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Case Report

Angiosarcoma Disappeared with Lymphaticovenular Anastomoses (LVA): Amazing Results of Stewart-Treves Syndrome

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Abstract

Background: Stewart-Treves Syndrome (STS) is a rare disease with angiosarcoma arising superimposed on chronic lymphedema of the extremities. Chemo and radiotherapies are not very effective, and most patients die from early metastasis. Hence in this report we present two cases where angiosarcomas in association with STS were successfully treated and completely regressed with only LVA treatment.

Patient summary: The first case presented with lower extremity lymphedema secondary to surgery for uterine cancer. She was treated with LVA in the early stage of lymphedema and long before appearance of the sarcoma. The sarcoma developed nine years after appearance of the lymphedema. Although the patient refused all forms of treatment, the sarcoma completely regressed. The second patient also presented with lower extremity lymphedema. The sarcoma in this instance was treated with immediate LVA. It disappeared three weeks after surgery was performed.

Results: In both reported cases, angiosarcomas that developed in association with lymphedema of the lower extremity completely regressed with either previously performed or immediate LVA (after appearance of the angiosarcoma) without the need for chemo, immune, or radiotherapies. The follow-up periods were from three to seven years and both patients showed no recurrence and no metastasis.

Conclusions: This is the first report of two such cases showing regression of sarcoma with LVA treatment. In the future this novel approach has the potential to influence the concepts of immunotherapy and immunodeficiency when managing sarcomas.

Keywords: Stewart-Treves syndrome; Lymphedema; Lymphaticovenular anastomosis; Angiosarcoma; Anti-canter immunotherapy

Introduction

Stewart-Treves Syndrome (STS) is a rare disease that gives rise to angiosarcomas on chronic lymphedema of the extremities. In 1948 Stewart and Treves first reported angiosarcoma arising in chronic lymphedema secondary to breast cancer. Regarding the epidemiology, it is reported that sarcoma occurs in 0.07 ~ 0.45 % of the patients who survive over five years after breast resection. The average age of sarcoma occurrence is 65-70 years-old [1,2]. The prognosis is bad and long term survival is very rare. Average survival after diagnosis is 2.5 years, and mortality occurs within two years for most patients due to metastatic lesions [1,2]. So far, there was only one report on tumor regression in patients with STS [3]. We first introduced Multiple Lymphaticovenular Anastomoses (mLVAs) with super microsurgical technique in 1990, and have since treated over 2000 patients with primary and secondary lymphedema of the extremities [4]. In this report, we describe a case that showed tumor regression after mLVAs prior to the occurrence of angiosarcoma.

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Case Presentation

A 60 year-old female was transferred to our hospital because of lymphedema of her left leg. Nine years ago, the patient had uterus cancer that was resected and had no radiation therapy. Three months after surgery, lymphedema appeared on the medial aspect of the proximal region in the left thigh. Inspite of constant physiotherapy with compression, edema progressed to involve the left lower leg and foot and deep cellulitis. Therefore, at the age of 60 (February 2008), 4 LVAs were performed through the medial aspect of the left leg (at ankle, knee, and proximal thigh). At two years after mLVAs the patient no longer required any decongestive therapy including compression. Five years after LVA surgery, in April 2013, a small tumor appeared on the anterior aspect of proximal 1/3 of the left lower leg and it showed rapid enlargement within one month. A Biopsy proved this to be an angiosarcoma. The patient refused chemotherapy and radiation. There was a progressive increase in tumor size locally for the first three months. In the four month the tumor began to regress, and by the sixth month it had disappeared completely leaving only an area of hyperpigmentation Figure 1-3. Currently at six years after

tumor occurrence, the patient has not had any tumor recurrence or metastasis, nor has she had any chemo or radiation treatment in the interim.

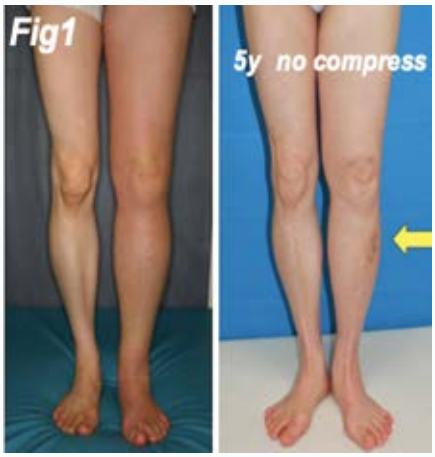

Figure 1: Case 1 Left: Lymphedema of left leg before mLVAs. Right: Five years after mLVAs, edema disappeared completely. Sarcoma appeared at the lateral aspect of left calf.

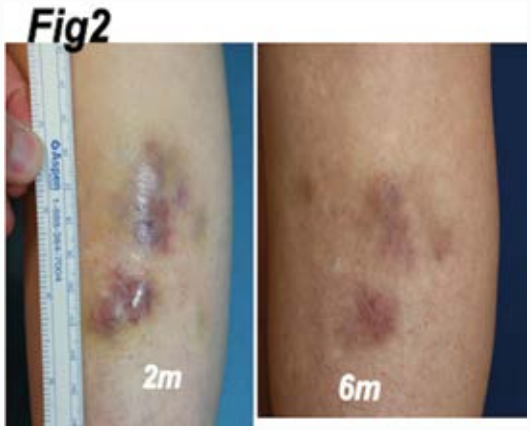

Figure 2: Left- At2 months after tumor occurrence. Its grew rapidly. Right: At 6 months after occurrence. It had disappeared without any treatment.

