

Stewart-Treves Syndrome after Bilateral Mastectomy and Radiotherapy for Breast Carcinoma: Case Report

Bilateral Mastektomi ve Radyoterapiden Sonra Gelişen Stewart-Treves Sendromu, Olgu Sunumu

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ABSTRACT

Stewart-Treves syndrome is an angiosarcoma that occurs because of chronic lymphedema, which in most cases is a complication after mastectomy with axillary node dissection and postoperative radiation. Prognosis for this rare tumor is poor. The best therapy is early and radical excision. Chronic lymphedema seems to be an important pathogenic factor. We report a 59-year-old patient with chronic lymphedema and lymphangiosarcoma of the left upper limb who had a left modified radical mastectomy with axillary node dissection and postoperative radiation nine years ago. Additionally, the patient underwent a right modified radical mastectomy with axillary node dissection and postoperative radiation one year ago. In this report, we present a case of Stewart-Treves syndrome after the patient was operated for bilateral breast carcinoma, a review of literature, and principles of treatment.

Keywords: Bilateral breast cancer, chronic lymphedema, angiosarcoma

ÖZ

Stewart-Treves sendromu çoğu aksiller lenf nodu diseksiyonu ve postoperatif radyoterapi ile mastektomi sonrası kronik lenfödem zemininde gelişen r anjiyosarkomdur. Nadir görülen bu tümörün prognozu kötüdür. En iyi tedavi erken radikal eksizyondur. Kronik lenfödem önemli bir patogenetik faktör olarak gözükmemtedir. Biz 59 yaşında 9 yıl önce sol modifiye radikal mastektomi, aksiller diseksiyon ve radyoterapi sonrası gelişen sol üst ekstremitede Lenfanjiyosarkom olgusunu sunduk. Hastaya bir yıl önce sağ modifiye radikal mastektomi, aksiller diseksiyon ve radyoterapi uygulanmıştı. Bu yazıda bilateral meme kanseri operasyonundan sonra gelişen Stewart-Treves sendromunu ve tedavi prensiplerini literatür eşliğinde sunuyoruz.

Anahtar sözcükler: Bilateral meme kanseri, kronik lenfödem, anjiyosarkom

Introduction

Lymphangiosarcoma of the upper limb was described in post-mastectomy patients by Stewart and Treves in 1948 (1). Lymphangiosarcoma following breast cancer is a rare entity. Today, it still is a potentially highly lethal vascular tumor. The tumor is best described in the upper limb following breast cancer treatment, but a small number of cases have arisen in lymphedema of the lower limb or upper limb without breast cancer and mastectomy (2). Lymphangiosarcoma has a poor prognosis (3, 4) with a 5-year survival of <5% with multimodality treatment. Wide surgical resection is the best treatment method (3-5). A review of literature suggests that mastectomy resulting from breast cancer-related lymphedema is the main predisposing factor (6). Other risk factors of lymphedema that have been reported are association trauma, filarial infection, and idiopathic acquired lymphedema (2).

Case Presentations

A 59-year-old woman underwent a modified radical mastectomy with axillary node dissection on the left side for invasive ductal carcinoma nine years ago. Postoperatively, the patient was irradiated with a total dose of 50 Gy to the. Target volume included the chest wall, supraclavicular fossa, and internal mammary node. Chronic lymphedema of the left upper limb developed after radiation therapy. In addition, our patient underwent radical surgery (a modified radical mastectomy with axillary node dissection) on the right side and radiation therapy for invasive carcinoma one year ago. Nine years after the first radiation therapy, the patient presented with a solid blue-reddish nodular lesion approximately 17 cm on the left upper limb to antecubital area.

The histopathological analysis of a punch biopsy demonstrated a vascular tumor. Low power view showed extensive infiltration of the dermis by a vascular tumor (Figure 1). The appearances are numerous anastomosing vascular channels of varying caliber. The endothelium, which was single and multilayered, typically plump, pleomorphic, and mitotically active, and forms papillae, nested within the vascular lumina (Figure 2, 3). On immunohistochemical analysis, the tumor cells expressed CD34 (Figure 4), CD31 (Figure 5), and factor 8. The tumor cells were enclosed within a reticulin sheath. The Ki-67 proliferation index was observed to be 80%.

