

 **Case Report** 

Compression Therapy Using Bandages Successfully Manages Acute or Subacute Lipodermatosclerosis

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We report nine cases with acute or subacute lipodermatosclerosis treated successfully using multilayer bandages. All patients were women aged 52–90 years. Before presenting to our clinic, all patients had been treated for a tentative diagnosis of cellulitis caused by bacterial infection or inflammation of unknown cause for 3–19 weeks without improvement. Initially, we instructed all patients or their caregivers regarding the bandaging technique to achieve an interface pressure of >40 mmHg. Subsequently, this technique was continued by patients/caregivers. Symptoms subsided within 2–7 weeks in all patients except one who had been noncompliant with the compression therapy.


Keywords: acute lipodermatosclerosis, compression therapy

Introduction

Lipodermatosclerosis (LDS) is a chronic condition (duration >1 year) in which patients present with sharply demarcated hyperpigmentation and induration in the gaiter lesion. Conversely, patients with LDS showing an acute (<1 month) or subacute (1 month–1 year) presentation demonstrate poorly demarcated erythema and induration with tenderness, which is often misdiagnosed as infection

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Received: October 30, 2018; Accepted: November 28, 2018
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and treated using medications, such as antibiotics.^{1–3)} The pathomechanism underlying LDS is venous hypertension; therefore, compression therapy should be beneficial. However, patients with acute LDS might not prefer compression stockings because of the pain associated with their use.¹⁾ We describe nine patients with acute/subacute LDS who were successfully treated solely with compression therapy using bandages.

Case Report

This case series was approved by the institutional review board of Yamaguchi University Hospital (Center for Clinical Research, Ube, Yamaguchi, Japan), and the need for individual patient consent was waived. Between April 2015 and March 2018, nine patients with acute or subacute LDS presented to our clinic. Patient characteristics are summarized in **Table 1**. In this series, we included patients who had an isolated, poorly demarcated, tender erythema, and induration limited to the lower leg. Whenever the skin manifestation was confusing, we referred to dermatologists and the diagnoses were made with our agreement because skin biopsy is generally contraindicated in LDS.

All patients were middle-aged or elderly women. Before presenting to our clinic, two patients had self-treated their lesions using commercially available medications. The remaining seven had been referred by physicians (four dermatologists and three other clinicians including a pain manager, vascular surgeon, and general practitioner). All patients had been tentatively diagnosed with cellulitis caused by bacterial infection or inflammation secondary to unknown causes, and all patients had received anti-inflammatory medications and/or antibiotics over 3–19 weeks, without improvement. No patients had been recommended compression therapy before their visit to our clinic.

During their initial visits, a qualified cardiovascular technician performed duplex venous ultrasonography. All lesions had been observed on the medial lower leg except one on the lateral lower leg. As shown in **Table 1**, all pa-

Table 1 Patient characteristics and treatment results

Case	Age (years)	Sex	BMI >30 kg/m ²	Walking <200 m/day	Walking disturbance	Occupation standing >8h	Anatomical venous disorders	Duration before referral (weeks)	Time until symptom relief (weeks)
1	52	Female	—	—	●	—	FV reflux	5	19
2	62	Female	—	—	●	—	—	19	3
3	62	Female	—	—	—	—	Previous venous surgery	4	4
4	67	Female	—	●	—	—	—	10	2
5	71	Female	—	—	—	●	—	16	7
6	71	Female	●	—	●	—	—	14	6
7	78	Female	—	—	—	—	Previous venous surgery	4	3
8	81	Female	—	—	●	—	GSV reflux	13	3
9	90	Female	—	●	●	—	—	3	3

BMI: body mass index; FV: femoral vein; GSV: great saphenous vein

●: present

Walking disturbance indicates the inability to walk independently without using some form of aid (example: crutches or walking frames).

tients presented with at least one functional/anatomical risk factor for venous congestion. Interestingly, cases 3 and 7 revealed a history of ablation of the great saphenous vein (GSV) on the affected side. No GSV recanalization was confirmed in these patients.

