

Lipedema: The intersection of physical and mental health

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Abstract. Lipedema is a chronic and under-diagnosed condition affecting mainly women, characterized by a disproportionate accumulation of adipose tissue in the abdomen, hips and lower limbs, often accompanied by neuropathic pain. The complexity of the condition extends beyond the physical symptoms to include significant psychosocial impact, exacerbated by frequent misdiagnosis and lack of awareness among patients and healthcare professionals. People with lipedema often experience psychological distress and social stigma, increasing the risk of anxiety, depression and eating disorders. Effective treatment requires a multidisciplinary approach, integrating physical therapy with robust psychological and sometimes psychiatric support systems. Increasing clinicians' awareness and understanding of lipedema is essential to improve diagnosis, treatment and prevention of associated psychiatric disorders. This article discusses the epidemiology, pathogenesis and comprehensive management strategies for lipedema with the aim of improving patient outcomes and quality of life.

lipedema; psychosocial impact; chronic pain; misdiagnosis; multidisciplinary treatment

INTRODUCTION

Lipedema is a chronic and frequently underdiagnosed medical condition that predominantly affects women. It is characterized by a disproportionate and symmetrical accumulation of adipose tissue, primarily in the lower body, hips, and lower extremities, and is often accompanied by neuropathic pain symptoms. The condition is notably resistant to standard treatment modalities. Its clinical impact extends beyond somatic manifestations to encompass significant psychosocial dimensions, the neglect of which can substantially hinder both diagnostic accuracy and therapeutic outcomes.

The pathophysiology of lipedema is not fully understood, making it difficult to diagnose and plan effective treatment. The lack of clear research and awareness among healthcare professionals often leaves patients in a 'maze' of unhelpful advice, therapies and recommendations that do not solve the problem and often exacerbate the negative psychological component [1].

In addition to the purely physical symptoms of pain, tenderness and easy bruising, people with lipedema often experience enormous psychological distress. The visible change in appearance leads to social stigma, body dissatisfaction and isolation, contributing to an increased risk of developing anxiety, depression and eating disorders. These psychosocial effects are exacerbated by patient frustration, as reported symptoms are often ignored and belittled by healthcare professionals [2].

Social and, unfortunately, medical perceptions of lipedema are often simplified to a problem of obesity, lack of self-discipline or physical inac-

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tivity. By ignoring the complex genetic, metabolic and hormonal interactions that underlie the disease, not only the physical but also the psychological suffering of patients is often neglected. This misunderstanding not only hinders effective patient care, but also contributes to stigma and isolation. As a result, patients with lipedema often have to cope not only with the physical symptoms of the condition, but also with profound effects on their psychological wellbeing and social interactions.

The proper diagnosis and treatment of lipedema requires a multidisciplinary approach that includes not only the physical management of the patient's condition through modalities such as compression therapy or manual lymphatic drainage and, in some cases, liposuction, but also a robust psychological and psychiatric support system. Comprehensive care models that integrate psychological support, individual psychotherapy and educational groups are essential to properly and comprehensively address this condition. Increasing clinicians' awareness and understanding of lipedema is key to improving the diagnosis, treatment and prevention of psychiatric disorders in people with the condition.

Epidemiology and pathogenesis

The epidemiology of lipedema is difficult to define because of the lack of comprehensive epidemiological studies and because it is often confused with obesity or lymphoedema. It is estimated to affect approximately 10-11% of the general female population. According to Hertpertz, lipedema occurs in 99% of women and only 1% of men [3]. In the male group, symptoms only occur in cases of severe androgen disruption (a decrease in androgen concentrations with a marked shift towards estrogens) [4]. In this group of patients, symptoms tend to occur or worsen during periods of significant hormonal change, such as puberty, pregnancy or menopause, further confirming the strong association of the condition with the body's hormonal regulation [5, 6].

Typical clinical manifestations of lipoid edema syndrome include so-called 'fat-free' feet and hands (these parts of the body are free of ede-

ma). There is also a negative Stemmer's sign on physical examination, which is used to diagnose primary and secondary lymphoedema. This involves pinching the skin on the dorsal (top) side of the foot near the proximal phalanx of the second or third toe. The test is positive if the skin fold does not catch or if the fold is thick. Another symptom is a ratio of waist circumference to hip circumference of $< 0.7/0.8$.

