Indian Journal of Pathology and Oncology 2024;11(2):187–190

Content available at: https://www.ipinnovative.com/open-access-journals

Indian Journal of Pathology and Oncology

Journal homepage: www.ijpo.co.in

Case Report

Composite hemangioendothelioma of breast: A case report with review of literature

Kannar Vidyavathi[1]*, Akshatha Bissegowda[1], Dharmapalan Anantharaman[2], Haruvanahalli Basappa Kavyashri[1]

[1]*Dept. of Pathology, East Point College of Medical Sciences and Research Centre, Bengaluru, Karnataka, India*
[2]*Dept. of Surgery, East Point College of Medical Sciences and Research Centre, Bengaluru, Karnataka, India*

ARTICLE INFO

Article history:
Received 28-03-2024
Accepted 23-04-2024
Available online 09-07-2024

Keywords:
Composite hemangioendothelioma
Breast

ABSTRACT

Composite hemangioendothelioma (CHE) is an intermediate grade neoplastic tumor of vascular origin. It consists of a varied mixture of benign, intermediate and malignantvascular components. Only few cases of CHE occurring in different soft tissue areas of the body and rarely in internal organs have been reported in literature till now. We report a case of CHE presenting as lump in the breast in a 42 year old female. A review of literature is also presented to create awareness of this entity which can be misleading in breast where angiosarcoma is also known to occur.

1. Introduction

Composite hemangioendothelioma (CHE) is a recently described vascular tumor of low grade malignancy. It consists of benign vascular components, low-grade and malignant vascular components which may be seen in varying proportions. Less than 40 cases of CHE have been reported in the literature so far.[1] CHE has been reported in soft tissues, bone, kidney, mandible. To the best of our knowledge, this is the second case of CHE reported in India.[2]

2. Case Report

A 42-year-old female presented with lump in the outer quadrant of left breast since 4 months, insidious in onset and associated with mild tenderness. No history of nipple discharge. On examination lump was measured 4 x 4 cm, mobile, firm in consistency, not fixed to underlying skin and chest wall and no lymph nodes palpable. No other significant family history was noted.

We received a lumpectomy specimen from Left breast measuring 5 x 5 x 4cm. External appearance was congested. Cut section showed an ill defined grey white mass with solid and cystic areas measuring 3 x 2.5 cm. Hemorrhagic areas were also seen (Figure 1).

The microscopic examination revealed a varied vascular tumor components, including hemangioma like areas, epithelioid hemangioendothelioma, retiform hemangioendothelioma, low-grade angiosarcoma-like area. The benign hemangioma like areas showed proliferation of capillary sized blood vessels.(Figure 2 a) The retiform hemangioendothelioma component showed elongated, arborizing, and dilated blood vessels lined with hobnail endothelial cells with intraluminal projection.(Figure 2 b) The epithelioid hemangioendothelioma component was characterized by cords and nests of epithelioid cells with eosinophilic cytoplasm embedded in hyalinized stroma. Some tumor cells contained intracytoplasmic lumina with erythrocyte retention and foci of vacuolated epithelioid cells having a pseudolipoblastic appearance. (Figure 3 a)

* *Corresponding author*.
E-mail address: vidyaraj74@gmail.com (K. Vidyavathi).

https://doi.org/10.18231/j.ijpo.2024.040

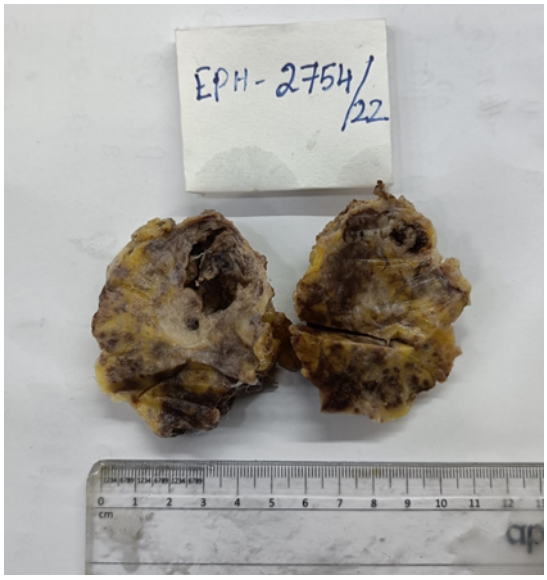

Figure 1: Breast tissue showing an ill-defined mass with grey white and hemorrhagic areas

The low-grade angiosarcoma-ike component was composed of slit-like and anastomosing vascular channels lined with mildly atypical endothelial cells (Figure 3 b). Mitotic figures were not seen. Immunohistochemical staining of all tumor cells, was positive for CD34. The Ki-67 index staining showed hotspots with was <30% staining (Figure 4). Therefore, a diagnosis of CHE was rendered. Neither local recurrence nor distant metastasis was observed 2 years after surgery.