Initially, we instructed all patients or their caregivers regarding the “no-intentional-stretch” bandaging technique: not to stretch the bandage intentionally but place it softly around the leg to fit it and smooth out wrinkles in an advancing direction. For this technique, a bandage with approximately 100% extensibility, but not a short-stretch bandage, is suitable. With this technique, the interface pressure (IP) and stiffness linearly increase with the number of bandage rolls used. By using three rolls of the above described bandages (Getto[®] elastic bandage, Kawamoto Corporation, Osaka, Japan; extensibility, 108%; width, 10 cm; length 4.5 m/roll) between the ankle and the popliteus, an IP of 40–45 mmHg and static stiffness index⁴⁾ of 11–13 mmHg could be achieved in ordinary Japanese patients, as reported.^{5,6)} Following appropriate training over 1–3 visits, all patients/caregivers were adequately proficient with this technique and continued using it by themselves every day after shower/bathing. Because the IP and stiffness is closely and linearly correlated,^{5,6)} the appropriateness of the applied bandages, i.e., an IP >40 mmHg, can be confirmed in every single patient by palpating the applied bandages from outside. Notably, 24-h compression could be continued, and the symptoms subsided within 2–7 weeks (with only occasional use of painkillers) in all patients as demonstrated in Fig. 1, except in case 1. This patient (case 1) had not been satisfactorily compliant with compression therapy, and therefore required 19 weeks to notice benefit. No other treatment, including anti-inflammatory medication and/or specific skin care, was required.

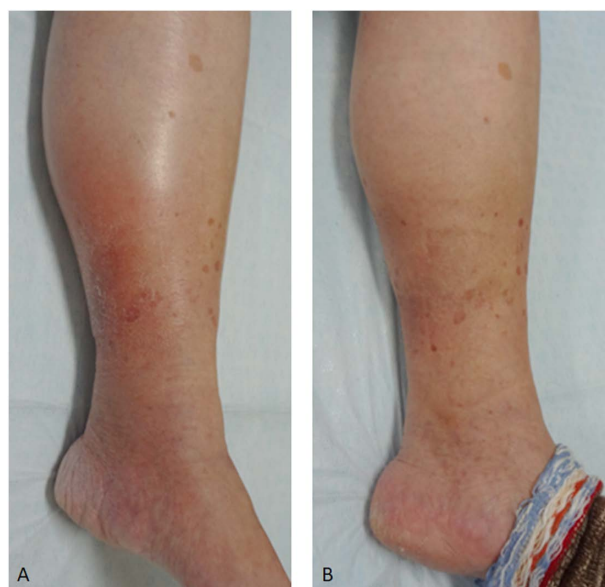


Fig. 1 Image showing acute lipodermatosclerosis affecting the leg.

(A) at the time of the initial visit, (B) after treatment.

Discussion

In this case series, five of nine patients did not present with anatomical venous disorders, as confirmed by a duplex scan. These patients only showed functional risk factors for venous stasis. These often-overlooked risk factors are significant and associated with development of chronic venous insufficiency (CVI).^{7,8)}

Although compression therapy is used as the first-line treatment for CVI, including in patients with acute/subacute LDS, using compression stockings is difficult for patients with acute LDS because of pain. However, a few modifications in handling these therapeutic aids can avoid severe deformation of the skin in the affected areas,

thereby avoiding pain. Thus, high-pressure compression therapy is well tolerated by most patients. This is the same technique that we use for the treatment of venous leg ulcers,⁹⁾ in which few patients complained of pain caused by bandages. Although we used an IP >40 mmHg for 24 h in this series, the appropriate IP and duration of compression for this condition need to be clarified in the future study.

Conclusion

Compression therapy using bandages alone seemed to be acceptable for most patients and successfully managed acute/subacute LDS.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethical Approval

This retrospective study was approved by the institutional review board of Yamaguchi University Hospital (Center for Clinical Research, Ube, Yamaguchi, Japan), and the need for individual patient consent was waived.

Disclosure Statement

The authors declare that there are no conflicts of interest.

Author Contributions

Study conception: KS

Data collection: KS, TH, MS, TN, TM

Analysis: KS

Investigation: KS

Writing: KS

Funding acquisition: NM, KH

Critical review and revision: all authors

Final approval of the article: all authors

Accountability for all aspects of the work: all authors

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