LIPEDEMA AND "PHYSIOLOGIC" EDEMA

Edgar A. Hines, Jr., M.D., Division of Medicine

Lipedema is characterized by fat legs and orthostatic edema. Characteristically, the buttocks and other parts of the lower extremities are symmetrically enlarged owing to accumulation of excess fat and fluid. The condition affects women almost exclusively and, in most instances, represents an exaggeration of the female form. The cause of the unique deposition of fat is unknown.

The enlargement usually develops gradually and progresses slowly. It may or may not be associated with generalized obesity or an unusual increase in body weight. In most instances the upper part of the body is normal in shape and contour. The skin and subcutaneous tissues of the involved parts are soft and pliable, which would distinguish the condition from lymphedema. The fat is often tender and hypertensive.

The basic difficulty in lipedema is the subcutaneous deposition of fat. The edema becomes more prominent after the increased fat has been present for several years. Occasionally the edema is so marked as to cause the patient to fear that she has dropsy, with its connotation of a lingering fatal illness from Bright's disease or heart disease. More commonly the patient is psychologically and emotionally disturbed because of the unsightly appearance of the legs.

The edema is related to the effects of gravity on the circulation in a tissue which constitutes a poor supporting structure and consequently offers little resistance to the passage of fluid from the blood and lymph vessels into the surrounding tissue spaces. In lipedema there is no excess of fat or fluid in the feet. This is probably attributable to pressure on the tissues from tightly fitting shoes. One patient who had worn old-fashioned high-topped shoes for many years, had no excess fat or any edema in the regions covered by the shoes.

The diagnosis of lipedema can be made easily from observation of (1) the characteristic symmetrical distribution of fat in the lower half of the body, excepting the feet, and (2) the edema of varying degrees in the more dependent portions of the affected members.

I am glad that the word "physiologic," in the title assigned to me, is within quotation marks because this should allow me some "poetic license" in its interpretation. I need this as I am not sure I understand the meaning of the term "physiologic edema." Two types of edema which might be considered normal or physiologic are gravitational

edema and premenstrual edema. The effect of gravity on the human body is rarely given adequate consideration. The circulation of the human being is built to operate most efficiently when a person is supine, or prone, or walking on all fours. It was greatly compromised when man decided to spend much of his time standing on his hind legs. As you well know, gravity tends to make everything move toward the earth. When man is upright, fluid tends to accumulate more in the lower parts of the body, usually the feet and legs, than the upper parts of the body. This phenomenon is controlled by the same hydrostatic laws that prevent filling of the upper part of an undivided bucket until the lower part has been filled.

Probably, as soon as the legs are dependent even for a few minutes, fluid begins to accumulate and to produce imperceptible edema. When the legs are dependent for a longer time, their circumference will measurably increase, depending on the elasticity and tone of the local tissues, the efficiency of the venous and lymphatic circulation and the duration of the dependency. I have measured the circumference of my left lower leg, at the same place, at 8 a.m. and at 5 p.m. for the past ten consecutive days and have found an increase in circumference at 5 p.m. ranging from 0.5 cm. to 1.2 cm. and a mean daily increase of 0.7 cm. As far as I know, my peripheral circulation is normal.

When the lower extremities are dependent and relatively inactive for long periods, as might occur from riding for several nights and days on a bus, or on one of the new streamlined coach trains of a railroad, or in an automobile, the persistent hydrostatic pressure may completely overcome the somewhat inefficient normal mechanism for moving the fluid out of dependent extremities. This causes a considerable, and even an alarming, degree of edema. If the affected person has not worn his shoes during his trip, at his destination he may have to hold the shoes in his hand because of his inability to replace them on his edematous feet. Several patients who have come under my care after a long cross-country ride, have been in this predicament and have been convinced that they had become dropsical on the way.

Sometimes a change in occupation or of daily routine to one in which the legs are more continuously dependent than before may cause exaggeration of this so-called physiologic edema. The patient may be greatly concerned as may be, also, the physician if he does not recognize the cause of the edema.

Premenstrual edema is an accumulation of tissue fluid which results from a combination of hydrostatic factors and retention of sodium in the tissues. The retention of sodium is related to hormonal changes possibly operating through the pituitary-adrenal mechanism. About this form of edema a great deal is still unknown.

All of these forms of edema may be exaggerated in hot weather, probably because of vasodilation and lessened tone of the tissues, with consequent loss of fluid through the walls of the blood and lymph vessels.

HORMONAL EDEMA

Randall G. Sprague, M.D., Division of Medicine

Hormones play an important part in the regulation of the body's content of water and electrolytes. It is therefore not surprising that edema which is attributable to the activity or lack of activity of certain hormones should occur under a variety of clinical circumstances. A brief discussion of some of these follows.

MYXEDEMA

Myxedema is due to a deficiency of the hormone of the thyroid gland. This type of edema is generalized in distribution, involving virtually all tissues of the body. Patients with myxedema may have both pitting and nonpitting edema. The metabolic studies of Boothby and associates,[1] Byrom[2] and others on the response of myxedematous patients to thyroid hormone indicate that the edema fluid has a high content of protein and an electrolyte composition which suggests that it is chiefly extracellular. When thyroid hormone is administered to athyrotic (myxedematous) patients the edema fluid leaves the tissues and is excreted. In the process large amounts of protein and electrolytes are mobilized, the blood urea may increase temporarily and urinary excretion of nitrogen and electrolytes is augmented for a time.

EDEMA DUE TO ACTIVITY OF STEROID HORMONES

Exogenous Steroid Hormones.—Edema may result from therapeutic administration of steroid hormones which are capable of causing retention of sodium chloride and water. Outstanding among these is desoxycorticosterone. The effects of this hormone are most strikingly demonstrated in patients who have Addison's disease, in whom the steroid causes pronounced retention of sodium chloride and water and loss of potassium.[3] If excessive amounts are administered, the patient may become edematous, hypertension may be induced and the heart may enlarge and fail. The concentrations of sodium and chloride in

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2. Byrom, F. B.: The Nature of Myxoedema. Clin. Sc. 1:273-285 (Nov.) 1934.
3. Thorn, G. W., Howard, R. P. and Emerson, Kendall, Jr.: Treatment of Addison's Disease With Desoxy-corticosterone Acetate, a Synthetic Adrenal Cortical Hormone (Preliminary Report). J. Clin. Investigation 18:449-467 (July) 1939.