

Lipoedema – a growing problem in Spain

Lipödem – ein zunehmendes Problem in Spanien

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Key words

lipoedema, obesity, decongestive lymphatic therapy, liposuction

Schlüsselwörter

Lipödem, Adipositas, Lymphdrainage, Liposuktion

published online 11.02.2021

Bibliography

Phlebologie 2021; 50: 376–383

DOI 10.1055/a-1306-7626

ISSN 0939-978X

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Georg Thieme Verlag KG, Rüdigerstraße 14,

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ZUSAMMENFASSUNG

Das Lipödem ist eine chronische Erkrankung, die überwiegend bei Frauen auftritt und eine abnorme Fettablagerung in den unteren Extremitäten bei erheblichem Missverhältnis zwischen oberer und unterer Körperhälfte, Hämatomneigung und Schmerzen verursacht. Trotz fehlender pathognomonischer Tests für das Lipödem geben immer mehr Patienten in sozialen Netzwerken an, hierunter zu leiden, und rücken die Krankheit auf diese Weise mehr ins Bewusstsein, ermöglichen jedoch auch zahlreiche Fehlinformationen über das Lipödem. Informationen sind für die Eigenbehandlung und realistische Erwartungen wichtig. Die Behandlung beinhaltet je nach Schweregrad physikalische Behandlungen, Kompressionsbekleidung, Sport, Diät, psychologische Unterstützung und eine chirurgische Behandlung.

ABSTRACT

Lipoedema is a chronic disease frequent in women, that causes an abnormal fat deposition in their lower limbs, with a remarkable disproportion between the upper and lower part of the body, easy bruising and pain. Despite the lack of pathognomonic tests for lipoedema, more and more patients in social networks are claiming they suffer from it, giving the disease more visibility but allowing a lot of fake information about lipoedema. Information for self-care and realistic expectations are important. Depending on the severity, the treatment includes: physical therapies, compression garments, exercise, diet, psychological support and surgical treatment.

