevli

Tekirdağ Namık Kemal University Faculty of Medicine, Department of General Surgery, Tekirdağ, Turkey

## ABSTRACT

Lower gastrointestinal bleeding is defined as bleeding that originates distal to the ligament of Treitz. Neoplasms causing lower gastrointestinal bleeding generally originate from the colon. A similar clinical picture can sometimes be caused by the invasion of the colon wall by intra-abdominal masses. Perivascular epithelioid cell tumors (PEComas) are mesenchymal neoplasms composed of histologically and immunohistochemically epithelioid or spindle cells, with immunoreactive properties for smooth muscle and melanocytic markers. The differential diagnosis of patients being evaluated for an intra-abdominal mass should be made meticulously. In the presence of atypical signs, extra care should be taken. This paper reports a case of an ovarian malignant PEComa presenting with melena from an ulcerated lesion in the transverse colon.

**Keywords:** GB100 protein, Melan-A, melena, perivascular epithelioid cell neoplasms, ulcer

## Introduction

In 1992, Bonetti et al.<sup>1</sup> proposed the term “perivascular epithelioid” to describe morphologically and immunohistochemically unusual cell types with a perivascular distribution. These cells are immunoreactive for melanocytic markers, have an epithelioid appearance and a clear acidophilic cytoplasm, and show a perivascular distribution. Over time, this nomenclature has been applied to a family of tumors, including angiomyolipoma, clear cell sugar tumors, lymphangiomyomatosis, clear cell myomelanocytic tumor of the falciform ligament, and other unusual clear cell tumors. In 2002, due to the diversity within the perivascular epithelioid cell tumor (PEComa) family, the World Health Organization defined the diagnosis of PEComa as a “mesenchymal tumor composed of histologically and immunohistochemically distinct perivascular epithelioid cells”.<sup>2</sup> Malignant PEComas are estimated to occur in 0.12–0.24 per million people worldwide.<sup>3</sup> We present an extremely rare case of ovarian PEComa with melena from a clinicopathological perspective.

## Case Report

A 46-year-old woman presented with intermittent watery, tarry stools, accompanied by a change in stool frequency. On

physical examination, a mass was palpated in the midline of the abdomen, and melena was also noted. Dynamic contrast-enhanced magnetic resonance imaging depicted a 21x14x10 cm right ovarian lesion with irregular borders and contrast enhancement (Figure 1). Colonoscopy revealed a 2x2 cm ulcerated lesion in the transverse colon. Although the histopathological examination of the biopsy showed malignant features, a clear diagnosis could not be made; therefore, the council decided to proceed with surgery. Exploratory laparotomy revealed a soft, fragile mass lesion with irregular borders invading the transverse colon (Figure 2). During surgery, en bloc resection of the mass with the transverse colon was performed. The frozen section analysis confirmed that the surgical margins were negative and ruled out adenocarcinoma. Immunohistochemistry examinations are summarized in Table 1. The final pathology indicated PEComa, as the tumor was large ( $\geq 5$  cm), exhibited high nuclear grade cellularity, contained areas of coagulation necrosis, and had a high mitotic index (2 figures per 50 high magnification fields) and a cellular character (Figure 3). A positron emission tomography-computed tomography (CT) scan detected no residual lesion or metastasis. The patient’s clinical follow-up protocol was determined by the multidisciplinary tumor board, and the patient received no further treatment. At the 6-month follow-



**Address for Correspondence:** Sami Acar, MD,  
Tekirdağ Namık Kemal University Faculty of Medicine, Department of General Surgery, Tekirdağ, Turkey  
E-mail: acarssami@yahoo.com ORCID ID: orcid.org/0000-0003-4096-3963  
Received: 07.12.2023 Accepted: 19.04.2024



