International Journal of Medical Science and Clinical Research Studies

ISSN(print): 2767-8326, ISSN(online): 2767-8342

Volume 01 Issue 04 June 2021

Page No : 71-75

DOI: https://doi.org/10.47191/ijmscrs/v1-i4-05

Multifocal Epithelioid Hemangioendothelioma – A Case Report

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ABSTRACT

Epithelioid hemangioendotheliomas are rare neoplasms involving any sites including soft tissue, lung, liver, kidney, etc. and many more. A multifocal hemangioendothelioma is extremely rare, and it can very well be mistaken as angiosarcoma with metastasis. Here, we describe a case of multifocal hemangioendothelioma which radiologically appeared like multiple metastatic lesions in paraspinal muscle, liver, kidney, adrenal, lung and gluteus muscle arising from renal cell carcinoma, lung carcinoma, or renal angiosarcoma. But histologically the picture is characteristic of epithelioid hemangioendothelioma. Morphological differentiation between an epithelioid hemangioendothelioma and epithelioid angiosarcoma is more helpful than the immunohistochemical markers.

KEYWORDS: Multifocal epithelioid hemangioendothelioma

ARTICLE DETAILS

Published On:
16 June 2021

Available on:
https://ijmscr.org

INTRODUCTION

Epithelioid hemangioendothelioma is an uncommon endothelial cell malignancy of low-grade malignant potential. Although it can occur in various sites like lung, soft tissue, kidney, liver, other viscera and bone, multifocal lesions are extremely rare. Metastatic lesions usually present with visceral and bone involvements.

The histomorphology is characteristic with unique recurrent genetic abnormalities which helps the pathologist in avoiding any potential diagnostic pitfalls.

CASE PRESENTATION

We would like to report a case of multifocal epithelioid hemangioendothelioma.

A 52-year-old man with type 2 diabetes mellitus and chronic kidney disease on hemodialysis, had multiple lesions in liver, lung, right kidney, right adrenal, inferior surface of duodenum, left paraspinal muscle, right gluteus maximus and right chest wall. They were detected on radiological evaluation. **(Refer CECT images)**.

CECT was done over chest and abdomen, where the following findings were identified.

Heterogeneously enhancing predominantly exophytic solid lesion in right kidney with infiltration to adjacent structures and lymphadenopathy. Heterogeneously enhancing lesion in right adrenal gland and inferior surface of duodenum. Multiple heterogeneously enhancing lesions in liver and lung. Heterogeneously enhancing lesion in left paraspinal muscle, right gluteus maximus and right anterolateral chest wall in subcutaneous plane.

Thrombosis involving inferior vena cava, right atrium and portal vein branches.

Cholestasis seen.

The above features were in favor of primary renal malignancy with disseminated metastasis. Hence the possibilities listed were clear cell renal cell carcinoma with metastasis, renal angiosarcoma with metastasis, and carcinoma of lung with metastasis. For histopathology correlation, an ultrasound guided biopsy was taken from the left paraspinal lesion.

Six linear cores of tissue were received for histopathology, and sections show a malignant spindle cell neoplasm with epithelioid differentiation and abundant vascular components, histo-morphologically suggestive of epithelioid hemangioendothelioma. Tumor cells are positive for Vimentin, CD31 and CD34. **(Refer images).**

Clinically and radiologically, the patient was being worked up for metastatic tumor. Two days after the guided biopsy, the patient succumbed to death due to sepsis and cardiopulmonary arrest.

DISCUSSION

Epithelioid hemangioendothelioma come under a spectrum of endothelial cell neoplasms having low grade malignant potential with behavior intermediate between benign hemangiomas and angiosarcomas[1].

Adults are more affected than children, with peak age of incidence at 47 years, age ranges between 21 to 66, with slight predominance in women[2]. Any site may be encountered by this neoplasm, ranging from lung, liver, bones, breast, lymph nodes, mediastinum, brain and meninges, the spine, skin, abdomen and many other sites[3]. Metastatic lesions involve liver and other viscera rarely. Such cases have very poor prognosis, and the biopsy usually shows an aggressive growth pattern, resembling angiosarcoma[4]. Mostly, the lesions are asymptomatic and rarely, presents with respiratory discomfort, painful masses and symptoms of spine compression[5].

