

Lymphedema Associated With Kaposi's Sarcoma: A Case Report

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Abstract

Lymphedema is a common yet underemphasized complication of Kaposi's sarcoma (KS). The aim of this case report is to present the clinical and functional outcomes of KS-related lymphedema in a patient. A 56-year-old male was diagnosed with KS and initiated on systemic chemotherapy and antiretroviral therapy. Doppler ultrasonography revealed no evidence of venous insufficiency or thrombosis in the right lower extremity; however, segmental slowing of lymphatic flow and increased subcutaneous edema were observed. The patient underwent a rehabilitation program consisting of lymphatic drainage, compression therapy, exercise, and skin care, three times per week for six weeks, totaling 18 sessions. The exercise program included 30 minutes of brisk walking five times per week, ankle pump exercises, and diaphragmatic breathing. Lymphedema was assessed using circumferential tape measurements, skin elasticity with a tonometer, functional capacity with the 6-Minute Walk Test (6MWT), and quality of life with the Lymphedema Quality of Life Questionnaire (LYMQOL). The rehabilitation program demonstrated improvements in edema control and skin elasticity, while also enhancing the patient's functional capacity and quality of life.

Keywords: Kaposi Sarcoma, Lymphedema, Rehabilitation, Hiv, Manual Lymph Drainage

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Kaposi Sarkomu İle İlişkili Lenfödem: Bir Olgu Sunumu

Özet

Lenfödem, Kaposi Sarkomu'nun (KS) sık karşılaşılan ancak yeterince vurgulanmayan bir komplikasyonudur. Bu olgu sunumunun amacı, KS'ye bağlı gelişen lenfödemin hasta üzerindeki klinik ve fonksiyonel sonuçlarını ortaya koymaktır. 56 yaşında erkek hasta, KS tanısı almış ve sistemik kemoterapi ile antiretroviral tedaviye başlamıştır. Yapılan Doppler ultrasonografide, sağ alt ekstremitede venöz yetmezlik ve tromboz bulgusuna rastlanmamış; ancak lenfatik akışta segmental düzeyde yavaşlama ve subkutanöz ödem artışı izlenmiştir. Hastaya toplamda 6 hafta süren, haftada 3 gün olmak üzere toplam 18 seanslık lenf drenajı, kompresyon tedavisi, egzersiz ve cilt bakımı içeren bir rehabilitasyon programı uygulanmıştır. Egzersiz programı: 30 dakika, haftada 5 gün tempolu yürüyüş, ayak bileği pompa egzersizleri ve diyaframatik solunum şeklinde düzenlenmiştir. Lenfödemin değerlendirilmesinde mezura ile çevre ölçümü, cilt esnekliği için tonometre ve fonksiyonel kapasite için 6 Dakika Yürüme Testi (6DYT) yaşam kalitesi için lenfödem yaşam kalitesi ölçeği kullanılmıştır. Uygulanan rehabilitasyon programı ödem kontrolü ve cilt elastikiyetinde iyileşme sağlayarak aynı zamanda hastanın fonksiyonel kapasitesi ile birlikte yaşam kalitesini artırdığını göstermektedir.

Anahtar Kelimeler: Kaposi Sarkomu, Lenfödem, Rehabilitasyon, Hiv, Manuel Lenf Drenajı

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INTRODUCTION

Kaposi's sarcoma (KS) is a malignant vascular tumor associated with Human Herpesvirus 8 (HHV-8). The disease is a multifocal and progressive pathology that can involve the skin, mucous membranes, lymphatic system, and internal organs (1). Lymphedema is a common complication of KS progression, negatively affecting quality of life. Lymphedema is a chronic, progressive condition caused by abnormal development or damage to the lymphatic system, leading to the accumulation of protein-rich fluid in the interstitial tissue spaces (2). Patients with lower extremity lymphedema (LEL) commonly experience swelling, reduced joint range of motion, fatigue, infections, ulceration, sensory impairment, deformity, body asymmetry, and muscle weakness. Lymphedema is a chronic swelling condition caused by impaired lymphatic flow (3). KS-related lymphedema generally occurs due to tumor involvement of lymphatic vessels, resulting in obstruction of lymph flow and fibrotic changes. It can be prominent in regions such as the lower extremities, genital area, and face. Immunodeficiency, particularly in Human immunodeficiency virus (HIV)-related KS cases, accelerates the development of lymphedema (4). Lymph nodes and vessels are more severely affected, leading to permanent circulatory disorders. Secondary infections are also a significant problem, with complications such as cellulitis and lymphangitis occurring in affected areas. KS-related lymphedema is characterized by violaceous-red nodules and plaques on the skin, and in some patients, elephantiasis-like presentation may occur (5).

CASE REPORT

A 56-year-old male patient, diagnosed with KS on the background of HIV positivity, was started on systemic chemotherapy (liposomal doxorubicin) and antiretroviral therapy. Within 3 months of follow-up, progressive swelling developed in the right lower extremity, worsening with prolonged standing, and skin hardening was noted. On physical examination, Grade 3 lymphedema of the right lower extremity, violaceous-red KS lesions, and fibrotic changes around the ankle were observed. Doppler ultrasonography showed no venous pathology,

but lymphatic flow slowing and edema were present. No evidence of venous insufficiency or thrombosis was detected; however, segmental slowing of lymphatic flow and increased subcutaneous edema were observed. These findings were consistent with lymphatic obstruction (Figure 1, Figure 2).

Written informed consent was obtained from the patient.

