Case Report / Olgu Sunumu

A Case of Primary Breast Angiosarcoma in a Male Patient with Literature Review

Erkek bir Hastada Literatür Taraması ile Birlikte Primer Meme Anjiosarkom Olgusu Sunumu

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Abstract: Primary breast angiosarcomas are rare malignities of breast. They are extremely rare in male patients. Breast angiosarcomas can occur as primary or secondary angiosarcomas. In angiosarcomas, clinicopathological factors such as tumor size, surgical margin status have been reported to be important in prognosis. In this article, breast angiosarcoma in a male patient will be presented in the light of the literature.

Keywords: angiosarcoma, breast, male

Özet: Primer meme anjiosarkomları memenin nadir görülen maligniteleridir. Erkek hastalarda son derece nadir görülür. Meme anjiosarkomları primer ve sekonder anjiosarkomlar olarak ortaya çıkabilir. Anjiosarkomlarda tümör boyutu, cerrahi sınır durumu gibi klinikopatolojik faktörlerin prognozda önemli olduğu rapor edilmiştir. Bu makalede erkek bir hastada görülen meme anjiosarkomu literatür verileri ışığında sunulacaktır.
Anahtar Kelimeler: anjiosarkom, meme, erkek

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1. Introduction

Primary breast sarcomas are rare accounting for 0,1<% of all mammary malignancies (1). It can be detected de novo (primary) or following breast cancer (secondary). Primary breast angiosarcoma is definied as a malignant vascular neoplazm arising within the breast parenchyma that usually does not invade breast skin at all, some times with a small spread of the breast skin, and is a relatively rare neoplasm of the breast (2). Primary angiocarcomas usually affect women in 3-4. decades and appear clinically as a painless, irregular breast mass (1). Primary breast angiosarcoma is rarely found in men and there are few cases in the literature (3).

2. Case

In November 2019, a 46-year-old male patient admitted to another center with a mass in his right breast. Ultrasonography (USG) revealed a subcutaneous 11x4 cm hypoechoic lesion. In March 2021, the patient underwent subcutaneous mastectomy of the right breast. Operative pathology was reported as angiosarcoma of the breast (Figure 1, Figure 2). Pathologically, the tumor size was 6x4x4 cm and surgical margin was negative. Tumor tissue with an infiltrative pattern extending to the skin tissue was observed in the breast parenchyma. Microscopically, spindle morphology in some areas and pleomorphic morphology in others were remarkable. Mitosis 22/10 HPF and histological grade 3 were detected in the tumor which contained extensive necrosis areas. Ki67 proliferation index was not mentioned in the pathology report. Immunohistochemically, vascular markers CD31 (Figure 3A), ERG (Figure 3B) and FLI1 (Figure 3C) were positive. Keratin was negative, CD34 was positive, Vimentin was diffusely positive, muscle and nerve markers were negative. When the clinical and pathological findings were evaluated together, the case was diagnosed as primary angiosarcoma of the breast.

Postoperative axillary USG showed atypical lymph nodes. Excisionel biopsy was performed on these atypical lymph nodes and pathological examination of excisional biopsy revealed no malignancy. Baseline imaging showed several nodules smaller than 1 cm in the lung parenchyma. Metastasis of these nodules couldn't be ruled out and follow-up was decided. The patient was evaluated as high-risk disease due to tumor size larger then 5 cm and high grade (grade 3) tumor and the patient was then given adjuvan paklitaxel chemotherapy for 18 weeks. No progression was detected in these nodules during adjuvant treatment. After six months of adjuvan treatment, wedge resection was performed for the progressive nodule detected in the patient's thorax tomography in October 2021. It's pathology was reported as angiosarcoma metastasis. In March 2022, multiple metastatic nodules, muscle and bone metastases were detected in both lung parenchyma on PET CT scan and sunitinib treatment was given in the first series. Due to detection of progression in lung parenchymal metastases in the fourth month of treatment, the treatment was discontinued and gemcitabine-vinorelbine treatment was started in the second series. After three cycles of gemcitabine-vinorelbine, progression was detected in lung metastatic nodules. Therefore, the patient was started adriamycin chemotherapy. After the first course of adriamycin chemotherapy, treatment could not be continued due to deterioration in the patient's general condition and he was followed up with palliative supportive care. Due to disease progression, the patient died 3 months later in July 2023.