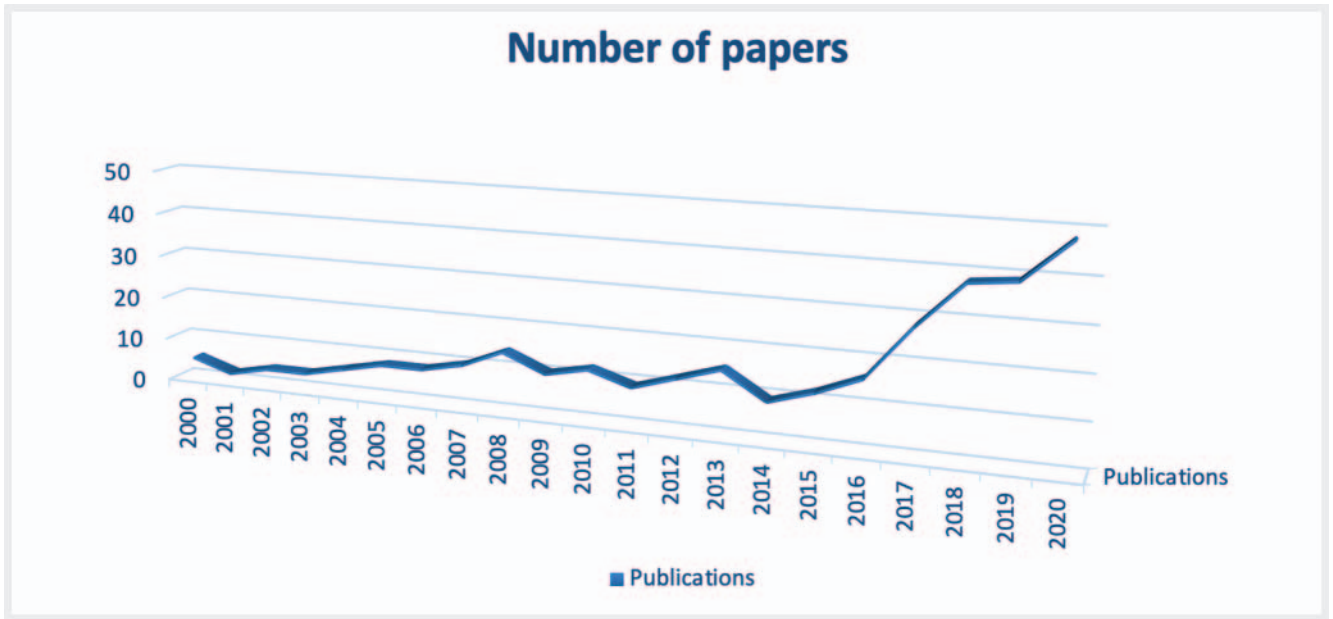
Introduction

Lipoedema is a chronic disease that is estimated to affect 0.06% to 10.00% [1] of the feminine population, causing an abnormal fat deposition in their lower limbs, easy bruising and pain [2]. One of the more typical features is that the enlargement of the lower limbs is disproportionate in relation to the upper part of the body [3].

The onset of the fat deposition in lower limbs at puberty is frequent and is related with a hormonal pathophysiological mechanism [4]; pregnancy and perimenopause have also been reported too as triggering events. There is a family history of lipoedema in 65–82% of the cases [5, 6].

Lipoedema causes a remarkable physical and psychological disability, despite the fact that patients are misdiagnosed too often.

Upon request by the European Society of Lymphology in 2013, it was included as a condition in the International Classification of Diseases (ICD) by the World Health Organization as “EF02 Certain noninflammatory disorders of subcutaneous fat” in May 2018 [7]. In November 2019, IFC had the honour to participate with Sandro Michelini, the past ISL president, Andrej Szuba (current ISL President), Matteo Bertelli (Director of the MAGI Genetics Laboratory) and Frank Labschies, in a meeting with the Alliance for Health Promotion in Geneva at the headquarters of the World Health Organization (WHO). The aim was to sensitize the organization in



► **Fig. 1** Number of papers published with the term Lipoedema and referenced in Web of Science Database (data from [16]).

order to favour the entry of the “Lipoedema” pathology among the officially recognized pathologies with its own code in the International Classification of Diseases.

Even though little is known about this disease, research is increasing in this field and some guidelines have been published in last years [8–11].

Is lipoedema a growing problem in Spain?

One of the main complaints of the lipoedema patients is the delay in reaching a diagnosis. Patients often feel rejected by medical staff, especially when they are stigmatized as being simply “obese”. In a survey published some years ago, of 251 consultants, members of the Vascular Society of Great Britain and Ireland, lipoedema was only recognised by 46.2% of them [12]. This is changing due to the fact that knowledge and awareness among physicians are increasing in the last years. Schmeller reported that 8–17% of patients in lymphoedema clinics in Germany had lipoedema [13]; Herpertz 15% [14]; in Spain 18.8% of lower limb oedema in a Lymphoedema Unit were lipoedema [15]. However, all the guidelines stress that these data are likely a significant underestimate because of problems with misdiagnosis or failure by community physicians to refer patients [9–11].

The role of patients’ associations in improving the awareness has yielded results and social networks are giving lipoedema more and more visibility. There is an increasing number of lymphoedema specialists interested in lipoedema, and in every Lymphology scientific meeting there is a part dedicated to lipoedema. Research and publications are increasing; and the number of papers has been multiplied by 8 in the last 20 years (► **Fig. 1**) [16]. Therefore, the requests of patients to be attended in lymphoedema units are growing, so is the work.

The number of diagnosed cases is growing, on the other hand the “problem” is starting to get less important, as patients find a place to be diagnosed and treated. At the same time, the trend in the prevalence of obesity is decreasing in Spain. Recent studies show that the frequency of obesity has begun to decline in Spanish women aged 60 and over [17], the overall prevalence and incidence rates of childhood overweight/obesity and obesity slightly decreased during the last decade [18].

In Spain there is a need for medical staff specialized in lipoedema, public and private support for research, guidelines for patients and non-conflict of interest information.

