

LIPEDEMA OF THE LEGS: A SYNDROME CHARACTERIZED BY FAT LEGS AND EDEMA *

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THERE is little in the literature on abnormal localized depositions of body fat to clarify the syndrome of lipedema of the legs which two of us (E. V. A. and E. A. H.) described in 1940.¹ Confusion and uncertainty, both manifested in an extensive article by Lyon² in 1910, are demonstrated by the use of such terms as "oedeme hystérique" and "pseudo-edema." We are not concerned in this presentation with the type of lipodystrophy (lipodystrophia progressiva) which is generally felt to be characterized by loss of subcutaneous fat of the upper half of the body and increased deposition of fat in the buttocks and lower extremities.³⁻⁶ As a digression, it is worthy of comment that steatopygia (fat buttocks) is considered a manifestation of beauty among the Hottentots.⁷ The syndrome which we shall consider in this presentation is definitely not considered a manifestation of beauty in modern "civilized" living. Indeed, it is quite probable that much or all of the distress (both emotional and physical) associated with lipedema would not occur were "fat legs" considered a manifestation of beauty.

DESCRIPTION OF THE SYNDROME "LIPEDEMA"

The term "lipedema" is one which has been coined by two of us (E. V. A. and E. A. H.) to describe large legs due to the subcutaneous deposition of fat in the buttocks and lower extremities and the accumulation of fluid in the legs (figure 1). Characteristically, there is symmetrical bilateral enlargement of the buttocks and lower extremities which begins almost imperceptibly and progresses gradually. Progressive enlargement of the limbs is ordinarily associated with gain of weight, but evidence of obesity of the trunk, upper extremities, face and neck may be entirely absent; in some instances, there is generalized obesity. The enlargement of the limbs is accentuated by orthostatic activity, particularly in warm weather, and although rest in bed may cause some decrease in size of the limbs, owing to removal of fluid, even prolonged rest in bed will not cause the limbs to become normal in size. Episodes of inflammation, such as are commonly observed in lymphedema, are uniformly absent. The characteristics that distinguish lipedema from lymphedema are given in table 1.

The examination ordinarily discloses no abnormalities except those referable to the lower extremities. The legs and buttocks are symmetrically

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FIG. 1. Lipedema of the lower extremities of a woman aged 48 years. a. Anterior view. b. Posterior view.

enlarged owing to the subcutaneous deposition of fat. The feet are ordinarily normal in size and configuration (figure 2). There is moderate to great sensitiveness to digital pressure and, particularly at the end of the day, there may be some evidence of edema, although the evidence is not great enough to explain the patient's statement relative to the degree of swelling which has occurred as a result of orthostatic activity. The skin and subcutaneous fat are soft and pliable. There may be generalized obesity, but in most instances the upper parts of the body are "normal" in size and contour.

Patients with lipedema complain of enlargement of the limbs, aching distress in them, particularly during activity, and rather marked tenderness

TABLE I
Differential Diagnosis

Characteristics	Lipedema	Lymphedema
Sex	Women (almost exclusively)	Men and women
Obesity	Present	Present or absent
Region involved	Always both limbs	Usually one limb
Symmetry	Always	Very seldom
Pain on pressure	Usually present	Usually absent
Progression	All parts of limb are involved simultaneously	From distal portion of limb, proximally
History of episodes of acute cellulitis	Absent	Occasionally present
Nature of swelling	Usually soft	Usually firm
Pitting edema	Usually minimal	Usually marked
Effect of elevation	Persistent enlargement	Reduction to normal size in early stages
Family history of large legs	Frequently obtained	Almost always not obtained

of the legs; the last can be easily demonstrated by digital pressure. The emotional reaction of patients to this syndrome varies from curiosity relative to its significance to marked evidence of anxiety and tension. In its most florid form there are exhaustion, insomnia, nervousness, tenseness, melancholia, anxiety and feelings of frustration. Patients are ordinarily ashamed of their legs or feel that their large legs have "ruined my life." These feelings and symptoms are understandable reactions to a situation which is in conflict with the great premium ordinarily attributed to comely