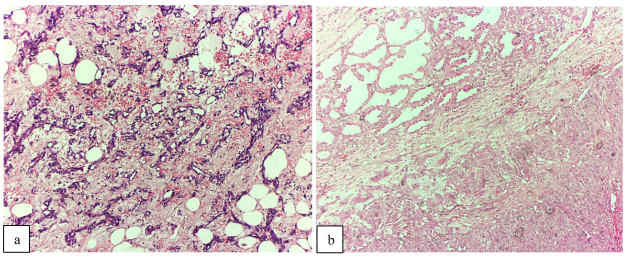

Figure 2: a): Capillary hemangioma like areas showing blood vessels lined by plump endothelium. H&E x100; **b)**: Areas showing retiform pattern H&E x 100

3. Discussion

CHE was first described by Nayler et al. According to the World Health Organization (WHO) classification of Tumors of Soft Tissue and Bone in 2013, CHE is described as a locally aggressive, rarely metastasizing vascular neoplasm, containing an admixture of histologically distinct components of benign and malignant components which vary greatly in their relative proportions.[3]

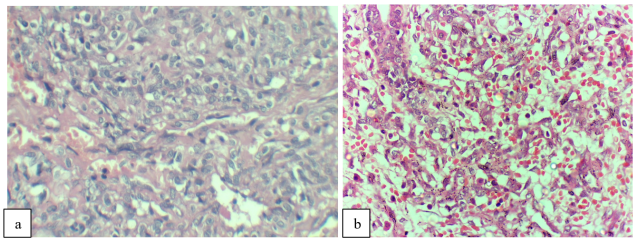

Figure 3: a): Areas showing anastomosing cords of epithelioid cells with prominent cytoplasmic vacuolization. H&E x 400; **b):** Areas showing Kaposiform like pattern H&Ex 400

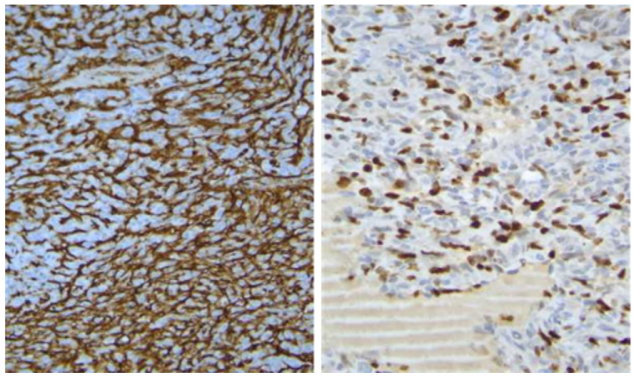

Figure 4: Immunohistochemistry positive for (**a**) CD 34 and (**b**) hotspots showing Ki 67 positivity

CHE is most commonly seen in young to middle-aged patients and also with a slight female preponderance.[1] However cases has been reported in newborns also.[4] They can develop at many sites, including the scalp, head and neck region, oral cavity and hypopharynx, skin and subcutaneous tissue of back, including internal organs like mediastinum, kidney, and spleen.[1,4–7] Despite the diversity in the sites, approximately half of the cases has been reported on the skin of the extremities, fingers, and toes. Rarely involvement of internal organs has also been reported. Though the majority of reported cases showed skin & subcutaneous tissues of finger and extremities, only one case of CHE in breast has been reported till now.

In skin and subcutaneous tissue the clinical presentation of CHE can vary from solitary or multiple nodule, poorly circumscribed erythematous or violaceous nodules, plaques or may be seen as ulceroproliferative lesions also. Multiple lesions may also be seen in some patients.