Clinical manifestations of lipoedema

The typical enlargement of the lower limbs in lipoedema patients is due to a symmetrical and abnormal increase of adipose tissue at the hips, buttocks, thighs and calves (► **Fig. 2, 3**), always bilateral and sparing feet, with “Cuffing Sign”. The arms can be affected by the deposition of fat in 30% of the cases [1, 19]. There is an evident disproportion in the distribution of the adipose tissue [3]. Patients complain of easy bruising and pain that is reported in 90% of the patients [20]. If there is no pain the diagnosis is usually doubtful – although pain is subjective and pain perception subject to many factors at least a sensation of unease or tenderness and heaviness must be present, otherwise the diagnosis is lipohypertrophy. Although oedema in lower limbs has not been visualised by ultrasonography [21], morphologic changes in lymphatic vessels and accumulation of interstitial fluid have been shown in some lipoedema patients, with no change in transport of lymphatic fluid [22]. In our experience some amount of fluid is present in most of the patients and may worsen at the end of the day and is often related to the orthostasis.



► **Fig. 2** Thirty-two y-o woman with type III lipoedema with BMI 28.08 and Waist-to-Height Ratio of 0.41 (slim).

The diagnostic criteria for Lipoedema were first described in 1951 by Wold et al [23] and have been modified in recent years by Herbst [24] (► **Table 1**).

Lipoedema and obesity

After years of being misdiagnosed as being “fat” instead of suffering from lipoedema, feeling guilty for not having control over their bodies, of not receiving any treatment, patients have recognized their own disease thanks to social media. The disease has gained visibility but also, the boom in messages from patients claiming that their obesity is not obesity but lipoedema, and the imprecise and non-scientific information in those media is causing great confusion among patients. There is no evidence that lipoedema leads to weight gain, however, weight gain can provoke the onset and progression of lipoedema [1, 25, 26].

Obesity is the most common comorbidity in lipoedema patients. For some authors this association is essential; Bertsch



► **Fig. 3** Twenty-four y-o with lipoedema with BMI 23.38 and Waist-to-Height Ratio of 0.40 (slim).

► **Table 1** Diagnostic criteria for Lipoedema.

Almost exclusive occurrence in women
Bilateral and symmetrical nature with minimal involvement of the feet
Minimal pitting edema
Pain, tenderness, and easy bruising
Persistent enlargement despite elevation of the extremities or weight loss
Increased vascular fragility

reports that 88% of lipoedema patients in Földi Clinic are obese (Body mass index (BMI) > 30 kg/m²) [27], and Herbst 76% [24] and they state that the Lipoedema patient with normal weight is a rarity [25]. In our experience, obesity is linked with progression of Lipoedema and is the most frequent comorbidity, but 40% of our patients are slim or normal weight, taking into account the Waist-to-Height Ratio (WHR), with a clear disproportion of volume between the upper and lower part of the body. This is probably a selection bias, because frequently we cannot include

morbidly obese patients where obesity-induced lymphedema is coexisting. Compared to the Spanish population, where 42.7% of women have an optimal anthropometric situation (WHtR <0.5 and BMI <25 kg/m²) [28], characteristics would not be so different. We think that in recent publications, non-obese lipoedema patients have been largely neglected and they suffer pain in addition to the disproportion and social stigma of obesity that they do not suffer from. So further research is needed to understand this atypical way of fat deposition. (► Fig. 2, 3). These patients have pure lipoedema and should be considered as the target of the research.

Concerning the natural history of Lipoedema, the discussion still continues today as to whether this disease is really a progressive condition. To answer this, we performed a prospective cohort study, measuring lipoedema volume over time. Long term volume was stable in two thirds of the patients. Progression of Lipoedema, described as a change of volume greater than 10%, that was observed in one third of the patients was related to weight increase, thus the importance of weight management [29].

Management of Lipoedema in Spain

The management of lipoedema is done differently depending on the country; many different specialists approach lipoedema. In Spain, patients are most frequently referred to doctors for Physical Medicine and Rehabilitation, specialists in Angiology and Vascular Surgery and Plastic Surgery. The most appropriate ones should be those managing lymphological diseases, due to their expertise in the diagnosis and in the prescription of MLD and compression garments, due the knowledge of the lymph vasculature, that is essential if operating on lipoedema [11].

