



Epithelioid hemangioendothelioma of bone

Kemikte yerleşim gösteren epitelioid hemanjiyoendotelyoma

Fevziye KABUKCUOĞLU,¹ Yavuz KABUKCUOĞLU,² Aytan LİVAOĞLU,¹ Aysim OZAGARI,¹
Raffi ARMAGAN,² Unal KUZGUN²

Şişli Etfal Education and Research Hospital, ¹Pathology Laboratory ²I. Orthopedics and Traumatology Clinic

Epitelioid hemanjiyoendotelyoma, histolojik görünümü ve klinik gidişi hemanjiom ve anjiyosarkom arasında yer alan, ara habasette bir damar tümörüdür. Nadiren kemikte de yerleşim gösterir. Kırk sekiz yaşında kadın hastada geçirdiği travma nedeniyle çekilen düz grafide, sol ayak birinci metatars diyafizinde hasara yol açan litik lezyon saptandı. Manyetik rezonans görüntüleme, birinci metatarsal kemiğin büyük bir kısmını kaplayan intramedüller solid lezyon izlendi. Sintigrafik incelemede, sol tibia diyafiz ve sol ayak birinci metatarsta tutulum görüldü. Histopatolojik incelemede, miksoid stroma içinde farklı çaplarda vasküler yapıları döşeyen veya solid adalar yapan atipik endotelial hücrelerden oluşan neoplastik lezyon izlendi. İmmünohistokimyasal incelemede, faktör VIII, CD34, CD31 ve vimentin ile immünreaktivite saptandı. Bu bulgularla epitelioid hemanjiyoendotelyoma tanısı konan hastaya metatars subtotal rezeksiyonu ve fibula ile rekonstrüksiyon yapıldı. Tibiadaki lezyon geniş olarak çıkartıldı. Dört yıllık takipte lokal nüks veya metastaz görülmüdü.

Anahtar sözcükler: Kemik neoplazileri/patoloji/radyografi; hemanjiyoendotelyoma, epitelioid/patoloji.

Epithelioid hemangioendothelioma is a low-grade malignant tumor with a histologic appearance and clinical course between that of a hemangioma and angiosarcoma. It is rarely encountered in the bone. A 48-year-old woman was examined following trauma. A cystic lesion was noted on a plain radiograph of the left foot, destructing the diaphysis of the first metatarsal bone. Magnetic resonance imaging showed a solid intramedullary lesion involving a large part of the bone. Scintigraphic examination showed uptake in the diaphysis of the left tibia and the first metatarsal bone of the left foot. Histopathologic examination showed a neoplastic lesion consisting of atypical endothelial cells lining vascular structures or forming solid nests in a myxoid stroma. The tumor was immunoreactive for factor VIII, CD31, CD34, and vimentin. A diagnosis of epithelioid hemangioendothelioma was made and the patient underwent subtotal resection of the metatarsal bone with reconstruction of the fibula, and a wide resection of the tibial lesion. No recurrences or metastasis were observed during a four-year follow-up.

Key words: Bone neoplasms/pathology/radiography; hemangioendothelioma, epithelioid/pathology.

The term hemangioendothelioma is used for a group of vascular tumors with intermediate malignancy, originating from the vascular endothelium and showing a histopathological appearance between that of a hemangioma and angiosarcoma.^[1] Epithelioid hemangioendothelioma is the most aggressive member of this group of tumors with metastatic potential.^[2] The lesion develops as a solitary mass in either superficial or deep soft tissues, and causes mild pain com-

plaint. It occurs in nearly all ages, but is rare in childhood. Infrequently, it may rise in bone or internal organs.^[3,4] Hemangioendothelioma growing in bone is usually multifocal or multicentric in contrast to soft tissue tumors.^[2,4]

A case of epithelioid hemangioendothelioma arising in bone is presented in the study with its clinical, radiological and histopathological features.

Case report

A 48-year old woman was examined following trauma. A lytic lesion destructing the diaphysis of the first metatarsal bone was noted on the plain graphs of the left foot (Figure 1). Magnetic resonance image (MRI) illustrated an intramedullary solid lesion involving a large section of the first metatarsal bone. The lesion made an apparent lobulation and expansion with high signal intensity in T_2 weighted image (Figure 2). Scintigraphic examination showed involvement in the diaphysis of the left tibia and left foot. No other bone involvement was observed. Plain graphs showed a lesion causing irregular anterior cortical thickening at the junction of one third upper and middle part of the tibia (Figure 3). Magnetic resonance image manifested a lesion measuring 3x2x2 cm, showing contrast involvement with irregular borders and making protrusion at the anterior cortex of the one third middle part of the diaphysis of the tibia (Figure 4). Histopathological examination of the Jam-Shidi needle biopsies from the first metatarsal bone and tibia showed a neoplastic infiltration composed of solid nests or vascular structures of different caliber lined with atypical endothelial cells, in a myxoid stroma. The endothelial cells were polygonal or spindle shaped and showed mild atypia. They had vesicular nuclei, apparent nucleoli and eosinophilic cytoplasm with intracytoplasmic vacuoles (Figure 5). Immunohistochemical study showed immunoreactivity for factor VIII, CD31, CD34 and vimentin. No immunoreaction was observed for pancytokeratin or epithelial membrane antigen (EMA). With these findings, the patient was diagnosed as epithelioid



Figure 1. Plain graph of the left foot shows lytic lesions destructing the diaphysis of the first metatarsal bone.

hemangioendothelioma. Metatars resection and reconstruction with fibula graft were performed.