Though the etiology of the tumor is not clear, few reports suggest that it may be associated with the presence of other vascular abnormalities, like arteriovenous malformation, lymphangioma circumscriptum, Maffucci syndrome, and Kasabach–Merritt syndrome.[1,2,6,8]

Histopathologically, CHE is a poorly circumscribed and infiltrative neoplasm containing variable vascular components including but not limited to: Low grade

angiosarcoma, Lymphangioma, Hemangioma (Spindle Cell, Capillary, Cavernous, Hobnail, Epithelioid) Etc CHE contains areas that resemble at least two of the following tumors. Its benign components may include capillary and cavernous hemangioma, spindle cell hemangioma, lymphangioma, and angiomatosis. The most common vascular components of intermediate malignant potential in CHEs are retiform and epithelioid hemangioendotheliomas. With respect to the malignant counterparts, a moderately differentiated to well-differentiated angiosarcoma-like area is present in nearly half of CHE cases and comprises a minority of the main tumor region.[7]

Retiform hemangioendothelioma like areas are seen as arborising vascular channels which may mimic rete testis and lined by single layer of bland endothelial cells or hobnail nuclei. No atypia is seen and mitotic activity is rare.

Epithelioid hemangioendothelioma shows tumor cells arranged in cords and small nests of endothelial cells having abundant eosinophilic cytoplasm in a myxohyaline stroma. Few cells may show intracytoplasmic lumen with RBCs inside.

Though various vascular components may be seen in CHE, amount of admixture of components is variable. An analysis of reported cases by Asilian et al showed that the most prevalent histopathologic appearances were epithelioid hemangioendothelioma, retiform hemangioendothelioma, spindle-cell hemangioma, and angiosarcoma-like appearance.[1]

The most important differential diagnosis in this case was angiosarcoma, which is also a common lesion in the breast. Angiosarcoma of breast shows irregularly shaped anastomosing vascular channels lined by spindle shaped, polygonal and epithelioid shaped cells. Angiosarcomas may be subclassified into 3 grades. Grade-I is well differentiated and consists of open anastomosing vascular channels lined by endothelial cells which dissect through stroma. The differential diagnosis for angiosarcoma Grade-I tumour is mostly Haemangioma, Myoepithelioma, Angiolipoma, Benign Spindle Cell Proliferation Lesion.[9] Grade-II is of intermediate grade and shows foci of solid and spindle cell proliferation along with features of grade I. Grade-III is a poorly differentiated tumour and shows predominantly solid and spindle cell areas, devoid of vascular formations with high mitotic activity.[9] The tumor shows a highly infiltrative architecture and poor demarcation.

Differentiating CHE from other vascular neoplasms of breast is important because this is a tumor with intermediate grade potential and may rarely develop metastasis to other sites. The diagnosis of CHE is dependent on finding different histologic vascular patterns within one lesion. Tissue sampling is the gold standard for a definitive diagnosis and because of the wide morphologic spectrum, requires adequate /Large sample to evaluate. The different vascular patterns can be best visualized on low power examination. Mitotic activity is also not increased, except may be seen in focal areas with an angiosarcoma like appearance.

Immunohistochemically, the tumor cells in CHE show variable positivity for CD31, CD34, and von Willebrand factor, but rarely for D2-40. The tumor cells are negative to cytokeratin, S-100, epithelial membrane antigen, desmin, actin, and HHV-8.[4,6,7] Another marker which is specific for vascular tumors is ERG (ETS-related gene) which may be expressed in both benign and malignant tumors of endothelial origin including Composite hemangioendothelioma.[10] Ki 67 proliferation index is marker may show a range of expression varying from 0.1% to 14.9% in the angiosarcomatous component.[4] Our case showed Ki 67 positivity ranging from 20-30% present in focal areas only as hotspots.

CHE may show frequent local recurrence, but rarely demonstrates lymph node or distant metastasis. The high rate of local CHE recurrence can be attributed to its multicentric origin and incomplete excision due to a deep infiltrative margin. Asilian et al. reported that and most of the patients did not show recurrence in the follow-up period.[1] Although no patient has died due to this rare tumor so far, metastasis to regional lymph nodes, soft tissues, bones, the liver, and the lungs has been reported.[8,11,12] The present case showed no recurrence on a 2 year follow up.

