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Comparison of Lymphedema and Lipedema: A Case Report

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Abtract

Lipedema is a rare, painful fat tissue disorder. This condition, which primarily affects women, is often confused with lymphedema and is treated incorrectly. There is a lack of literature on this globally overlooked disease. Conducting more clinical and experimental research on these two diseases, which have different diagnoses, treatments, and complications, will guide doctors in the treatment of lipedema.

Keywords: Lower extremity edema; Lymphedema; Lipedema

Abbreviations: VEGF: Vascular endothelial growth factor

Introduction

Lipedema and lymphedema are two different diseases that are often confused in clinical practice and treated interchangeably, despite having distinct symptoms and treatments [1]. Lipedema is a lipodystrophic fat tissue disorder, typically affecting young women, with a genetic basis [1]. It is characterized by disproportionate subcutaneous fat tissue distribution, swelling in the lower extremities, pain, easy bruising and ecchymosis with minor trauma, abnormal increases in the diameter of the upper and lower extremities, and a significant negative impact on daily life [2]. Lymphedema, on the other hand, is the accumulation of protein-rich fluid in the interstitial space due to lymphatic flow obstruction [3]. In the early stages, it presents as soft and pitting edema, which over time becomes non-pitting edema and leads to irreversible swelling of the extremities due to fibrosis and lymphatic obstruction [4]. This study compares lipedema and lymphedema, highlighting the differences in diagnosis and treatment.

Epidemiology

Lipedema is generally observed between puberty and the third decade of life [1]. Child et al. believe that the prevalence of lipedema is 1 in 72,000 [5]. Some studies suggest that lipedema affects up to 11% of post pubertal women [5].

Although lipedema is not yet classified as a genetic disease, a positive family history is present in 16-64% of cases [5]. It is thought that lipedema is a disease transmitted through X-linked dominant or incompletely dominant autosomal inheritance, particularly prevalent in females [6]. While lipedema is often accompanied by anxiety and depression, lymphedema is associated with venous diseases and recurrent cellulitis [7]. Lipedema patients generally have an increased body mass index, but in most cases, the upper body appears normal. Their increased body weight is due to the disproportionate fat distribution between the two legs or arms.

Lymphedema, characterized by a disruption in the lymphatic network acquired through external factors, is usually sporadic. Lymphedema can be either primary or secondary. Examples of primary lymphedema include Milroy disease (congenital lymphedema), which is characterized by congenital hereditary lower extremity lymphedema, familial lymphedema praecox (Meige disease, the most common form of lymphedema), and lymphedema tarda [8]. Secondary lymphedema includes conditions such as lymphedema resulting from cancer surgery or filariasis caused by the nematode Wuchereria Bancrofti in endemic regions (the most common form of secondary lymphedema) [9]. Lymphedema most commonly affects the lower extremities,

but it can also involve the upper extremities and genital areas. Lymphedema can develop after procedures such as mastectomy, lumpectomy, lymph node biopsy, oncological surgery, or radiation therapy [9].

Pathogenesis

Although the pathophysiology of lipedema is not yet fully understood, it is thought to be multifactorial [10]. The main causes of the disease include increased vascular permeability, increased vascular fragility, and increased protein permeability caused by microangiopathy in the adipose tissue. Estrogen metabolism, tissue hypoxia, and elevated VEGF levels due to PIT-1 and VEGFR gene mutations are also reported to play a role in the pathophysiology of lipedema [11].

In the pathophysiology of lymphedema, mechanical obstruction of lymphatic flow leads to lymphangiographic changes [3]. At this stage, the interstitial space is not yet affected. In advanced stages, fibrosis in the lymphatic channels causes edema, which increases intralymphatic pressure, leading to valve insufficiency in the lymphatic vessels and backflow of lymphatic fluid into the skin.

The histopathology of lipedema, while not pathognomonic or diagnostic, includes adipocyte hypertrophy, increased fibrosis, microangiopathy, and adipocyte necrosis. Immunohistochemical findings of the disease include crown-like structures formed by CD68+ macrophages infiltrating necrotic adipocytes and CD34+ and Ki67+ stem cells of adipose tissue origin [12]. While the edema in lipedema is due to increased adipose tissue, the localized edema present in lymphedema is composed of lymphatic fluid [3].

