

LIPOEDEMA

Overview and Cause

The term lipoedema was first used by Allen and Hines (1940) to describe a symmetrical "swelling" of both legs, extending from the hips to the ankles, caused by deposits of subcutaneous adipose (fatty) tissue. The underlying cause of these fat deposits remains unknown. While lipoedema is **not** a disorder of the lymphatic system, it is frequently confused with bilateral leg lymphoedema. It occurs almost exclusively in women and may have associated family history (20% of cases) and is often accompanied by hormonal disorders as well. It is said to affect up to 10% of European women.

The fat deposits in the lower legs extend to the ankles often with flaps of tissue hanging over the foot, but the feet are **not** affected. Occasionally lipoedema is found in the arms. Typically there are fatty bulges in the medial upper thigh and the medial lower thigh, just above the knee. Clinically the affected individuals complain of increasing swelling as the day progresses which is relieved by prolonged elevation of the legs overnight. Pain and tenderness is also a feature of this condition. It is a progressive condition.

Stages of Lipoedema

In Stage 1, the skin is still soft and regular, but nodular changes can be felt upon palpation. There are no colour changes in the skin and the subcutaneous tissues have a spongy feel, lift a soft rubber doll.

In Stage II, the subcutaneous tissue becomes more nodular and tough. Large fatty lobules begin to form on the medial upper and lower thigh and medial and lateral ankles just above the ankle bone. The individual may report tenderness to touch over the shin area. Skin colour changes occur in the lower leg, indicating secondary lymphoedema which often occurs in later stage lipoedema.

Cellular Changes of Lipoedema

There are many cellular and tissue changes that occur in lipoedema. There is a decrease in the elasticity of the skin and underlying tissue. The basement membrane of blood vessels is thickened and there are disturbances in blood movement. There is decreased vascular resistance, increased skin perfusion and increased capillary filtration. These vascular changes combined with the decreased efficiency of the calf muscle pump, result in both the dependent pitting oedema (soft swelling) seen in Stage 1, as well as the secondary lymphoedema that often complicates lipoedema in its later stages.

Medical Management

Diagnosis - The diagnosis of lipoedema is difficult if the clinician is unfamiliar with this condition. Often these people are told that they are "fat" and should just lose some weight to resolve the problem. For reasons still unknown, the fatty tissue accompanying this condition cannot be significantly decreased by diet. It is not uncommon for a diagnosis of primary lymphoedema to be made. This results in frustration for the person who then seeks out lymphoedema therapy with poor results. Rare cases of male lipoedema are associated with alcoholism.

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There are several significant clinical differences between lipoedema and bilateral primary lymphoedema. The feet are not involved in lipoedema while in lymphoedema the feet are oedematous with a positive Stemmer's sign. (pinch test at the base of the second toe) Stemmer's sign is negative in lipoedema. The "swelling" in lipoedema is symmetrical, while in primary lymphoedema, usually one limb is more involved than the other. The subcutaneous tissues feel rubbery in lipoedema but fibrotic for lymphoedema.

The time of onset of the "swelling" in lipoedema is usually around puberty and many of these cases have accompanying diagnoses of hormonal disturbance (thyroid, pituitary or ovarian). This is usually not the case with primary lymphoedema.

A lymphoscintigram may be helpful to differentiate between lymphoedema and lipoedema, however, there can be conflicting results as lymphoedema often occurs to some degree in the later stages of lipoedema, probably due to impairment of lymph flow caused by the pressure of fatty tissue.

Treatment and Prognosis

There is no effective medical treatment for lipoedema and the prognosis is guarded, however, significant functional improvement is possible with good program compliance and therapy intervention. Medical management involves treating the hormonal disturbance if present and providing nutritional guidance to avoid additional weight gain. Many of these individuals have endured years of ridicule because of their physical appearance and become recluses in their homes, further limiting their activity level. As lipoedema progresses and the hypersensitivity increases, they feel less inclined to walk or exercise because of the pain. They inevitably gain more weight due to the inactivity and depression often finding food their only comfort.

The primary goal of therapy intervention in the person with lipoedema is symptom relief and realistic improvement of trunk and lower extremity function. Application of the combined lymphoedema treatments has shown some success in relieving the pain and hypersensitivity in the lower legs and improving general mobility. Usually a lower level of compression is needed to support the lipoedematous limb, compared to the lymphoedematous limb of the same size and girth. This guideline applies to the compression garments as well. These individuals often require more padding under the compression bandages, particularly in the shin area. They do not tolerate the heavier, denser compression fabrics and usually require a lower grade compression garment than someone with uncomplicated lymphoedema. The therapist must remember, however, that later stage lipoedema is often accompanied by lymphoedema as well and the treatment and management must take that factor into consideration when recommending exercise and garments. A maximum of only a 10% reduction in limb size is expected.

The main goals of intervention are to decrease pain and hypersensitivity, to decrease the lymphoedematous component of the disease and to assist the individual in maintaining and/or reducing adipose tissue through exercise and nutritional guidance. The compression garments can help to decrease the adipose tissue with exercise and weight loss. The most difficult task is fitting the compression garments; often they must be custom made due to the large size of the individual and are often uncomfortable at the waist, particularly when sitting. Making the radical change in daily activity level is most challenging for these individuals. Providing continued support and encouragement is important.

Networking is helpful. Nothing can compare to the encouragement and hope that an individual with lipoedema can derive from seeing and talking with someone else living with the same problem and hearing how others cope on a day to day basis.

Special Considerations for Compression Therapy in Lipoedema

The compression bandage should first be applied with minimal pressure. In the course of the treatment, this pressure sensitivity decreases, so that the compression bandage can be applied with increased intensity as needed. Recent research has shown that lipoedema patients can tolerate higher pressures.

Special Considerations for Functional Rehabilitation

Lipoedema is often combined with secondary changes to the joints (hips and or knee arthritis, deformity of the foot arches) which must be appropriately treated.

Because of pathological changes, fat metabolism is impaired in Lipoedema. Regardless of this fact, it remains worthwhile to include fat burning endurance exercises and strength training in lipoedema therapy. These exercise activities reduce the sensitivity of the tissue to pressure, and support reconditioning.

Two to three months of exercising are required to bring the body to a basically fit condition. In order to succeed, the patient should have a minimum of three exercise sessions per week.

The ergometer (stationary bike) and walking are the best for lipoedema patients. Swimming or aquatic exercise (aquatic jogging) are suitable additional activities. Strength endurance training must always be included utilizing weight resistance machines. At home strength endurance training is also possible with a Thera-band.

Ref. Allen EV, Hines EA (1940) Lipoedema of the Legs. A syndrome characterized by fat legs and oedema.
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