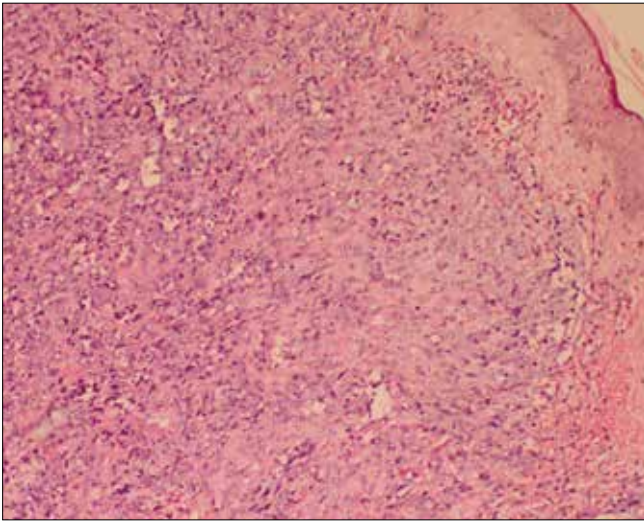


Figure 1. Extensive infiltration of the dermis by a vascular tumor; 10×HE

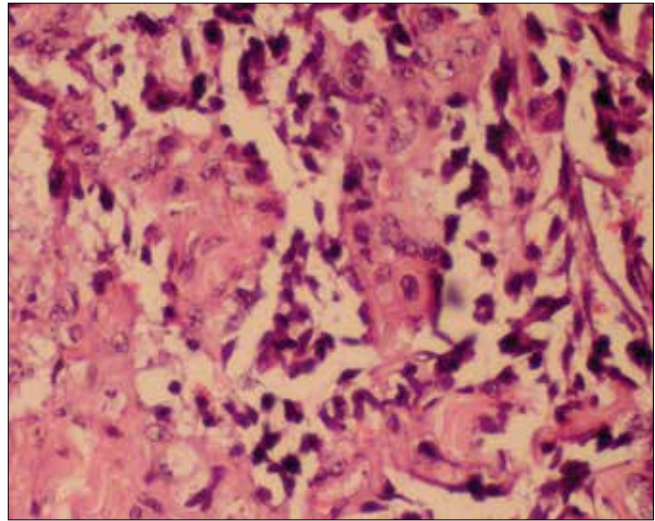


Figure 3. The endothelium that was typically plump and pleomorphic; 40×HE

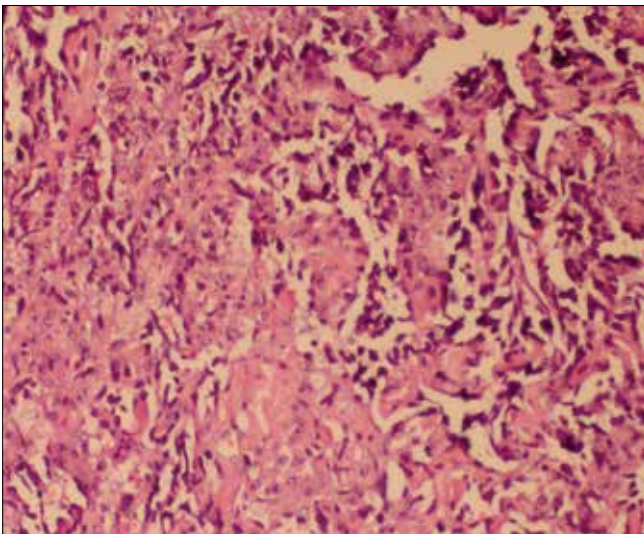


Figure 2. The endothelium that was single and multilayered; 20×HE

We considered a palliative chemotherapy regimen using a combination of etoposide and ifosfamide. The patient did not have any significant chemotherapy complication. Lesions decreased by 80% after chemotherapy.

Discussion and Conclusions

Stewart-Treves syndrome (STS) was originally described as a lymphangiosarcoma of the upper extremity occurring many years after radical mastectomy for breast cancer (1). Currently, there are two million breast cancer survivors in the United States alone, and 20% of them suffer from breast cancer-related lymphedema (7).