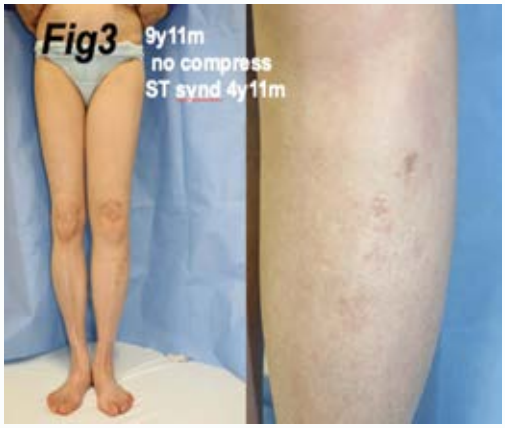

Figure 3: Left- At 9 years 11months after mLVA. No need of compression. Right: No recurrence of tumor without any treatment.

Discussion

To our best knowledge, this article is the first report on STS where secondary angiosarcoma regressed completely in association with mLVAs. The dramatic suppression of sarcomas was thought to be the result of immuno-reaction to cancer cells due to the presence of mLVAs, as it is usually rare to see any long-term regression with conventional therapy. In addition, we assume that the disappearance of sarcoma is due to our meticulous super microsurgical technique yielding high-quality LVA's and ultimately successful results [4]. Our case showed dramatic improvement of lymphedema following LVA surgery, and not requiring postoperative decongestive physiotherapy. Therefore we hypothesize that permanent patency of the LVA is essential for sarcoma regression, and a postoperative occlusion would probably deter this effect. Regarding other papers on salvaged patients with STS, so far, there was only one report by Yamasaki, Dermatology in Okayama University, that sarcoma super imposed on lymphedema disappeared with chemo, immuno, and radiotherapy [3]. Yamasaki reported two cases of STS arising in association with leg edema that were treated with previous mLVAs by the team of primary author used to be in Okayama University Hospital. The first case was treated with chemo-radiotherapies. The sarcoma disappeared and the patient had no recurrence or metastasis for 13 months after the radiotherapy. Meanwhile, the second case was treated with immune-radiotherapies, but the patient finally died of sepsis with their extensive treatments, not metastasis. Yamasaki concluded that the mLVAs might cause malignant change of the lymphatics, and that both cases showed dramatic and some improvement with radiotherapy [3]. However, it is common knowledge that conventional therapies are not always satisfactory for STS. In addition, based on the results of our case, there is a possibility assumes that the excellent results of Yamasaki's report might be due to the presence of mLVAs before the tumor occurrence. Regarding the mechanism of sarcoma onset, Farag and Qureshi [5,6] described oscillatory blood flow through arteriovenous fistulas in patients with renal-transplant that may cause shear stress at the endothelium, providing a pro-inflammatory stimulus to growth peptides which enhances the activity of DNA transcription that ultimately results in sarcoma formation. Yamasaki et al. [3] presumed that the aberrant flow through LVA may be the trigger that contributes to the tumorigenesis of STS. However, based on our experience we do not accept Yamasaki's hypothesis. We believe that LVA plays no role in triggering tumorigenesis, but instead it probably stimulates an auto immuno-response against cancer cells. Finally, we expect that in the future, LVA may have further applications and possibilities: for example, its use as a potent anti-cancer immunotherapy for malignant tumors.

References

1. Sharma A, Schwartz RA. Stewart-Treves syndrome: pathogenesis and management. J Am Acad Dermatol. 2012;67(6):1342-8.
2. Lee JH, Jeong YJ, Oh DY, Kim SW, Rhie JW, Ahn ST. Clinical experience of stewart-treves syndrome in the lower leg. Arch Plast Surg. 2013;40(3):275-7.
3. Yamasaki O, Takeshima C, Ikeda K, Suzuki N, Otsuka M, Kimata Y, et al. Stewart-Treves syndrome arising in patients with lymphaticovenular anastomosis for chronic lymphedema of the leg. Eur J Dermatol. 2012;22(4):545-6.
4. Koshima I, Kawada S, Moriguchi T, Kajiwara Y. Ultrastructural observation of lymphatic vessels in lymphedema in human extremities. Plast Reconstr Surg. 1996;97(2):397-405.
5. Farag R, Schulak JA, Abdul-Karim FW, Wasman JK. Angiosarcoma arising in an arteriovenous fistula site in a renal transplant patient: A case report and literature review. Clin Nephro. 2005;63(5):408-12.
6. Qureshi YA, Strauss DC, Thway K, Fisher C, Thomas JM. Angiosarcoma developing in a non-functioning arteriovenous fistula post-renal transplant. J Surg Oncol. 2010;101(6):520-23.