The resected bone sent for pathologic examination measured 4.5x3.5x2.5 cm. The hematoxylin eosin stained sections after decalcification revealed tumor tissue showing the same features with the previous biopsies. Focal necrosis and one or two mitotic figures were observed in ten high power fields. Large resection of tibial lesion was performed in another session. The histopathological examination showed the same characteristics.

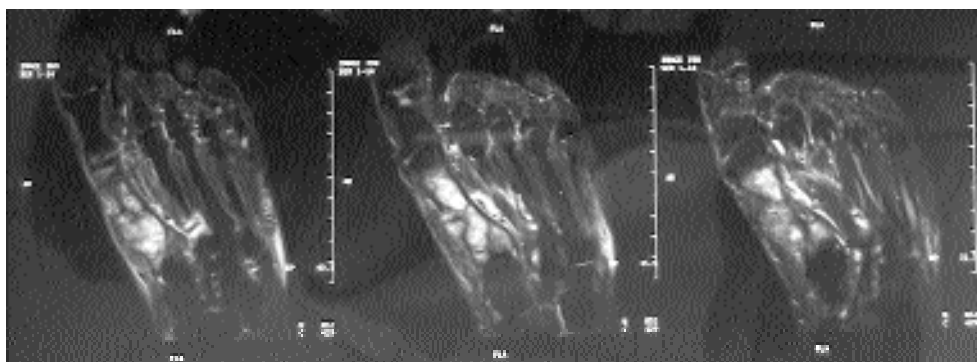


Figure 2. MRI shows intramedullary solid lesion covering a large part of the first metatarsal bone. The lesion shows apparent lobulation and mild expansion with high signal intensity in T_2 weighted image.



Figure 3. Two way graphs of the 1/3 upper part of the tibia reveal a sclerotic lesion causing irregular expansion of the cortex at the anterolateral face of the tibia.

At the fourth year control of the patient, it was observed that the fibula had adapted as the metatarsal bone, and arthrosis had developed at the metatarsophalangeal joint (Figure 6). Arthrodesis was performed for arthrosis. No local recurrence or internal organ metastasis were observed.

Discussion

Vascular tumors originating from the bone constitute an infrequent group of tumors of bone. The term epithelioid hemangioendothelioma was first used by Weiss and Enzinger^[2] for a vascular tumor of soft tissue with intermediate malignancy, showing features between hemangioma and angiosarcoma. Hemangioendothelioma originating from the bone mostly occur between the ages of 20 and 30, and men and women are equally involved.^[4] A lytic lesion causing bone destruction is observed. Any bone of the skeletal system may be involved. About half of the cases are multifocal.^[2] Multiple lesions show a tendency to develop in the lower extremities.^[5,6] The case presented showed multiple involvement at the left metatarsal bone and tibia.

The histopathological examination of epithelioid hemangioendothelioma shows strands or solid nests of epithelioid endothelial cells usually growing centrifugally around a central vein in a stroma varying from myxoid to hyalinized. The cells form primitive vascular channels occasionally containing erythrocytes. The epithelioid endothelial cells typically have abundant eosinophilic cytoplasm with vacuoles. The nucleus is usually oval shaped and concentrically placed.^[1,4,7]

The epithelioid hemangioendothelioma cells show immunoreactivity for CD31, CD34, factor VIII and vimentin. Positive reaction for cytokeratin