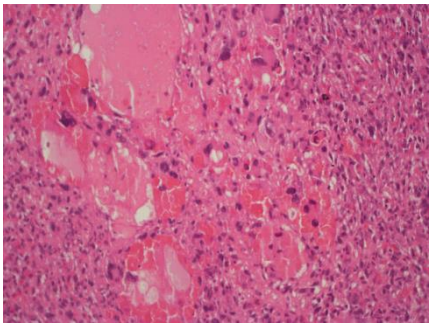


Figure 1. There are vascular structures lined with malignant endothelium,

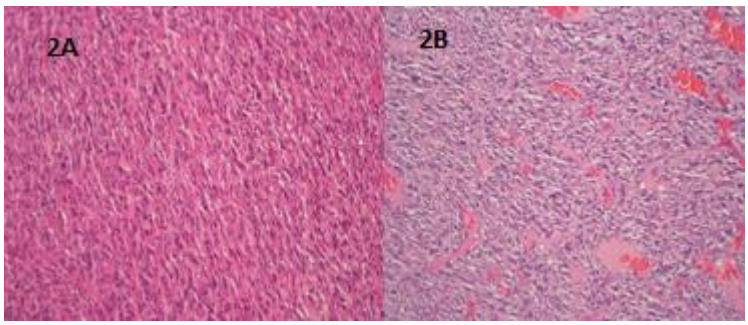
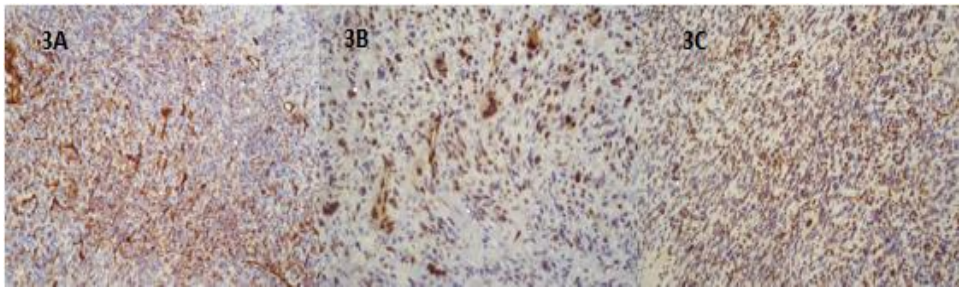


Figure 2A-B. Tissue consisting of highly hyprcellular, hyperchromatic and pleomorphic cells with high mitotic activity is observed (H&E X100 magnification)



CD 31 (**Figure 3A**), ERG (**Figure 3B**) and FLI1 (**Figure 3C**), vascular markers in the tumor tissue are positive (x100 magnification)

3. Discussion

Angiosarcomas are rare malignancies vascular endothelial cell origin. Although angiosarcomas can be seen all over the body, they are usually seen in the skin, liver, breast and soft tissue. Less than 1% are detected as primary or secondary breast tumors (4). Breast angiosarcomas are generally seen in young women; however it can be seen very rarely in men. Secondary angiosarcomas of the breast occur mostly in older women who have been treated for breast cancer. There are two types of angiosarcomas of the breast, lymphedema-associated and post-irradiation-associated. Lymphedema-associated secondary angiosarcoma develop from lymphedema limbs after mastectomy and axillary lymph node dissection. Radiation-associated angiosarcoma may affect the dermis of the breast as well as the breast parenchyma after radiation (4), while primary angiosarcoma involves the breast parenchyma (4) and may secondarily involve the breast skin (5). There are fewer than 10 well-described cases of male primary angiosarcoma in the literature (Table 1) (6-12).

In most series published in the literature, the prognosis of breast angiosarcoma was associated with tumor diameter and histological grade (3,13), but some studies did not find a better prognosis in low-grade tumors (5,14). In the studies, treatment of breast angiosarcoma is

mastectomy and surgical resection. Since axillary lymph node involvement is rare, axillary dissection is not routinely recommended in patients with breast angiosarcoma (15). In our case, postoperative imaging showed atypical lymph nodes in the axillary region. Excisional biopsi was performed from these lymph nodes and pathological examination of the biopsy showed no malignancy.

Grade I-II angiosarcomas should be differentiated from benign vascular proliferations and non-vascular stromal lesions such as psoudoangiomatous stromal hyperplasia (16). On the other hand, high-grade angiosarcomas should be differentiated from aggressive breast cancer subtypes (5). İmmunohistochemical markers are useful in the distinction. Epithelial markers such as EMA and vascular markers such as CD 31, CD34 and D2-40 are useful in differentiating angiosarcoma from carcinoma (15). In our case, CD 31, CD34 and EMA were positive.

Treatment options in metastatic angiosarcoma include antracycline-based and taxane-based chemotherapies, gemcitabine-based chemotherapies, immunotherapy options (17), vinorelbine, pazopanib (18,19), sorafenib (20), sunitinib (21). Since our patient developed metastasis under paklitaxel given as adjuvant, gemcitabine-vinorelbine, sunitinib, adriamycin treatments were given in metastatic series.

Table 1. Well-defined cases of male breast angiosarcoma reported in the literature

	Mansori H. at al. 2000 (9)	**Granier G. at al. 2005(6)**	**Wang ZS at al 2007(7)**	**Kamat at al. 2015(10)**	**LB. Awan At al. 2017 (12)**	**Da silva BB at al. 2018(11)**	**Our case**
Age	57	58	20	57	65	36	46
Size (cm)	4	Unknown	18	Unknown	1.3	3.7	6
Treatment	No	Unknown	No	No	Unknown	Paclitaxel	Paclitaxel Gemcytabin-vinorelbin Adriamycin
Grade	Unknown	Unknown		Low grade	Low grade	High grade	High grade
Follow up	Norecurrence for three years	Unknown	Died six months after diagnosis	No recurrence	Unknown	Died shortly after diagnosis	Died 2 years after diagnosis

4. Conclusion

Breast angiosarcomas are rare tumors. Its incidence in men is extremely low. It is important to distinguish breast angiosarcomas from other vascular and non-vascular tumors. More experience is needed in the diagnosis, follow-up and treatment of breast angiosarcomas.

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Ethics

Informed Consent: The authors declared that informed consent form was signed by the patient.
Copyright Transfer Form: Copyright Transfer Form was signed by the authors.
Peer-review: Internally peer-reviewed.
Authorship Contributions: YSK. : Surgical And Medical Practices, Literatüre Search, Design,Writing BY : Surgical And Medical Practices, Literatüre Search, Concept, Writing
Nazlı Sena Şeker : Surgical And Medical Practices ,Design, Literatüre Search **Conflict of Interest:** No conflict of interest was declared by the authors.
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