Furthermore, the efficacy of oedema-reducing treatments is comparatively low, particularly in comparison to lymphoedema. Despite the implementation of intensive physiotherapy, the success rate remains suboptimal. Patients frequently report a sensation of heaviness, tightness of the affected tissue, and marked tenderness, which can reach the point of pain upon palpation. Furthermore, a marked tendency to hematoma formation is also characteristic, even in the presence of minor trauma or pressure (excessive fragility of the capillary walls in the lipedema fatty tissue) [7]. According to observations, oedema occurs in 97% of cases in the lower half of the body, with a predominance of both legs (66%), less frequently involving the buttocks and hips, and sometimes also the upper limbs.

With regard to the clinical picture and disease progression in lipedema, we distinguish the following three sequential stages:

- 1) The skin surface in the affected area is smooth, the subcutaneous tissue is thickened, soft, and devoid of visible bulges or papules.
- 2) The skin surface is not smooth, the subcutaneous tissue is thickened, and small bulges are present.
- 3) The skin surface is visibly uneven, the subcutaneous tissue is thickened and hardened, and large bulges are visible beneath the skin. Additionally, there is often impaired mobility.

The diagnosis of lipedema is often based on the physician's experience, which is informed by a physical examination and medical history with the patient. A careful analysis of the symptoms and physical examination helps to rule out other potential causes of pain. Additional ultrasound (USG) examination is often necessary for differential diagnosis with venous insufficiency or lymphoedema.

Although pain is not currently recognized as a diagnostic criterion for lipedema, it is one of the most frequently reported symptoms by patients. According to reports, approximately 92% of patients with lipedema report experiencing pain, with more than half rating it as severe or extremely severe [8]. It is characterized by tenderness, a sensation of tightness, and increased sensitivity of the lower extremities to touch. Its ethology is not fully understood; however, one hypothesis suggests a neuropathic origin. Neuropathic pain, which may occur in patients with lipedema, arises from damage to or dysfunction of the nervous system. In the context of lipedema, it is hypothesized that chronic mechanical overload, microangiopathies, and persistent inflammation of adipose tissue may irritate nerve endings. Additionally, the excessive accumulation of adipose tissue in the lower extremities may exert pressure on neural structures, resulting in neuropathic pain symptoms [9].

As potential mechanisms underlying neuropathic pain in lipedema, it is postulated that: (1) Inflammation – Adipocytes in lipedema exhibit heightened inflammatory activity, producing pro-inflammatory cytokines (e.g., TNF- α , IL-6), which may stimulate nociceptors and lead to hypersensitivity; (2) Mechanical Compression – Excess adipose tissue can compress peripheral nerves, causing mechanical damage or ischemia; (3) Microcirculation Dysfunction – Lipedema is associated with microcirculatory disturbances that may result in hypoxia of peripheral nerves, further increasing the risk of neuropathic pain; (4) Molecular Hypotheses – Alterations in adipose tissue metabolism in lipedema may lead to increased activation of pain receptors (e.g., TRPV1, ASIC), potentially explaining hypersensitivity to stimuli.

The most common pain complaints among patients with lipedema include burning pain, stabbing pain, hypersensitivity to touch (allodynia), and sensations of tingling, numbness, or burning in the lower extremities.

The pathogenesis of lipedema remains incompletely understood. However, a growing number of studies point to a genetic basis for the disease and abnormalities in microcirculation and lymphatic vascular permeability. These reports potentially open up new possibilities for thera-

pies that could target specific pathological mechanisms. In addition to genetic and hormonal factors, the role of inflammatory processes in adipose tissue is gaining importance in the context of the development and management of lipedema. Studies have demonstrated that adipose tissue in areas affected by lipoedema is characterised by increased numbers of inflammatory cells and alterations in the expression of adhesion molecules, which may also contribute to pain and a sensation of heaviness [8].

According to Al-Wardat et al., another potential contributing factor to the occurrence of lipedema may be significantly reduced vitamin D concentrations in the bodies of the women studied [10]. Furthermore, these studies indicate a strong correlation between vitamin D concentration, BMI, body height and levels of anxiety and depressive symptoms in the study group of women.

