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OEDEMA - A guide for patient's

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What is it?

Oedema (edema) is a build-up of excess fluid in the body tissues. If the fluid is in the tissue under the skin it leads to a puffy, shiny appearance and a doughy feel. Most commonly, oedema is seen in the ankles or legs, as the fluid is gravity-dependent.

Usually, applying finger pressure leaves an indentation in the skin, hence the term "pitting oedema", but oedema can also be "non-pitting", when it is caused by lymphatic obstruction.

Oedema is not a disease in itself. Rather, it is a clinical sign which may be associated with an underlying medical problem.

What are the mechanisms that cause oedema?

General Principles:

Oedema occurs when the body's normal balance of fluid intake and output is disturbed. Normally, one takes in fluid by drinking and eating and gets rid of it in the form of sweat, urine, faeces and by breathing. Within the body, fluid is transported by blood vessels (arteries and veins) and also by the lymphatic system. The fluid in the bloodstream contains not only blood cells, but also oxygen and other nutrients for the body's cells. This fluid can move through the walls of the blood vessels into body tissues to provide nutrition and water for cells and then move back into the blood vessels once depleted of nutrients.

The 2 possible mechanisms that can cause an abnormal fluid build-up in the tissues are:

- 1) An increase in the pressure within the blood vessels (e.g.. caused by an increased amount of fluid) causing fluid to shift out of the vessels into the surrounding tissues, or
- 2) A decrease in the amount of proteins(e.g. albumen) in the bloodstream causing water to shift out of the vessels to make the surrounding tissues as dilute as the blood stream.

Causes of oedema

- 1) Heart Failure

The term 'heart failure' is used when the heart is unable to pump blood effectively around the body. If the right side of the heart is weak, blood tends to pool in the veins and this causes fluid shifts from the venous system to the tissues. Various hormones are also released when someone is in heart failure and this can increase oedema by causing salt and water retention.

Typically, someone with congestive heart failure will have ankle swelling, but the oedema may be more apparent in their sacrum (lower back) if they have been lying down .

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2) Kidney disease

Nephrotic syndrome is a disease of the kidneys in which large amounts of protein are lost in the urine. This results in a generalised oedema, caused both by fluid shifts into the tissues and by the activation of hormones which increase salt and water retention. Puffy eyes might be one of the first noticeable symptoms in someone with nephrotic syndrome.

Renal (kidney) failure can also cause oedema by causing salt and water retention.

3) Other causes of decreased protein

Several other disease states can lead to a very low level of protein in the blood, resulting in oedema. Examples are:

Chronic liver disease - caused by alcohol, or hepatitis.

Malnutrition or starvation

Certain types of gastroenteritis

4) Thyroid disease

An under active and an overactive thyroid gland can cause oedema, as thyroid hormone plays an important role in many steps of metabolism. The oedema in thyroid disease can be non-pitting.

5) Venous insufficiency, or weakened veins

Long-standing problems with leg veins (e.g. varicose veins or veins with damaged valves) can cause a pooling of blood in the legs and result in swelling/ oedema.

6) Lymphoedema

The lymphatic vessels drain lymph from the peripheries to lymph nodes, forming a component of the immune system. Lymphoedema is caused by an obstruction of the lymphatic vessels. Obstruction can be caused by infection, scar tissue (e.g. from surgery or radiotherapy), parasites, tumours or hereditary conditions.

7) Medications

Certain medications can have a side effect of ankle swelling. These include commonly used drugs such as blood pressure medications (in particular the class of drugs known as 'calcium channel blockers'), steroids and antidepressants.

8) Ordinary or 'physiological' causes of oedema

Oedema can occur in a fit and healthy person under certain conditions; it will usually resolve without treatment.

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Heat - hot weather causes the peripheral blood vessels to expand, resulting in fluid shifts from the blood vessels to surrounding tissues.

Immobility - lack of use of one's leg muscles, such as on a long plane flight, leads to blood pooling in the veins and can result in oedema.

Pregnancy and the menstrual cycle - changes in hormone levels can affect the rates at which fluid leaves and enters tissues.

What if only one leg is swollen?

If only 1 leg is affected by oedema, the cause is likely to be a localised problem. Commoner causes of swelling of 1 leg include:

Blood clots/ deep vein thromboses: A clot in one of the deep leg veins can cause swelling of that leg. This may be painful and possibly accompanied by a change in skin colour.

Joint inflammation: Arthritis or gout can cause swelling of joints and the surrounding tissues.

Lymphoedema: see above

Treatment of oedema

The treatment depends on the underlying cause of the oedema. If it is one of the ordinary, or physiological causes, there are a few general measures to take to improve the swelling. Some of these measures may even help people with oedema caused by an underlying medical problem. They include:

- keeping legs elevated as much as possible
- cutting down on salt intake
- exercise
- weight loss
- wearing supportive stockings

When to see a doctor

You should see a doctor if you have any persistent leg swelling. This is particularly urgent if the leg swelling is accompanied by any other symptoms such as shortness of breath or pain.