Lymphedema-associated angiosarcoma classically arises on the arms of elderly females who have undergone radiotherapy many years previously (STS). It may also develop in other forms of iatrogenic lymphedema, congenital lymphedema, and very rarely in lymphangiomatous malformation and in association with elephantiasis (8).

Typically, the tumor presents in women who have a severe longstanding lymphedema of the arm following breast surgery (1, 2). In most

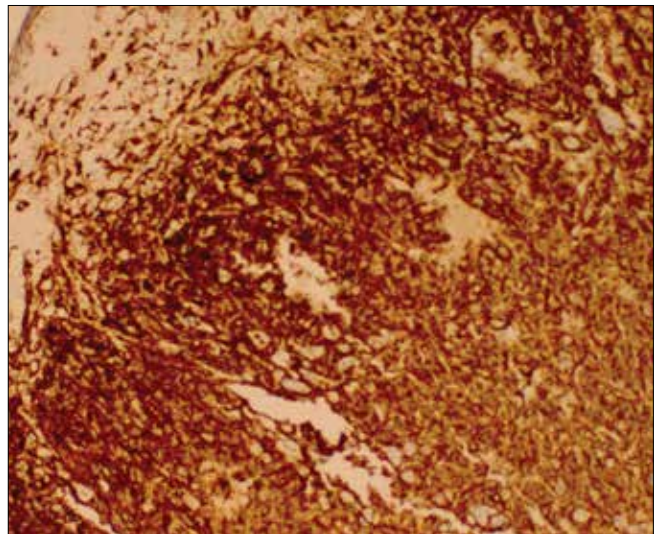


Figure 4. On immunohistochemical analysis, the tumor cells expressed CD34; 20×HE

cases, lymphedema is present for approximately 10 years before the tumor arises, usually in the inner portion of the upper arm. Radiotherapy can usually be excluded as an etiologic factor because the sarcoma nearly always develops beyond the areas of chronic radiodermatitis. Our patient had a bilateral modified radical mastectomy with axillary node dissection and postoperative radiation ten years ago and right modified radical mastectomy with axillary node dissection and postoperative radiation one year ago.

Lymphedema-induced angiosarcomas have also been described in men (9) and in a lower extremity (10). We report a 59-year-old woman with STS of the upper limb.

A skin biopsy of the lesion showed irregular anastomosing vascular channels lined by endothelial cells with different degrees of atypia and mitotic activity alternating with areas of closely spaced cells with a high mitotic index and spindle-like morphology. Immunohistochemical staining for CD31, CD34, F8, and Ki67 are helpful for the establishment of the diagnosis of lymphangiosarcoma. In our case, the tumor was in the form of numerous anastomosing vascular channels

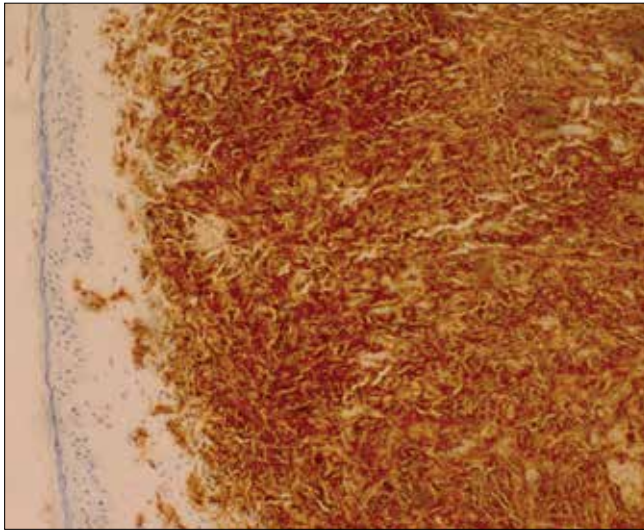


Figure 5. On immunohistochemical analysis, the tumor cells expressed CD31; 20×HE

of varying caliber. The endothelium, which was typically plump, pleomorphic, and mitotically active and forms papillae, nests within the vascular lumina. On immunohistochemical analysis, the tumor cells expressed CD34, CD31, and factor 8.

The presence of endothelial cell atypia, multilayering, and mitotic activity allows distinction from benign hemangioma and Masson's tumor. Immunohistochemical staining for CD31, CD34, factor 8, and Ki67 are helpful for the establishment of the diagnosis of lymphangiosarcoma.