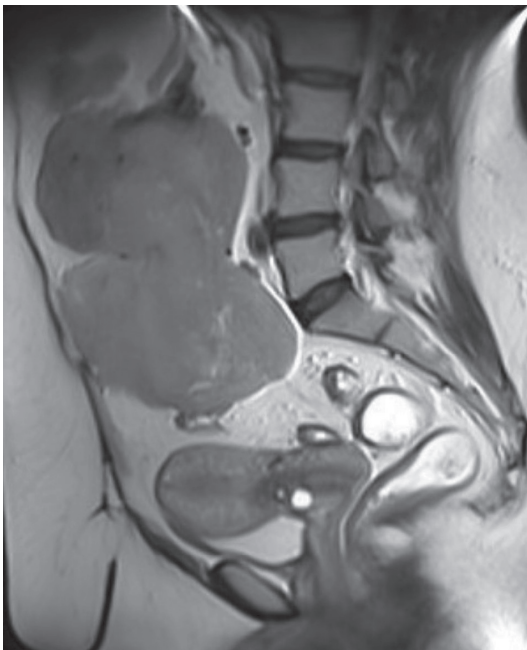
Copyright© 2024 The Author. Published by Galenos Publishing House on behalf of Turkish Society of Colon and Rectal Surgery. This is an open access article under the Creative Commons AttributionNonCommercial 4.0 International (CC BY-NC 4.0) License.

up, the patient had no complaints, and abdominal and thorax CT scans were normal. Informed consent was obtained from the patient for this case report.

## Discussion

We presented a rare case of ovarian PEComa. The colonoscopic biopsy performed for differential diagnosis did not provide a definitive pathological diagnosis. Furthermore, diagnosing this rare condition proved challenging even in the final pathology after surgery.

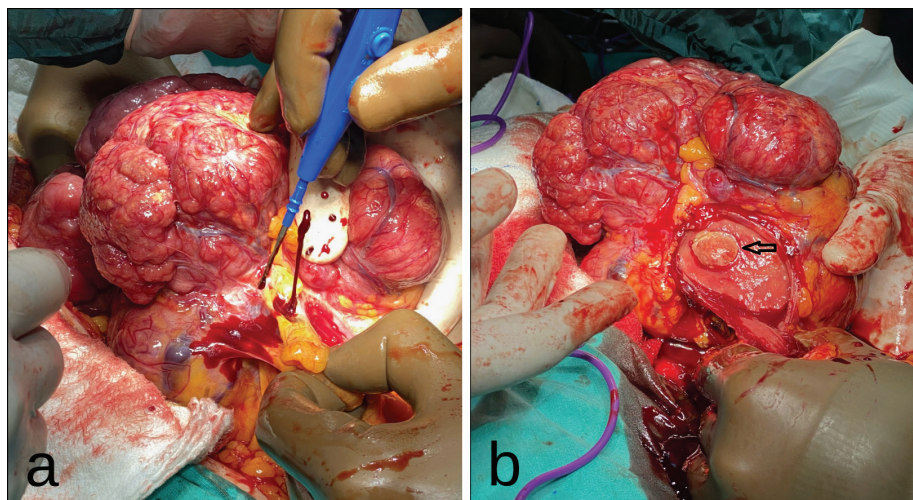
In the PEComa family, cells are located around small-to-medium-sized vessels and seem to form a vessel wall. It is necessary to make differential diagnoses of tumors with clear cell morphology from other spindle and epithelioid



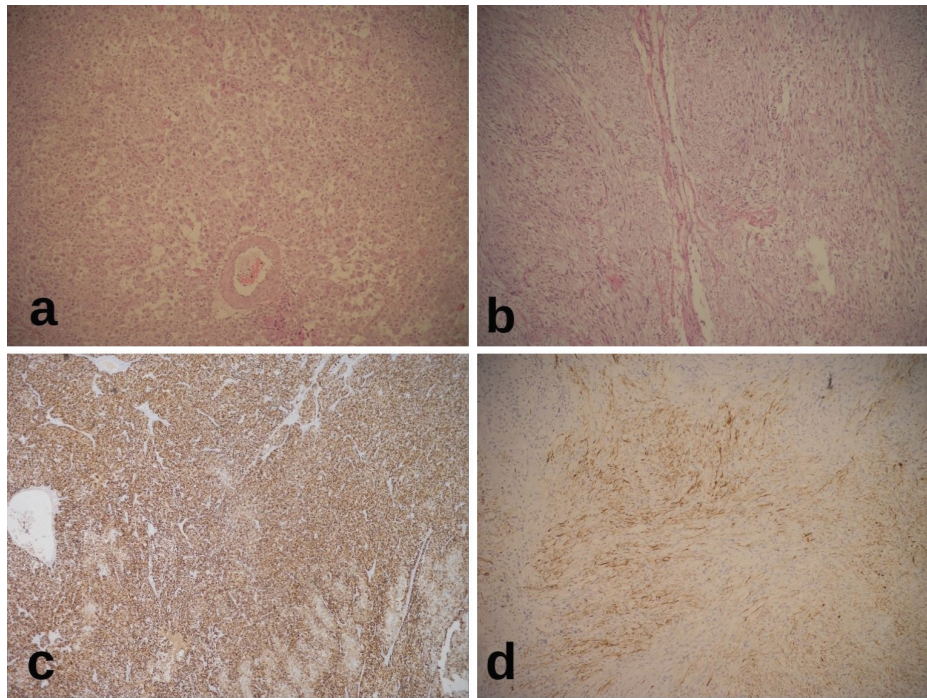
**Figure 1.** Preoperative magnetic resonance imaging