Grossly, the lesions are medium to large sized, ranging from 0.6cm to 10cm well circumscribed masses with or without an involved vessel attached with it[6]. Cut sections are whitish, firm.

Microscopically, the tumor has an infiltrating growth pattern. The tumors are composed of short strands, cords, and small nests of epithelioid, round, to slightly spindled cells having an intracellular lumina filled with RBCs. Nuclei are oval, rarely pleomorphic with mild atypia. A characteristic myxohyaline stroma surrounds the cells. Half of the cases will have an angiocentric growth also[7]. In our case, the neoplasm is composed of cords and nests of epithelioid cells with intracytoplasmic lumen harboring RBCs. The nuclei are pleomorphic but only shows mild atypia.

YAP1-TFE3 fusion positive tumors will show a solid growth pattern, vascular channel formations and bright eosinophilia of the cytoplasm[8].

Immunophenotypically, all endothelial cell markers are positive including CD31, CD34, ERG, FLI-1 and also shows weak positivity for epithelioid markers like panCK, CK7, CK8, CK18, but negative for EMA. Lymphatic marker podoplanin will be positive[9]. Our case shows positivity for Vimentin, CD31 and CD34. Focal nuclear positivity for FLI-1 is seen but the cells are negative for CK.

CAMTA1 and TFE3 immunohistochemical markers are positive in tumors with such mutations. This can be used to type the tumor based on molecular genetics[10].

More than 90% of the cases with epithelioid hemangioendothelioma have recurrent genetic abnormalities in chromosomes 1 and 3. Specifically, t(1;3) (p36; q23-25), which involves the gene WWTR1 and causes the fusion of WWTR1 – CAMTA1. WWTR1 codes for TAZ protein which is required for tumor suppression via Hippo Pathway[11].

Rest of the minority of cases will have a translocation involving YAP1 gene and causes a fusion product YAP1 – TFE3, which also affects Hippo Pathway[12].

The tumor is rarely multifocal, as in our case. In this situation a possibility of other epithelioid vascular tumors like epithelioid angiosarcoma may be considered, but histologically epithelioid angiosarcoma exhibits a higher grade of cytological atypia and mitotic activity, which shows atypical mitotic figures. High grade anaplasia is not present in epithelioid hemangioendothelioma[13].