The care of lipoedema patients aims to prevent obesity, the progression of the disease, to prevent or reduce the impact on the musculoskeletal system, and to reduce the impact on normal function [11]. Patients with lipoedema who follow the recommendations and treatments prescribed in a Lymphedema Unit report a reduction in heaviness and pain, and better shape of their lower limbs, weight control, mobility and quality of life [11].

Lipoedema needs a multidisciplinary approach: early education about the nature of the disease and risk factors for progression, accurate information about self-care, psychosocial support, diet, physical activity, skin care, compression therapy, pain management and surgery in some cases.

As there is no cure for lipoedema and it is a chronic disease, self-care is essential and it is very important for the patient to understand that her active participation in the process is not a choice. Achievable goals and realistic expectations have to be set at the first visit, and misunderstandings caused by uncertain information have to be clarified.

As patients with lipoedema have psychological and emotional issues, consider to send them to a specialist or, in less severe cases, at least to the Associations of patients that play an important role in helping them to cope with lipoedema.



► Fig. 4 Pilot study of aerobic exercise plus compression.

Physical activity

Physical activity is one of the pillars of the management of lipoedema.

Physical activity should target weight control at the least and weight loss if possible, which usually affects upper body to a greater extent than the lower body [10, 30]. It has been shown that exercises involving the leg and calf muscles increase lymphatic drainage and venous flow, thereby reducing or preventing edema [31]. Benefits derived from physical activity are evident and include improvement in muscle strength, mobility (which prevents or improves joint problems), self-esteem, and general wellbeing.

We recommend aerobic exercise, progressive in intensity, to avoid high intensity activities that could cause pain and bruising [11], exercise specially in the water, to swim or even to move the lower limbs inside the water or walk to avoid straining knees and ankles.

There is no evidence that physical activity benefits lipoedema patients in terms of volume. To assess the efficacy of physical activity and compression garments, our group performed a pilot study in patients with mild lipoedema [32]. With only one session of aerobic-supervised-exercise plus compression, the mean volume reduction was 313 ml, showing the benefits in the volume of stage 1 lipoedema patients from exercise plus compression (► Fig. 4). This reduction in volume is little but it means that some amount of fluid can be drained by compression and exercise, in patients with lipoedema.

Diet

Many diets have been recommended for patients with lipoedema but none has been shown to be really effective in controlling the disease. The management of patients with lipoedema differs depending on whether or not the patient is obese [33].

In obese patients, the weight control is the goal but is difficult to obtain. Patients complain that they lose more fat in the upper part of the body, increasing the disproportion. They ignore, that the legs lose weight, too, and this is beneficial [23, 24]: a better general health status; a better mobility, less joint pain when associated with osteoarthritis; and a better adaptation to compression garments.

In patients with a normal body mass index (BMI), the control of weight can help the patient to avoid the progression of the disease, as weight gain is one of the most important predictors of progression [29], to prevent the impairment of mobility, and that it is a protection for the joints.

Regarding diets, many diets have been proposed. Rare Adipose Disorders (RAD) diet [24, 34] is based on a reduction of pasteurized dairy products, animal fats, monosaccharides, carbohydrates, salt and artificial preservatives, artificial additives and sweeteners. Harvie and Howell's diet is the Mediterranean diet associated with restriction in calorie intake on 2 days a week [35].

Regarding ketogenic diet, a recent paper hypothesized that it can reduce weight and excessive adipose tissue deposition, and therefore improve pain and quality of life in lipoedema patients, not only in obese or overweight but also in normal weight patients [36].

While these studies go on, and knowing the difficulty in complying with a change in habits, our recommendation is to follow a healthy diet: Mediterranean diet, with a reduction in the intake of carbohydrates (sugars) and especially in the afternoon, and an increase in the intervals between the meals during the day and at least 12 hours at night. The aim is to reduce hyperinsulinemia that promotes storage of metabolic fuels and inhibits breakdown of stored triglyceride [37, 38]. Short term diets are not effective at long term but long term change of eating habits towards healthy eating is a strong recommendation.