mesenchymal neoplasms, including gastrointestinal stromal tumors, tumors with positive melanocytic antigens (melanoma, clear cell sarcoma, smooth muscle cell tumors, and adrenal cortical cancers), rhabdomyosarcoma, myoepithelial tumor, mature adipose tissue tumors, and alveolar sarcomas. Clinical, morphological, and immunohistochemical features are considered for differential diagnosis.<sup>4</sup> PEComa express melanocytic markers [e.g., GB100 protein (HMB45), Melan-A, tyrosinase, and microphthalmia-associated transcription factor (MITF)]. They have a granular eosinophilic cytoplasm and express smooth muscle markers (e.g., smooth muscle actin, pan-muscle actin, muscle myosin, calponin, and h-caldesmon).<sup>5</sup> The most commonly expressed in cutaneous and sclerosing PEComas is desmin.<sup>6</sup> The most sensitive markers for PEComa are HMB45, Melan-A, and MITF.<sup>7</sup> This case of PEComa was positive for immunohistochemical staining of HMB45, Melan-A, and desmin.

No clear optimal management strategy has been established in the treatment of PEComa. The most common treatment is surgical intervention. Treatment modalities (e.g., radiotherapy and chemotherapy) can be used in high-risk lesions. Neoadjuvant therapy has been administered in a limited number of cases, but desired outcomes have not been achieved. In a small group of patients, a diagnosis cannot be made without surgical resection, which leads to the inability to determine the treatment and to reduce its effectiveness. Heterogeneous results were achieved in the chemotherapy treatment of PEComas. Based on the current literature, it is difficult to determine the best chemotherapy regimen and efficacy.<sup>8,9</sup> The role of radiation therapy for PEComa remains unclear.<sup>8,10</sup> A specific group within the PEComa group shows aggressive features. The malignancy criteria in PEComas include histological features, a high mitotic index, tumor size of  $\geq 5$  cm, and the presence of vascular invasion and necrosis (Table 2). Meticulous follow-up and treatment plans should be made in this group.



**Figure 2.** The appearance of a mass during surgery. a) Invasion area with transverse colon. b) Ulcerated area (arrow) formed in the colonic mucosa



**Figure 3.** a) Epithelioid areas of PEComa with typical capillary-like vasculature and perivascular radial distribution of cells observed (hematoxylin-eosin, x400). b) Coexistence of spindle cells with epithelioid cells (hematoxylin-eosin, x400). c) Strong positive staining for HMB-45 and Melan-A observed (x400). d) Presence of desmin-positive spindle component (x400)

PEComa: Perivascular epithelioid cell tumors

**Table 1.** Immunohistochemical examinations and their results

Immunohistochemical examination	Result
HMB45	Positive
Desmin	Positive
Melan-A	Positive
SMA	Light staining
CD34	Positive in tumor vessels
Myosin	Positive
Vimentin	Positive
Ki-67	5-10%
PanCK	Negative
CD117	Mild, patchy positive
Dog 1	Negative
S-100	Negative
ER	Negative
PR	Negative