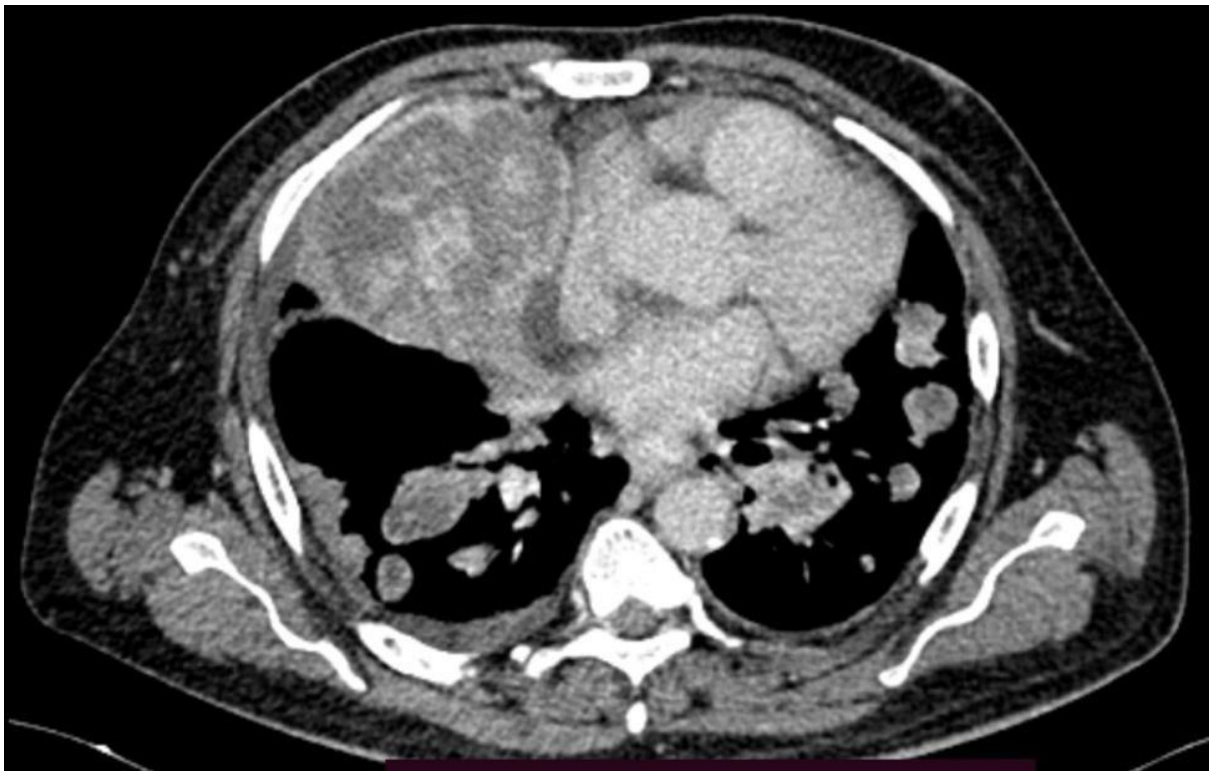

Figure 1: CECT image of lesions in both lungs.