Decongestive Lymphatic Therapy

Decongestive Lymphatic Therapy (DLT) is the treatment of choice for lymphedema, but manual lymphatic drainage has shown only very limited efficacy in pure lipoedema, in terms of volume, where the problem is an excess of fat rather than an excess of fluid [1, 39]. Patients ask for it when they come to the Unit, with the false hope that they will improve significantly, but we cannot prescribe it for lipoedema in Spain, as it has no proven effect on the body form and limited availability of trained physiotherapists has to be taken into account.

The MLD has effects on pain reduction and increase of its threshold, oxytocin secretion, stress alleviation and may lead to reduced hematoma formation, though these beneficial effects are not directly caused by the drainage [11, 40–44].



► Fig. 5 Mild stages.

Compression

However, compression is an important tool for lipoedema patients. As fat is not reducible with compression, the aim is to reduce the oedema that can be present [45], to reduce inflammation, to reduce pain and heaviness, to support tissues, and to reshape lower limbs.

If pitting sign is positive, compression with intermittent pneumatic compression and multilayer bandages can reduce it, before prescribing flat-knitted garments for the maintaining phase.

In many countries, the flat-knitted compression hosiery is preferred for lipoedema patients. However, there is no evidence that clarifies which fabric or level of pressure is better for these patients.



► Fig. 6 Moderate stages.

In the first stages of Lipodema, class 2 circular knit ready-to-wear garments can be enough, in my experience, to prevent orthostatic oedema, help drain mild oedema and improve the symptoms immediately after. In these patients, I recommend footless leggings, since feet are spared and a full tights including the feet are not easy to wear, during summertime in Spain, but it is important to check the feet don't swell.

In obese patients or patients with extreme volumes of their lower limbs with fat lobes, flat knit custom-made garments will fit better.

In stage 2, a class 2 circular knit full tights is recommended during the whole day, except in cases with deformity of the limbs that may need flat-knitted hosiery.



► Fig. 7 Advanced stages.

Compression in two pieces, such as capri garment combined with knee-length compression socks, can improve the doff-and-donning difficulty in older patients that need flat-knitted material [15].

Surgical treatment

Surgical treatment is another therapeutic tool for lipodema patients and it should not be the first step in our opinion.

In obese patients, bariatric surgery has to be considered in patients with BMI ≥ 40 kg/m² or 35–40 kg/m² with type 2 diabetes or hypertension who have tried conservative methods to lose weight, [11] despite some papers reporting the lack of efficacy in lipodema fat [46].

The two surgical options to remove the excess of fat tissue are liposuction and lipectomy [47].

Liposuction is the only available technique to correct the abnormal adipose tissue avoiding lymphatic damage. The aims are to reduce fat tissue, to improve the limb shape and mobility, to reduce symptoms such as pain. Tumescence liposuction is the treatment of choice, and experts report that it is highly effective and safe [48–52].

However, while the pathophysiologic mechanisms are not fully identified, this is not a cure and cannot be recommended for all the patients.

The conditions proposed by Bertsch et al to consider liposuction are in line with our practice, specially liposuction must be incorporated into a comprehensive therapeutic approach, obesity must not be predominant (the BMI should be less than 32 kg/m²) and the patient's weight should have been stable for at least 2 years [53].

In summary

In mild lipoedema (► Fig. 5), we provide the information for self-care, we prescribe compression garments, circular-knitted full tights, recommend long term change of eating habits and increase in physical activity. And we plan annual monitoring.

In moderate stages (► Fig. 6), if pitting oedema is present: some sessions of multilayer bandages or Intermittent Pneumatic Compression can be useful before prescribing flat-knitted compression hosiery. The patients have to maintain weight and to increase physical activity.

In advanced stages (► Fig. 7), Endocrinologist advice can be requested to manage metabolic syndrome to achieve weight control. Compression with flat-knitted full tights or by means of two pieces is recommended for daily use. We strongly recommend aquatic physical activity to avoid damage to joints if obesity is present, and psychological support. Liposuction can help in patients with voluminous lobes of fat in selected cases.

Conflict of Interest

The authors declare that they have no conflict of interest.

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