Clinical Findings

The diagnosis of lipedema is made clinically through history and physical examination [13]. Wold et al. attempted to establish diagnostic criteria for lipedema. These criteria include the patient being female, bilateral and symmetrical swelling in the lower extremities without foot involvement (reverse shoulder or cuff sign), minimal pitting edema, pain, tenderness, easy bruising, and the persistence of edema despite elevation and weight loss [14]. Unlike lymphedema, lipedema is most commonly seen in women between the ages of 10 and 30, affecting the bilateral legs, thighs, and hips [15]. The first clinical sign of lipedema is fullness in the retro malleolar sulcus, which manifests as a decreased prominence of the Achilles tendon. There is no edema in the hands or feet in the bilaterally affected upper or lower extremities, and the edema in the legs starts above the malleolar level. The cuff sign, or reverse shoulder sign, refers to the sharp transition zone between healthy and diseased tissue, which can be seen at the wrist or ankle. The step-off sign, characterized by the overlapping of fat masses in the knee region, can be seen in lipedema [16].

Lymphedema, on the other hand, is predominantly unilateral. In bilateral cases, one side is more edematous and asymmetrical than the other, with no symptoms of pain or easy bruising. The skin of lipedematous tissues appears normal. Skin thickening and induration, commonly seen in lymphedema, are not present in lipedema [17]. The minimal non-pitting edema in lipedema does not decrease with elevation. Lymphedema typically has unilateral and asymmetric involvement. The skin of lymphedematous tissue is sclerotic, hyperpigmented, and damaged. There is doughy swelling of the extremities, fullness in the affected fingers, a peau d'orange appearance due to dermal fibrosis, and a 2 cm difference in diameter between the extremities. The Stemmer sign, characterized by the inability to pinch the base of the second toe, is highly characteristic of lymphedema [18].

Diagnosis and Differential Diagnosis

This disease is included in the differential diagnosis group. Other diseases in the differential diagnosis include lipodermatosclerosis, obesity, venous insufficiency, and myxedema [19].

In the dynamic lymphoscintigraphy findings of lipedema patients, there may be a slowing of lymphatic flow due to disruptions in micro-lymphatic flow caused by increased adipose tissue, as well as pathological lymph node uptake. However, many studies have also noted that there are no changes in lymphoscintigraphic findings of patients with lipedema. In lymph edema patients, there is always a lymphatic flow disorder shown by lymphoscintigraphy.

In the differentiation of lipedema and lymph edema, CT and MR imaging have gained importance recently. Especially, MR is successful in demonstrating skin and subcutaneous changes (honeycomb appearance) that are not seen in lipedema patients but are present in lymphedema patients [20].

Treatment

The treatment of lipedema differs from that of lymphedema. Treatment for lipedema includes dietary and nutritional changes for weight loss, edema control, decongestive physiotherapy, liposuction, and laser-assisted lipolysis [21].

In contrast, compression therapy is generally very effective for lymphedema. Other treatment alternatives for lymphedema include lymphovenous anastomosis and vascularized lymph node transfer [22,23]. However, in lipedema, compression therapy can particularly increase pain below the knee in the lower extremities. This condition is referred to in the literature as Painful Fat Syndrome [24]. Pain typically worsens with prolonged standing or sitting and intensifies with touch and pressure.

Conclusion

Due to its rarity, the diagnosis of lipedema is often overlooked globally and confused with lymphedema. Both diseases have unique complications. Advanced-stage lipedema can lead to venous diseases (venolipedema), lymphatic abnormalities

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(lympholipedema), osteoarthritis, limb ulcerations, and recurrent infections [25]. Lymphedema, on the other hand, can cause complications such as erysipelas, lymphangitis, and lymphangiosarcoma [16]. However, the diagnosis and treatment of these two conditions are different. Increased awareness and attention towards lipedema will facilitate progress in its diagnosis and treatment.