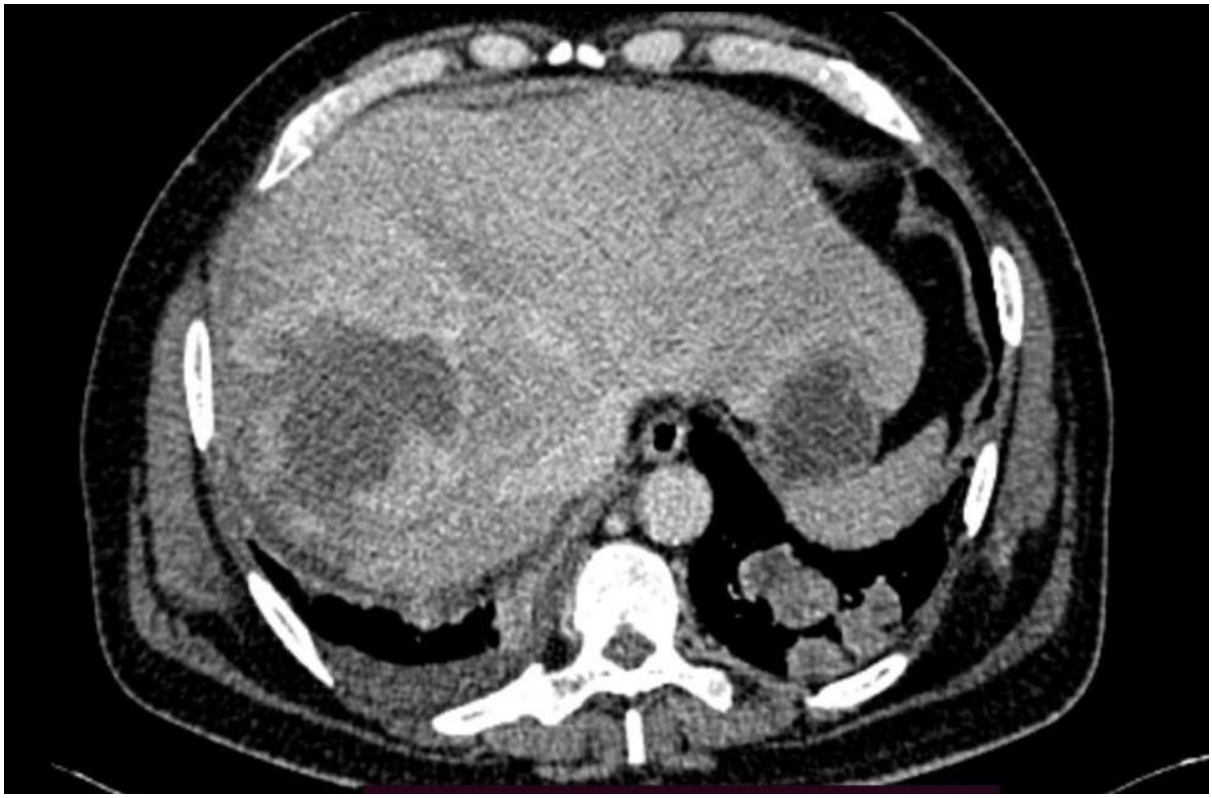

Figure 2: CECT image of lesions in liver

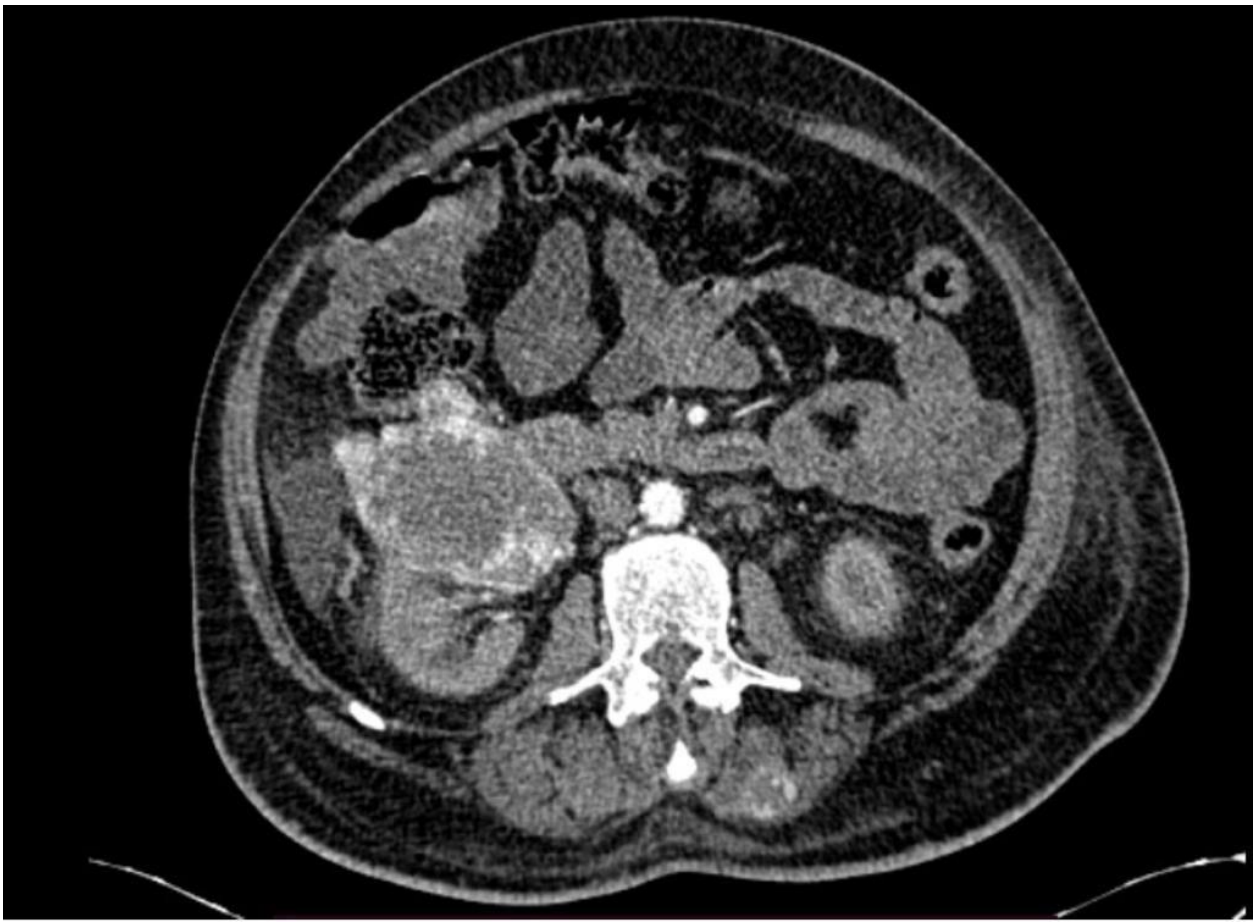

Figure 3: CECT image of lesions in Right Kidney and Left Paraspinal muscle.