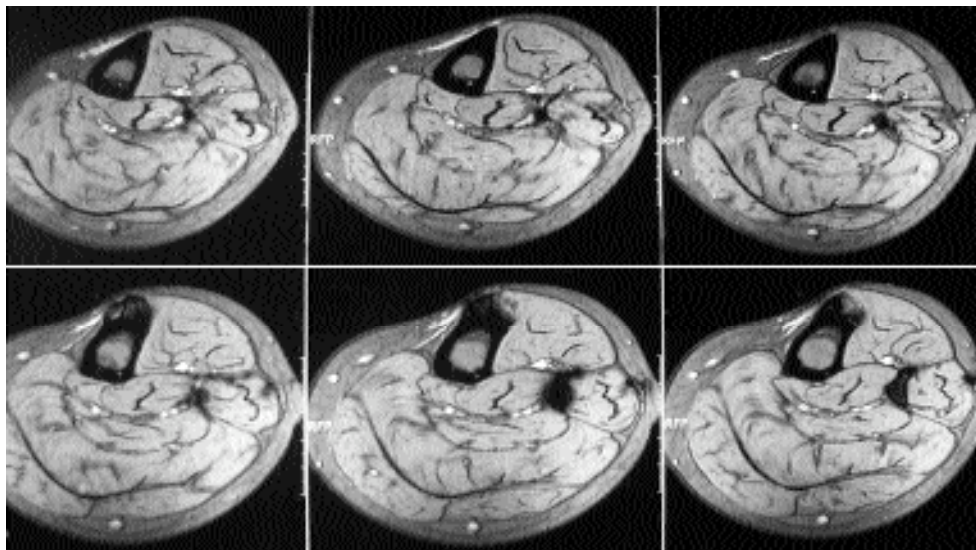


Figure 4. MRI of the 1/3 upper part of the diaphysis of the tibia shows a lesion located at the anterior of the tibia, measuring 3X2X2 cm, having irregular margins and indistinguishable borders with the tibial anterior muscle .

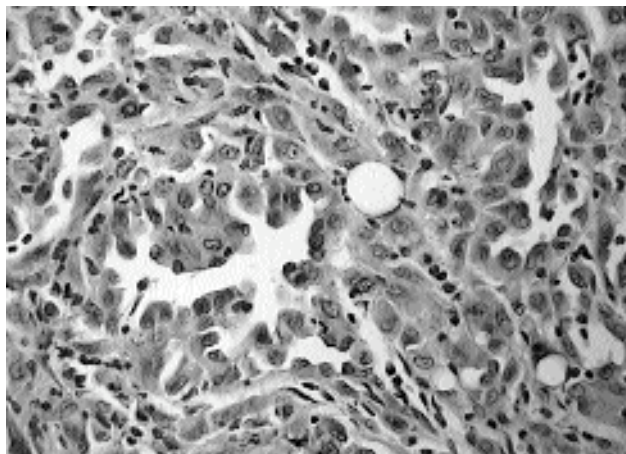


Figure 5. The lesion consists of endothelial cells with mild pleomorphism, lining vascular structures of different caliber (HEX200).

and EMA have been noted in one fourth of the cases but the expression is weak and focal.^[1,4] The presented case showed immunoreactivity for factor VIII, CD 31, CD 34, and vimentin. No staining was observed with cytokeratin and EMA.

Epithelioid hemangioma should be considered in differential diagnosis of epithelioid hemangioendothelioma.^[8,9] Epithelioid hemangioma of the bone also contain epithelioid endothelial cells, which are large and cuboid with eosinophilic cytoplasm. Well developed vascular channels are noted. The vascular channels of epithelioid hemangioendothelioma are primitive. Instead of apparent lumen formation, cord or nest-like growth is observed. Hyalinized or myxoid stroma is also characteristic of epithelioid hemangioendothelioma. Epithelioid hemangioma of the bone is less likely to be multifocal.^[9]

The epithelioid form of angiosarcoma occasionally may cause problem in differential diagnosis. In this type of tumors, very atypical and mitotically active solid nests of epithelioid endothelial cells are seen. The vascular channels are observed as irregular sinusoidal channels, and necrosis is prevalent.^[1] The case presented showed sparse and focal necrosis. Mitotic activity was low.

The epithelioid hemangioendothelioma is lobulated under low magnification, and may show giant cells around a central myxoid area. This appearance may lead to a diagnosis of chondromyxoid fibroma, which is also lobulated with myxoid stroma. The characteristic lesion of chondromyxoid fibroma is



Figure 6. At the four year follow up, AP and lateral plain graphs show adaptation of the fibula as the metatarsal bone and arthrosis of the first metatarsophalangeal joint.

hypocellular at the central, and hypercellular at the peripheral regions. The cells don't have a vacuolated cytoplasm like the epithelioid hemangioendothelioma.^[4]

Carcinoma metastasis should be considered in differential diagnosis in multifocal involvement. Nuclear atypia and mitotic activity is greater, and the desmoplastic stroma is more apparent in metastatic carcinoma. Positive immunoreaction is observed with vascular and endothelial antigens in epithelioid hemangioendothelioma. Occasional EMA or cytokeratin reaction is focal and weak.^[1,4]

Nearly 25% of epithelioid hemangioendothelioma show atypical features.^[1,6] While the cases with cellular atypia increased mitotic activity and necrosis are expected to show a worse prognosis, it is not possible to predict prognosis only with the morphological features, for it is known that some low grade lesions may also metastasize.^[1,2,3] Because of the high incidence of the multifocal lesions in epithelioid hemangioendothelioma, it is necessary to perform bone scanning and design the treatment plan according to the results. Radical surgery may be performed if the tumor is suitable for resection. Radiotherapy give good results but carry the risk of sarcoma development.^[10] In the fourth year follow up

of the presented case, no local recurrence, internal organ or lymph node metastasis were observed. If technically sufficient resection is possible, wide resection is the most suitable treatment for epithelioid hemangioendothelioma.

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