Case Images from Our Clinic

Figure 1 & 2

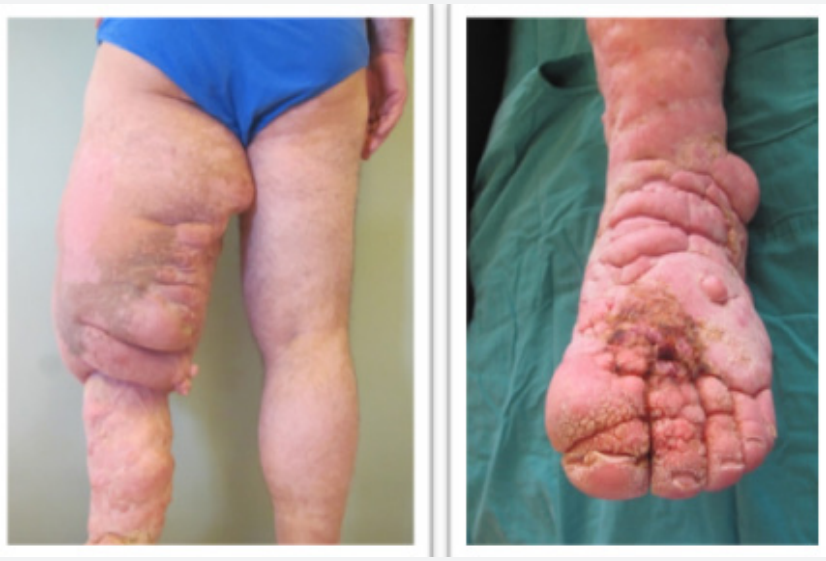

Figure 1: Male Patient Presenting to Our Clinic with Lymphedema

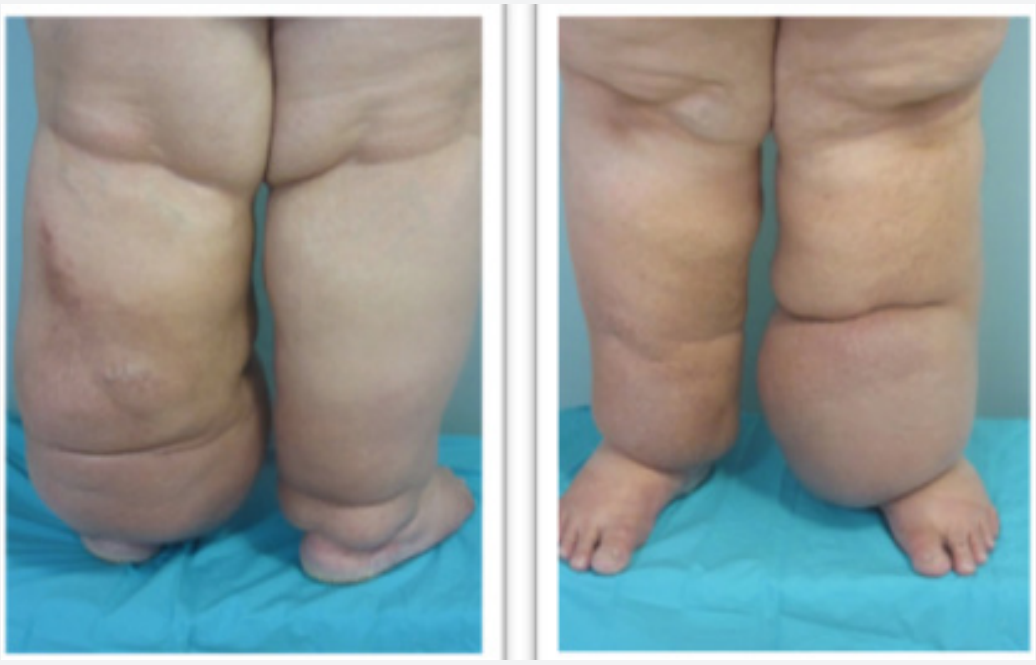

Figure 2: Female Patient Presenting to Our Clinic with Lipedema

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