Figure 1. Cutaneous Kaposi's Sarcoma lesions on the lower extremity



Figure 2. Application of multilayer compression bandaging for lower limb lymphedema



In this case report, lower extremity findings of a patient with KS were evaluated. The calf and ankle circumference were measured with a standard tape measure in centimeters. To assess elasticity of the skin and subcutaneous tissue, a tonometer was used. Tonometer assessment allowed for objective monitoring of fibrosis and tissue stiffness, with skin elasticity expressed as a percentage (%) (6). Functional capacity was assessed using the 6-Minute Walk Test (6MWT) following the American Thoracic Society protocol, conducted in a 30-m corridor. Participants were instructed to walk "as fast as possible for 6 min without running or jogging," and the total distance walked was recorded (7). Quality of life (QoL) was assessed with the Lymphedema Quality of Life Scale (LYMQOL), consisting of four subscales: function, appearance, symptoms, and emotional status. Each item is rated on a scale from 1 to 4. The score for each subscale is calculated by dividing the total score by the number of items. Higher scores indicate greater negative impact of the disease on QoL (8). Baseline measurements were recorded, and the patient was followed for six weeks with a regular lymphedema rehabilitation and exercise program. At the end of the period, the same measurements were repeated for comparison.

The patient underwent an 18-session rehabilitation program over six weeks, three times per week, including lymphatic drainage, compression therapy, exercise, and skin care (9). Each session lasted approximately 45–60 minutes. The exercise program consisted of: walking for 30 minutes, ankle pump, diaphragmatic breathing and single- and double-leg heel/toe raises with body weight. The patient continued systemic chemotherapy and antiretroviral therapy. Regression of KS lesions was achieved. Two episodes of cellulitis occurred during follow-up, treated with antibiotics.

Comparison of baseline and six-week outcomes showed a 3 cm reduction in calf circumference, a 15% increase in skin elasticity, and a 60-meter improvement in 6MWT distance. LYMQOL scores improved significantly, with a 10-point increase. These findings indicate that the rehabilitation program provided improvement in edema control and skin elasticity, while also enhancing functional capacity and quality of life (Table 1). Patient education was provided on skin care and hygiene precautions. Partial regression of lymphedema and KS lesions was observed during follow-up.

Written informed consent was obtained from the patient.

Table 1. Before and after treatment results

Measurement Parameter	Baseline Value	After 6 Weeks	Change
Calf circumference (cm)	44 cm	39 cm	-5 cm
Ankle circumference (cm)	30 cm	27 cm	-3 cm
Skin elasticity (%)	5%	10 %	+5 %
Quality of Life Scale	32	52	+10
6-Minute Walk Test (m)	390 m	450 m	+60 m

DISCUSSION

In this case report, we presented the development of lymphedema and the rehabilitation process in an HIV-positive patient diagnosed with KS. Informed consent was obtained from the patient. KS-related lymphedema is a common but often overlooked complication in clinical management. KS-related lymphedema results from tumor invasion, lymphatic compression, fibrosis, and infections (10). In this case, venous obstruction was excluded by Dop-

pler ultrasonography, and significant segmental impairment of lymphatic flow was detected. In HIV-positive individuals, immunosuppression can cause more extensive lymphatic involvement and faster progression of lymphedema (11).

Following the six-week program, meaningful improvements were achieved in limb circumference, skin elasticity, 6MWT distance, and quality of life. These results support the ef-

fectiveness of individualized and multimodal approaches in lymphedema management. Furthermore, successful systemic oncological treatment contributed to reducing both tumor burden and lymphatic obstruction. The occurrence of two episodes of cellulitis during the rehabilitation process highlights the increased infection risk in KS-related lymphedema.

The effectiveness of lymphedema treatment has also been emphasized in international guidelines. A systematic review analyzing 14 international guidelines on diagnosis and management reported that CDT was the most frequently recommended approach, followed by self-management strategies including skincare, self-lymphatic drainage, exercise, and compression. These recommendations support the beneficial effects of lymphedema treatment on edema control, functional capacity, and quality of life (11).

A randomized trial showed compression bandages reduced lymphedema and improved quality of life in HIV-associated KS (12). Brambilla et al. reported that elastic compression stockings reduced limb volume and improved function in classic KS-related lymphedema (13). The literature on KS-related lymphedema management remains limited, and most treatment approaches rely on general lymphedema protocols. This case report demonstrates that standard lymphedema treatments can be cautiously applied in KS-specific situations, providing partial improvement. These findings are consistent with the outcomes of our case, supporting the complementary role of rehabilitation in KS-related lymphedema (14).

This report is limited to a single case, so the results cannot be generalized. Long-term follow-up was not possible, and therefore long-term outcomes could not be evaluated. The patient's systemic chemotherapy and antiretroviral therapy may have contributed to lymphedema improvement by reducing tumor burden. Thus, it was not possible to isolate the specific effects of the rehabilitation program. Future studies on KS-related lymphedema should include larger patient populations. Moreover, advanced imaging methods exploring the relationship between

regression of KS lesions and improvement in lymphedema could provide deeper insights into disease pathophysiology. Accurate immunohistochemical evaluation is crucial in sarcoma diagnosis, as highlighted in one study (15) emphasizing the diagnostic contribution of novel markers. Accurate diagnosis may allow for earlier rehabilitation planning.

In conclusion, the rehabilitation program in this case demonstrated beneficial effects on edema control, skin elasticity, functional capacity, and quality of life. Early diagnosis, appropriate treatment, and tailored rehabilitation strategies can improve quality of life. A multidisciplinary approach is critical for managing both lymphedema and KS.

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Patient consent for publication: Written informed consent was obtained from the patient.

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