It is therefore evident that increasing our knowledge of the epidemiology and pathogenesis of lipedema is crucial not only for a better understanding of the disease, but also for the development of more effective treatments. As public and medical awareness of the disease increases, there is hope for an improved quality of life for those affected and early diagnosis and patient-specific therapy.

Physical and psychological effects

The impact of lipedema on patients is always multidimensional and goes far beyond the visible physical symptoms [11]. Somatically, lipedema is characterised by a painful accumulation of fat, usually around the hips, legs and sometimes arms, resulting in a disproportionate, inadequate appearance that does not correlate with total body weight. This abnormal distribution of fat is resistant to diet and exercise, leading to frustration and despair. The physical discomfort associated with lipedema, including significant tenderness, pain and a feeling of heaviness in the affected limbs, makes daily activities significantly more difficult. As the disease progresses, there is an increased risk of secondary oedema developing, further complicating the clinical picture and increasing the physical burden [8].

It is important to note that the psychological aspects of lipedema have a significant impact on the overall condition of the patient. The chronic nature of the condition, combined with a lack of awareness and understanding on the part of healthcare professionals, often leads to delayed or misdiagnosis. This results in chronic stress for the patient and secondary anxiety, depression or eating disorders. The visible symptoms of lipedema lead to problems with self-acceptance, low self-esteem and gradual social withdrawal. The unsuccessful, lonely struggle to manage the condition through diet, exercise or herbal medication leads to low self-esteem, guilt, shame and complete social isolation.

Constant pain and physical limitations contribute to an increased prevalence of anxiety and depression. The chronic stress of coping with an often incomprehensible condition can exacerbate mental health problems, creating a vicious cycle of depression and anxiety.

Ernst and colleagues proved that lipedema is associated with several health problems and a lower quality of life [12]. This is the result of delayed diagnosis, improper medical care and insufficient support. Worse physical health and most substantial limitations in daily life were reported among women with the most progressive lipedema. Then Fetzer's report points out numerous negative effects of lipedema on women's everyday lives [13]. These include: wearing compression garments, negative effects of liposuction procedures, pain, limited mobility. All of this affects the lowering of women's self-esteem. They have worse career prospects and opportunities for personal development. The effect of lipedema on occupational functioning has also been underscored by the research conducted by Clarke and colleagues [14]. Their findings indicated that between 51% and 73% of respondents reported limitations in their professional activities and career choices. Furthermore, fewer than two-thirds of participants were employed at the time of the study. These findings suggest that lipedema may exert a considerable influence on vocational functioning, with potentially far-reaching consequences for individuals' psychological well-being.

The treatment plan should not only address the somatic complaints but also provide psychological and, if necessary, psychiatric support.

Strategies such as cognitive behavioural therapy, support groups, education and stress management techniques are important in improving the quality of life of people with lipedema. Positive effects on mental condition were noted after liposuction. Ardnt, Kaster and Klesper described highly significant results regarding a decrease in depressive symptoms [15]. Statistically significant positive effects on quality of life and body image were also found. In addition, 97.9% of the patients interviewed stated that they had experienced a reduction in pain as a result of liposuction. In 95.8%, liposuction boosted an improvement in mobility. These studies indicated that liposuction not only provides physical relief, but also significantly reduces psychological stress and improves quality of life. Therefore, a holistic approach to the patient and simultaneous attention to their mental and physical symptoms during therapy and treatment is important.

Co-occurrence of psychiatric disorders

The relationship between lipedema and emotional disturbance goes well beyond the physical manifestations of the disease and has a profound impact on the mental health and overall quality of life of those affected. Studies have clearly shown that people with lipedema are significantly more likely to develop a range of psychiatric disorders, including depression, anxiety and eating disorders. Cagliyan and colleagues, in their study investigating the co-occurrence of fibromyalgia and lipedema, showed a clear association between the presence of these conditions and symptoms of depressive and anxiety disorders in the women studied [16].

Other problems described in the study by Chachaj and colleagues in the group of women with lipedema were significant behavioural disturbances compared to the control group. The study demonstrated that one of the main factors significantly affecting the functioning of women with lipedema was specifically behavioural disorders, not just emotional symptoms [17].