Management of CHE still remains debatable as the number of cases reported so far is limited. Asilian et al. analysed treatment approach and revealed that the most common treatment was surgical excision of the CHE with a safe margin. Wide local excision beyond the clinical margin is the currently accepted primary treatment for CHE. Careful preoperative evaluation and postoperative imaging surveys with computed topography or magnetic resonance imaging may be necessary for appropriate management.[1–7,13]

4. Conclusion

Composite hemangioendothelioma is a vascular tumor of intermediate malignant potential. As only few case reports have been reported, data on clinical presentation, progression of this tumor and treatment strategies are not well-defined. CHE in breast is rare and requires extensive histopathological examination to differentiate from the more common lesion of angiosarcoma breast.

5. Source of Funding

None.

6. Conflict of Interest

None.

References

1. Asilian A, Mozafarpoor S, Goodarzi A, Jafari MA, Rajabi P, Eftekhari M. Composite hemangioendothelioma as a rare malignant condition: a case report and comprehensive literature review. *Iran J Dermatol*. 2021;24(4):367–77.
2. Bhat A, Chowdappa V. Composite hemangioendothelioma: Report of a rare case. *J Clin Diagn Res*. 2016;10(10):1–3.
3. Fletcher CDM, Bridge JA, Hogendoorn PCW, Mertens F. WHO Classification of Tumors of soft tissue and Bone. vol. Vol 5. 4th ed. France: IARC; 2013.
4. Fukunaga M, Suzuki K, Saegusa N, Folpe AL. Composite hemangioendothelioma: Report of 5 cases including one with associated Maffucci syndrome. *Am J Surg Pathol*. 2007;31:1567–72.
5. Mcnab PM, Quigley BC, Glass LF, Jukic DM. Composite hemangioendothelioma and its classification as a low-grade malignancy. *Am J Dermatopathol*. 2013;35(4):517–22.
6. Mahmoudizad R, Samrao A, Bentow JJ, Peng SK, Bhatia N. Composite hemangioendothelioma: An unusual presentation of a rare vascular tumor. *Am J Clin Pathol*. 2014;141:732–6.
7. Leen SLS, Fisher C, Thway K. Composite hemangioendothelioma: Clinical and histologic features of an enigmatic entity. *Adv Anat Pathol*. 2015;22(4):254–9.
8. Aydingöz IE, Demirkesen C, Serdar ZA, Mansur AT, Yaşar S, Aslan C. Composite haemangioendothelioma with lymph-node metastasis: An unusual presentation at an uncommon site. *Clin Exp Dermatol*. 2009;34(8):802–6.
9. Jagtap SV, Shukla D, Bonde VS, Jagtap SS. Primary angiosarcoma of Breast: An uncommon histopathological subtype. *J Clin Diagn Res*. 2015;9(12):5–6.
10. Miettinen M, Wang ZF, Paetau A, Tan SH, Dobi A, Srivastava S, et al. ERG transcription factor as an immunohistochemical marker for vascular endothelial tumors and prostatic carcinoma. *Am J Surg Pathol*. 2011;35(3):432–41.
11. Requena L, Díaz JL, Manzarbeitia F, Carrillo R, Fernández-Herrera J, Kutzner H. Cutaneous composite hemangioendothelioma with satellitosis and lymph node metastases. *J Cutan Pathol*. 2008;35(2):225–30.
12. Chu YC, Choi SJ, Park IS, Kim L, Han JY, Kim JM. Composite hemangioendothelioma. *Korean J Pathol*. 2006;40:142–7.
13. Nayler SJ, Rubin BP, Calonje E, Chan JK, Fletcher CD. Composite hemangioendothelioma: a complex, low-grade vascular lesion mimicking angiosarcoma. *Am J Surg Pathol*. 2000;24(3):352–61.

Author biography

Kannar Vidyavathi, Professor https://orcid.org/0009-0006-8506-8160

Akshatha Bissegowda, Assistant Professor

Dharmapalan Anantharaman, Professor

Haruvanahalli Basappa Kavyashri, Assistant Professor

Cite this article: Vidyavathi K, Bissegowda A, Anantharaman D, Kavyashri HB. Composite hemangioendothelioma of breast: A case report with review of literature. *Indian J Pathol Oncol* 2024;11(2):187-190.