Lymphangiosarcoma is an aggressive, malignant vascular tumor following long-lasting chronic lymphedema. Regardless, this malignancy significantly worsens patients' outcomes and needs to be diagnosed and treated early.

Chemotherapy and radiation therapy do not improve survivorship significantly. Early amputation or wide local excision offers the best chance for long-term survival. Some authors recommend radical resection in the form of disarticulation or amputation. Surgical treatment can be preceded or followed by radiation therapy. The decision to perform a primary amputation for STS of the extremity is based on the location and local extent of the tumor and the expected function of the extremity after tumor resection. The higher risk of metastases for patients who require primary amputation is accounted for by independent risk factors associated with their tumors' predominantly large size. Locally advanced tumors or metastatic forms can be treated with mono- or poly-chemotherapy that is systemic or local (11). Overall prognosis still remains dismal. Untreated patients usually live 5–8 months after diagnosis (12).

Our patient not accepted to amputation. Therefore, we considered a palliative chemotherapy regimen using combination of etoposide and ifosfamide. The patient did not have any significant chemotherapy complication. Lesions decreased by 80% after chemotherapy. Follow-up examination of our patient has lived at one year after diagnosis.

In conclusion, STS is a rare entity and has a generally poor response to chemotherapy. Early detection and diagnosis have a crucial prognostic value. The development of new chemotherapeutic agents effective in lymphangiosarcoma is required.

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References

1. Stewart FW, Treves N. Lymphangiosarcoma in postmastectomy lymphoedema. *Cancer* 1948; 1:64-81. (PMID: 18867440) [CrossRef]
2. Scott RB, Nydick I, Conway H. Lymphangiosarcoma arising in lymphedema. *Am J Med* 1960; 28:1008-12. (PMID: 14444271) [CrossRef]
3. Danese CA, Grishman E, Dreiling DA. Malignant vascular tumors of the lymphedematous extremity. *Ann Surg* 1967; 166:245-53. (PMID: 6029576) [CrossRef]
4. Echenique-Elizondo M, Tuneu-Valls A, Zubizarreta J, Lobo C. Stewart-Treves syndrome. *Cir Esp* 2005; 78:382-84. (PMID: 16420866) [CrossRef]
5. Stewart NJ, Pritchard DJ, Nascimento AG, Kang YK. Lymphangiosarcoma following mastectomy. *Clin Orthop Relat Res* 1995; 320:135-141. (PMID: 7586817) [CrossRef]
6. Ocana A, Delgado C, Rodriguez CA, Bellido L, Izquierdo N, Martin R, Cruz JJ. Case 3. Upper limb lymphangiosarcoma following breast cancer therapy. *J Clin Oncol* 2006; 24:1477-8. (PMID: 16549844) [CrossRef]
7. Yasir JS, Masood U, Asim Q, Shaista K. Lymphangiosarcoma of the arm presenting with lymphedema in a woman 16 years after mastectomy: a case report. *Cases J* 2009; 2:6887. (PMID: 19918554) [CrossRef]
8. Soran A, D'Angelo G, Begovic M, Ardic F, Harlak A, Samuel Wieand H, Vogel VG, Johnson RR. Breast cancer-related lymphedema-what are the significant predictors and how they affect the severity of lymphedema? *Breast J* 2006; 12:536-43. (PMID: 17238983) [CrossRef]
9. Chen KTK, Bauer V, Flam MS. Angiosarcoma in postsurgical lymphedema: An Unusual occurrence in a man. *Am J Dermatopathol* 1991; 13:488. (PMID: 1951986) [CrossRef]
10. Hultberg BM. Angiosarcomas in chronically lymphedema extremities. Two cases of Stewart Treves Syndrome. *Am J Dermatopathol* 1987; 9:406-12. (PMID: 3120612) [CrossRef]
11. Wierzbicka-Hainaut E, Guillet G. Stewart-Treves syndrome (angiosarcoma on lymphoedema). A rare complication of lymphoedema. *Presse Med* 2010; 39:1305-8. (PMID: 20970956) [CrossRef]
12. Sharma A, Schwartz RA. Stewart-Treves syndrome: Pathogenesis and management. *J Am Acad Dermatol* 2012; 67:1342-8. (PMID: 22682884) [CrossRef]