Depression in patients with lipedema is associated with chronic pain, mobility problems and lack of self-acceptance. The persistent, progressive and purely irreversible nature of the disease, coupled with challenges in obtaining

a proper diagnosis and effective treatment, exacerbates the typically depressive feelings of hopelessness, powerlessness and abandonment [18, 19].

Anxiety disorders, including generalised anxiety disorder, social anxiety and panic attacks, also relatively often complicate this disease entity. Lack of self-acceptance, fear of being judged by others and chronic stress exacerbate or even trigger anxiety disorders. The aim of one study by Al-Wardat and co-workers was to examine difficulties in emotion regulation (ER) in female patients with lipedema compared to healthy subjects. The cross-sectional study compared differences in ER and anxiety between 26 women with lipedema and 26 healthy women of the same age, using the Difficulty in Emotion Regulation Scale (DERS) and the Hamilton Anxiety Scale (HAM-A). Patients with lipedema showed significantly greater difficulty in emotion regulation and higher levels of anxiety compared to those without lipedema. The results indicate that initial difficulties in emotion regulation play a significant role in the development of affective and drug disorders [20].

Another disorder from the spectrum of psychological and psychiatric problems complicating lipedema is eating disorders. The misconception that lipedema is solely the result of lifestyle choices can lead to inappropriate dietary restrictions and subsequent eating disorders. According to Wright and colleagues, lack of appropriate medical support and attempts to self-medicate with restrictive food intake often lead to anorexia, or mixed eating disorders [21].

The occurrence of this type of disorder is often exacerbated by social pressure and stigma associated with the promotion of the 'ideal figure', further reinforcing feelings of guilt, shame and isolation [22].

This significant association between lipedema and the occurrence of psychiatric disorders highlights the importance of integrating psychological and psychiatric care into the treatment plan for patients with lipedema. Early intervention and ongoing psychological support can alleviate emotional symptoms, improve somatic outcomes, influence the patient's motivation towards treatment and thereby improve their quality of life. Both individual psychotherapy, support groups, psychoeducation and pharma-

cotherapy can significantly influence the course and outcome of treatment for people with lipedema [19, 23].

Treatment strategies

Treatment strategies for lipedema focus on symptom management and improving the patient's quality of life. The principal conservative treatments include compression therapy, manual lymphatic drainage (MLD), automatic mechanical drainage using appropriate devices, and physiotherapy exercises. Compression therapy is employed to reduce fluid accumulation and improve lymphatic flow. Manual lymphatic drainage, a special form of massage, is used to move lymphatic fluids from blocked areas into healthy vessels. Physical exercise, particularly swimming and cycling, has been demonstrated to enhance lymphatic drainage and promote greater mobility over time.

The use of medication to treat lipedema is justified when the tendency to swell throughout the day is deemed to be significant, causes pain or impairs mobility. In select cases, diuretics (diuretics) may be beneficial; however, they should never be used long-term. The effect is transient and results in a measurable reduction in body weight due to the expulsion of excess water retained in the tissue.

In the case of complaints such as sensitivity to pressure and touch, drugs used to treat varicose vein disease may be beneficial. The majority of these products are based on plant-derived (phytotherapeutic) ingredients, with their active components derived from horse chestnut, red vine, nostrum, and ruscus [24].

Long-term improvement in lipedema through pharmacological treatment remains unattainable. Therefore, it is essential to acknowledge the limited efficacy of available medications. Non-steroidal anti-inflammatory drugs (NSAIDs) may be used on an ad hoc basis to alleviate pain symptoms. However, clear and standardized treatment guidelines for lipedema are currently lacking [8].

It has been proposed that tricyclic antidepressants, serotonin-norepinephrine reuptake inhibitors (SNRIs), or pregabalin may offer therapeutic benefit in managing lipedema-related symp-

toms, particularly in light of peripheral nerve involvement suggested by some studies. Unfortunately, current literature lacks specific clinical guidelines regarding their use in this context. In cases where conservative management proves insufficient, liposuction may be considered as an adjunctive option. This surgical intervention aims to reduce the pathological accumulation of adipose tissue associated with lipedema, potentially alleviating physical discomfort and improving mobility. It is important for patients to understand that, while liposuction may offer symptomatic relief, it does not target the underlying pathophysiology of the condition. As such, it should be implemented as part of a comprehensive, long-term rehabilitation strategy [25].