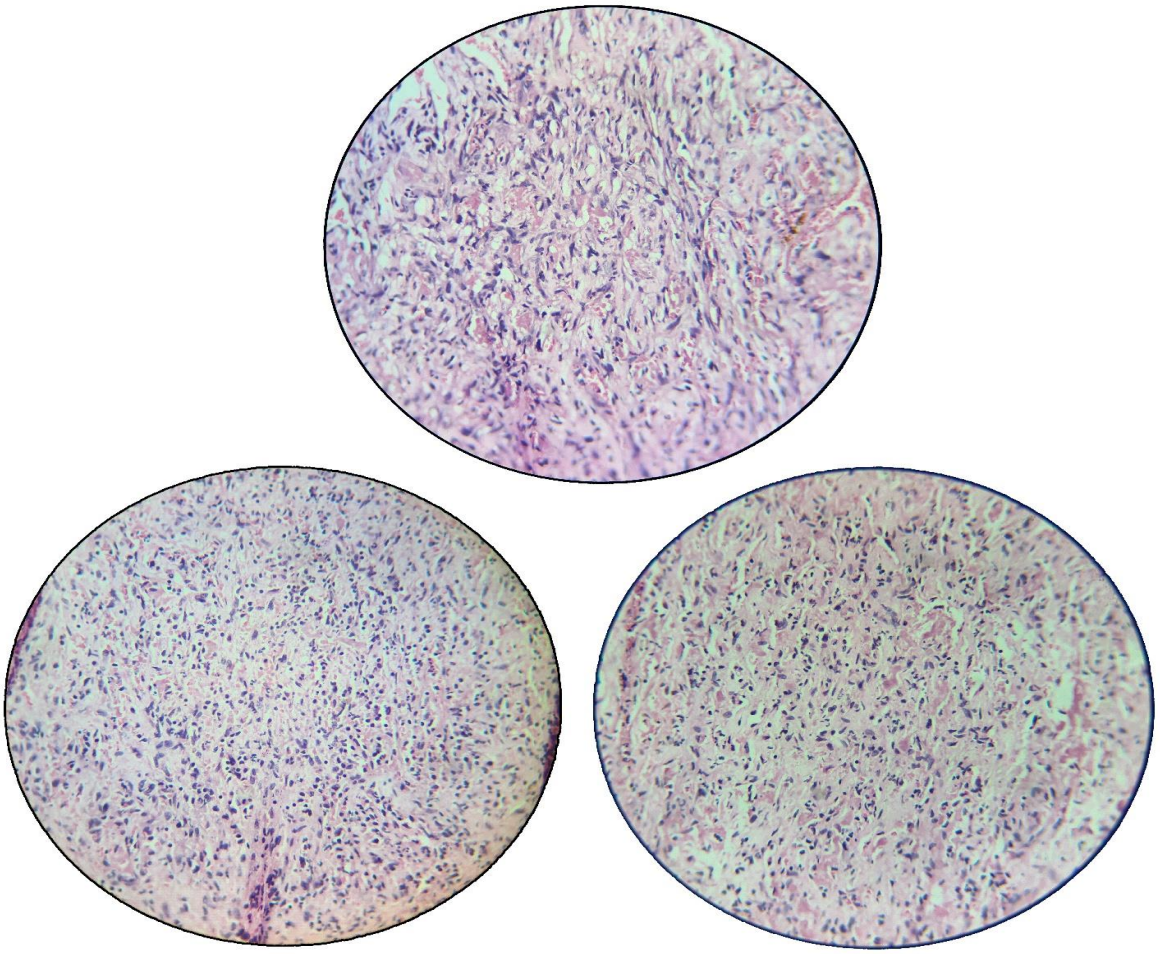

Figure 4: Section from guided biopsy of the lesion from paraspinal muscle shows features of Epithelioid hemangioendothelioma

