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ELDER CARE

A Resource for Interprofessional Providers

Lower Extremity Edema in Older Adults

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Lower extremity edema is the accumulation of fluid in the lower legs, which may or may not include the feet (pedal edema). It is typically caused by one of three mechanisms.

The first is venous edema caused by increased capillary permeability, resulting in a fluid shift from the veins to the interstitial space. The fluid shift can be due to venous disease or systemic processes that cause the fluid shift.

The second is lymphatic edema caused by obstruction or dysfunction of lymphatic outflow from the legs, resulting in accumulation of protein-rich interstitial fluid.

The third is from lipoedema, which is an accumulation of fluid in fat cells. These three mechanisms can operate independently or in combination.

Regardless of the mechanism, chronic lower extremity edema is detrimental to health and quality of life. Older adults with lower extremity edema often experience alterations in cosmetic appearance, gait disturbances with decreased mobility and fall risks, impaired sensation in the feet, cutaneous ulcers in the lower leg, and occasionally, chronic pain. These can all lead to worse health outcomes.

Evaluation

Distinguishing between unilateral and bilateral disease is important when evaluating patients with lower extremity edema. Unilateral edema suggest an obstructive process, such as venous thrombosis, cancer, or infection.

Bilateral edema, which is more common in older adults, is often multifactorial and may reflect a systemic process. Treating the underlying systemic cause can often lessen the edema. Table 1 lists common causes of bilateral lower extremity edema.

In addition to seeking evidence for these conditions, clinicians should be aware of certain clues in the patient's presentation. In particular, if unilateral edema has an acute-onset (present for less than 72 hours), venous thrombosis and infection should be considered as possible causes and steps should be taken to exclude those diagnoses. On the other hand, when edema is long-standing and accompanied by a dull, aching pain, chronic venous insufficiency is a more likely diagnosis.

A localized, symmetrical increase in subcutaneous adipose tissue in the legs that is in marked disproportion to deposition of adipose tissue in the trunk, and which is often associated with bruising and tenderness, should raise suspicion for lipoedema. In contrast, lymphedema caused by obstruction is usually painless.

If the cause is not identified with history and physical exam, other tests should be performed. To rule out systemic disease, obtain a complete metabolic panel and blood count, thyroid-stimulating hormone, and urinalysis. An albumin level <2 g/dL will often cause edema and suggests kidney/liver disease or malnutrition as a cause.

Table 1. Common Causes of Non-Acute Bilateral Lower Extremity Edema in Older adults

<u>Venous Edema</u> Venous insufficiency Heart failure Hypothyroidism Medications Calcium channel blockers Non-steroidal anti-inflammatory drugs Steroids Estrogens Thiazolidinediones Diuretics (with long-term use)	Renal disease with fluid retention Obesity Pulmonary hypertension (often associated with sleep apnea) Anemia Hypoalbuminemia due to liver disease, protein-losing enteropathy, or proteinuria <u>Lymphedema</u> Obstruction due to tumor or obesity, trauma, or other cause of lymphatic destruction <u>Lipoedema</u> Cause is unknown. More common in women.
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TIPS FOR DEALING WITH LOWER EXTREMITY EDEMA IN OLDER ADULTS

- Check to see if the patient takes a medication that causes edema. Reduce the dose or stop the medication if possible.
- Consider lipoedema in patients with these clinical features: (1) cuffing sign (feet typically have normal appearance in early stages), (2) pressure sensitivity in the below-knee medial fat pads, particularly with orthostasis, and (3) Stemmer's sign (the skin at the base of the second toe cannot be pinched/lifted without difficulty).
- Diuretics for treatment of lower-extremity edema are most appropriate for short-term use. Long-term, it is more important to address and reverse the process causing the edema.
- Only prescribe compression stockings if the patient has an ankle-brachial index ≥ 0.80 .

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If heart failure or pulmonary hypertension with sleep apnea is suspected, an echocardiogram should be obtained. If lipoedema is suspected, check indicators of obesity (e.g., weight, body-mass index ratio, waist circumference, etc.); if obesity is not present, localized fat deposits in the legs are highly suggestive of lipoedema.

Treatment

Treatment depends largely on the cause of the edema. Treatments for some conditions may be curative (e.g., discontinuing an edema-causing medication). Other curative therapy includes liposuction, which can be used to reduce the amount of pathological subcutaneous tissue in affected limbs of patients with lipoedema. More commonly, however, treatment is aimed at reducing swelling by improving lymphatic drainage and decreasing capillary leakage. This is typically accomplished by non-pharmacologic treatments (Table 2).

If external compression stockings are used, they should be graded (i.e., tighter distally than proximally). If patients

struggle putting on stockings, suggest stockings that come with a donning device. Use of non-graded hosiery (e.g., TED stockings) typically do not result in significant improvement in edema, but they are appropriate for patients with a history of deep venous thrombosis.

Compression stockings of any type should not be used to treat edema in patients who have uncontrolled heart failure, severe or oozing dermatitis, advanced peripheral neuropathy, or peripheral arterial disease (ankle-brachial index is <0.80). The presence of pedal pulses is not adequate to exclude peripheral arterial disease in patients being considered for treatment with compression stockings.

Lymphatic massage, also called manual lymphatic drainage, is an integrative medicine technique in which sites in the lymph system are stimulated to drain with the hands, either by a therapist or by patients themselves. It was developed for treating lymphedema but may have benefit in lipoedema, particularly when combined with vibrotherapy (in which patients stand on a vibrating platform). It is not generally effective for venous edema.

Preventive measures should be used to reduce complications of chronic edema. In particular, patients and caregivers should be taught how to lower the risk of cellulitis/erysipelas through good skin hygiene and how to recognize the early signs of infection.

Modification of sodium or protein intake is sometimes recommended. Little evidence supports its benefit, however, unless the modification is part of the treatment regimen for an edema-causing systemic condition like heart failure.

Pharmacologic treatments also have a role. However, the first step in drug treatment is to decrease or stop current medications that may be contributing to edema, if possible (Table 1). If diuretics are administered as a treatment for lower extremity edema, they are most appropriate for short-term use to aid in initial excretion of excess fluid. While longer-term administration of diuretics may also be appropriate if their use is aimed at treating the underlying cause of edema (e.g., heart failure), they should not be the mainstay of long-term therapy for edema. Furthermore, patients receiving diuretic therapy should be monitored for dehydration and electrolyte disturbances, both of which are potential risks when diuretics are taken by older adults.

Treatment	Mechanism of action
Exercise	Muscle activity stimulates contractility of lymph vessels and encourages proximal/cranial movement of lymph
Elevation	Decreases venous filtration by lowering venous pressure
Graded external compression (hosiery)	Opposes capillary filtration, keeping fluid in venous system
Lymphatic massage/manual lymphatic drainage (occasionally with addition of vibrotherapy)	Stimulates lymph drainage to flow proximally
Lipoaspiration or liposuction +/- plastic surgery	Debulking to permanently reduce the amount of pathological subcutaneous tissue in lipoedema
Psychotherapy	To address psychosocial/appearance-related distress and associated mental health conditions such as depression and anxiety

References and Resources

- Rave E, Partsch H, Hafner J, et al. Indications for medical compression stockings in venous and lymphatic disorders: An evidence-based consensus statement. *Phlebology*. 2018; 33(3):1630184.
- Ratchford EV, Evans NS. Approach to lower extremity edema. *Curr Treat Options Cardiovasc Med*. 2017; 9(3):16.
- Reoch-Schupke S, et al. S1 guidelines Lipedema. *J Dtsch Dermatol Ges*. 2017; 5(7):758-767.

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