In addition to purely physical treatments, it is also important to consider the role of psychological and psychiatric cooperation and care. Psychotherapy, in particular cognitive behavioural therapy (CBT), is one of the most efficacious forms of treatment. Cognitive behavioural therapy can provide strategies for coping with the emotional distress caused by lipedema, improving self-esteem and coping skills with body image and self-acceptance. Furthermore, support groups, psychoeducation, and counselling can provide emotional support and a sense of community for those suffering from the condition.

In the treatment of depression in patients with lipedema, where anxiety disorders are often also present, the use of antidepressants that have been appropriately selected is of great importance. In this context, serotonin-norepinephrine reuptake inhibitors (SNRIs), such as venlafaxine or duloxetine, may offer effective assistance, exhibiting a positive effect on both depressive symptoms and neuropathic pain. SNRIs exert their effects through serotonergic and noradrenaline pathways, which may not only improve mood but also reduce feelings of anxiety and pain.

Bupropion may be considered as an alternative antidepressant, given its minimal association with weight gain and potential benefits for weight management. This consideration is particularly relevant in the treatment of lipedema, where weight control plays a critical role. The selection of antidepressant therapy for individuals with lipedema should take into account both the medication's metabolic profile and its efficacy in

managing pain symptoms. Additionally, pharmacological treatment should be integrated with psychotherapy and, when indicated, other forms of psychological support.

Monitoring the efficacy of the therapy and potential adverse effects is crucial for tailoring the treatment to the individual patient's needs. The involvement of specialists from different disciplines can enhance the likelihood of therapeutic success, improving both the physical and psychological state of patients with lipedema and accompanying depressive or anxiety disorders.

The significance of psychoeducation and support groups in the context of a holistic approach to the problem of lipedema

Psychoeducation and support groups should be regarded as an integral component of a comprehensive strategy for addressing the challenges associated with lipedema. These groups offer a valuable opportunity for patients to gain insight into the condition, share their experiences, and receive emotional and practical support. Such activities are of fundamental importance in empowering patients by educating them about the basics of the condition, providing emotional support and promoting coping strategies to deal with existing stress. Participation in psycho-educational programs can markedly enhance both patient and clinician comprehension of the disease's symptoms, including its pathogenesis, progression, and rationale for treatment options.

In addition, support groups offer a unique space where people with this diagnosis can simply find understanding in shared experiences, thereby reducing the feelings of isolation and stigma that are commonly associated with this diagnosis. These groups, which may be in the form of online or live-led meetings, provide a forum for the exchange of practical advice on symptom management, the discussion of treatment experiences, and the sharing of coping strategies for everyday challenges. The sense of community and belonging that emerges from these interactions can be profoundly therapeutic in itself, offering emotional relief and fostering resilience among members.

In addition to mutual support, these groups should organize meetings with medical professionals to provide knowledge of the latest research, treatment innovations, and self-care techniques. Furthermore, psychoeducation within these groups encompasses aspects of psychological and psychiatric care in coping with the disease. Group leaders can provide guidance on coping with the mental health challenges that often accompany the disease, such as anxiety, depression and body image issues. The activities should include stress management techniques, mindfulness practices, and interventions to improve self-esteem and positive body image.

CONCLUSIONS

Despite its relatively high prevalence and significant impact on the lives of those affected, lipedema remains a relatively marginalized and underestimated condition. This chronic disorder presents patients with a multitude of challenges, including physical discomfort and mobility issues, in addition to a profound psychosocial impact. The process of obtaining a definitive diagnosis can be challenging, often due to the condition being misunderstood, which can further exacerbate feelings of isolation and social misunderstanding.

It is imperative to enhance awareness and comprehension of this disease among medical professionals and the general public. It is of the utmost importance to educate healthcare professionals about the symptoms of lipedema, as this can facilitate early identification and appropriate intervention, which can significantly improve patient outcomes and quality of life.

The intricate interplay between physical symptoms and psychological well-being underscores the necessity for a comprehensive, interdisciplinary approach to managing disease symptoms. Somatic treatments, such as compression therapy and surgical options, provide relief from physical symptoms. However, they must be complemented by psychological support and, if necessary, individually tailored psychiatric treatment targeting individual psychiatric symptoms.

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