ER: Estrogen receptors, PR: Progesterone receptors

**Table 2.** Classification of PEComas

Category	Criteria
Benign	<b>None of:</b> Size $\geq$ 5 cm Infiltrative growth pattern High nuclear grade cellularity Mitotic rate 1/50 HPF* Necrosis Vascular invasion
Uncertain malignant potential	<b>One of:</b> Nuclear pleomorphism Multinucleated giant cell Size $\geq$ 5 cm
Malignant	<b>Two or more:</b> Size $\geq$ 5 cm Infiltrative growth pattern High nuclear grade cellularity Mitotic rate $>$ 1/50 HPF Necrosis Vascular invasion

\*HPF: High power fields

PEComas tend to develop local recurrence or distal metastases, most commonly to the lung. Metastatic spread may occur years or decades after curative surgery. No definitive treatment has been described in the literature to date. Surgery is the optimal treatment option whenever appropriate, particularly in oligometastatic patients. Although treated with systemic chemotherapy regimens, their efficacy is relatively low. In addition, better survival rates were reported up to 12 months onset from the diagnosis of metastatic disease without any adjuvant therapy. The use of mTOR inhibitors as targeted therapies holds promise.<sup>11</sup>

Although our case had malignant features, no adjuvant treatment plan was made due to the absence of metastatic disease, and clinical follow-up was deemed appropriate according to oncological principles.

**Acknowledgements:** We thank our hospital pathological clinic staff.

### **Ethics**

**Informed Consent:** Informed consent was obtained from the patient for this case report.

### **Authorship Contributions**

Surgical and Medical Practices: S.A., Concept: Ç.K., Design: S.A., Data Collection or Processing: S.A., Ç.K., Analysis or Interpretation: S.A., Ç.K., Literature Search: Ç.K., Writing: S.A.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study received no financial support.

## **References**

1. Bonetti F, Pea M, Martignoni G, Zamboni G. PEC and sugar. *Am J Surg Pathol.* 1992;16:307-308.
2. Folpe AL. Neoplasms with perivascular epithelioid cell differentiation (PEComas). In: Fletcher CDM, Unni KK, Mertens F, (eds). *World Health Classification of Tumors: Pathology and Genetics of Tumors of Soft Tissue and Bone.* IARC Press: Lyon; 2002, p. 221.
3. Czarnecka AM, Skoczylas J, Bartnik E, Świtaj T, Rutkowski P. Management strategies for Adults with locally advanced, unresectable or metastatic malignant perivascular epithelioid cell tumor (PEComa): challenges and solutions. *Cancer Manag Res.* 2023;15:615-623.
4. Thway K, Fisher C. PEComa: morphology and genetics of a complex tumor family. *Ann Diagn Pathol.* 2015;19:359-368.
5. Pea M, Bonetti F, Zamboni G, Martignoni G, Riva M, Colombari R, Mombello A, Bonzanini M, Scarpa A, Ghimenton C, et al. Melanocyte-marker-HMB-45 is regularly expressed in angiomyolipoma of the kidney. *Pathology.* 1991;23:185-188.
6. Walsh SN, Sangüeza OP. PEComas: a review with emphasis on cutaneous lesions. *Semin Diagn Pathol.* 2009;26:123-130.
7. Chang KL, Folpe AL. Diagnostic utility of microphthalmia transcription factor in malignant melanoma and other tumors. *Adv Anat Pathol.* 2001;8:273-275.
8. Musella A, De Felice F, Kyriacou AK, Barletta F, Di Matteo FM, Marchetti C, Izzo L, Monti M, Benedetti Panici P, Redler A, D'Andrea V. Perivascular epithelioid cell neoplasm (PEComa) of the uterus: A systematic review. *Int J Surg.* 2015;19:1-5.
9. Martignoni G, Pea M, Reghellin D, Zamboni G, Bonetti F. PEComas: the past, the present and the future. *Virchows Arch.* 2008;452:119-132.
10. Jeon IS, Lee SM. Multimodal treatment using surgery, radiotherapy, and chemotherapy in a patient with a perivascular epithelioid cell tumor of the uterus. *J Pediatr Hematol Oncol.* 2005;27:681-684.
11. Gennatas C, Michalaki V, Kairi PV, Kondi-Paphiti A, Voros D. Successful treatment with the mTOR inhibitor everolimus in a patient with perivascular epithelioid cell tumor. *World J Surg Oncol.* 2012;10:181.