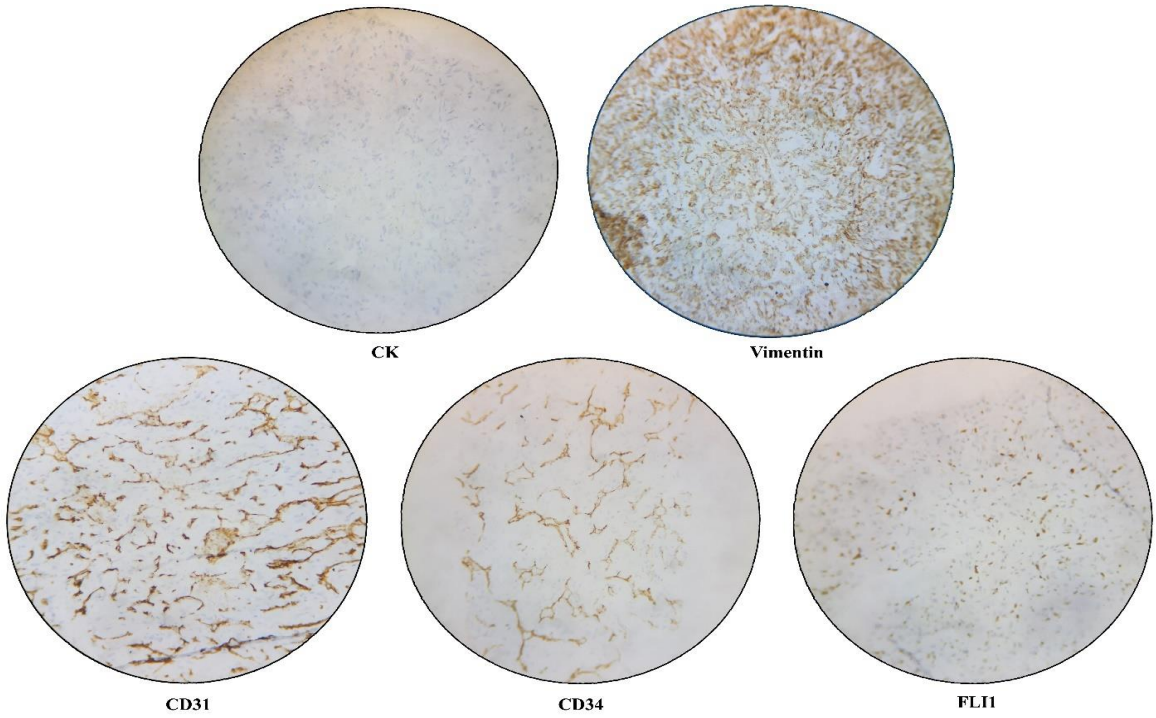

Figure 5: Immunohistochemical study shows the tumor cells to be positive for Vimentin, CD31, and CD34. But negative for CK and FLI1

CONCLUSION

In conclusion, we describe a case of multifocal epithelioid hemangioendothelioma in left paraspinal muscle with multifocal lesions in kidney, adrenal, liver, lung, chest wall, gluteus maximus muscle and inferior surface of duodenum. The clinico-radiological picture may mimic a metastatic carcinoma or angiosarcoma. So, the pathologist should be aware of the histomorphology of this rare tumor to avoid diagnostic pitfalls.

ACKNOWLEDGMENTS

I humbly extend my sincere gratitude to Dr. Jayasree, Professor and Head of Radiodiagnosis department, Government medical college, Trivandrum for following up the case, discussing and thereby providing her expert opinion regarding the imaging studies done for the patient.

And, I also extend my thanks to Dr. Fouziya, Resident of Radiodiagnosis department, Government medical college, Trivandrum for providing all the details of imaging studies done on the patient.

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