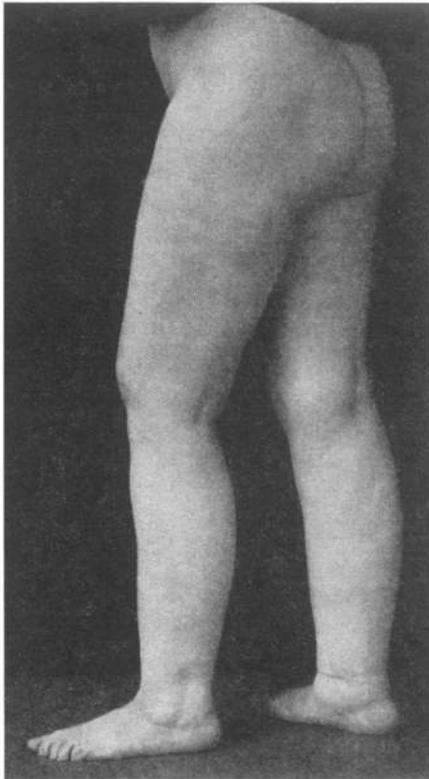


FIG. 2. Mild lipedema of the lower extremities of a woman aged 46 years. There is no lipedema of the feet where pressure has been maintained by shoes.

legs. Patients with lipedema are ordinarily very sensitive about the appearance of their legs; they wear long skirts, avoid appearance in swimming suits and stand behind chairs at parties. They are likely to be "mirror peepers," searching repeatedly in mirrors for evidence that the appearance of their legs is not actually as bad as it seems to be. Quite characteristically, they examine visually the legs of other women, hoping, it seems, to be comforted by finding someone with legs as homely as theirs.

The basic difficulty in lipedema is the subcutaneous deposition of fat,

the cause for which remains obscure. The situation differs from ordinary obesity both in the distribution of fat and in repeated observation by patients that a low caloric intake causes diminution of subcutaneous fat in the upper part of the body but has little influence on the lower extremities. We have not actually confirmed this opinion by direct observation. Because fat is a poor supporting structure, lacking firmness, it offers little resistance to the passage of fluid from the blood vessels into the tissue spaces; hence, the large limbs become even larger when patients are active on their feet.

It is interesting to speculate on the reasons why these patients usually have no excess accumulation of fat or of edema in the feet. This is due most likely to the continued external pressure on the tissues from tightly fitting shoes. In one patient who had worn old-fashioned high shoes for many years, the excess fat accumulation and the edema were not present beneath the areas covered by the shoes.

The treatment of lipedema is usually unsatisfactory. In cases of generalized obesity, sharp reduction of weight may help. In cases of obesity affecting only the region below the waist, reduction of weight may cause but little reduction of the localized obesity. The restriction of fluids and the use of diuretics such as potassium nitrate are usually without benefit. Heat and gentle massage may relieve the distress. If activity on the feet causes much accentuation of swelling, elastic stockings may be tried, but the discomfort caused by them frequently exceeds the benefit realized from their use. Reassurance that the condition is not hazardous to health or to life is important. Particularly is it important to inform the patient that "Bright's disease" and heart disease are absent. If the assumption is correct that lipedema of the feet is prevented by the pressure from shoes, the early use of adequate elastic supports on the legs might prevent the development of marked enlargement of the legs. A sympathetic discussion of the nature of the condition with the patient and an explanation of the physiologic basis are usually helpful. A kindly presentation of the probability that the patient may need to accept the situation, and encouragement of the patient to readjust her life and reactions to an unavoidable situation and to live normally, may give her courage to do so. More formal psychiatric care may be necessary. In some instances, plastic surgical procedures may be of benefit.

REPORT OF CASES

This is a study of 119 cases of lipedema in patients examined at the Mayo Clinic from 1937 through 1946. Each patient was examined by one of the consultants in the section on peripheral vascular diseases of the clinic. The same diagnostic criteria were satisfied in each case. The following features of the clinical syndrome were evaluated:

Family History and Nationality. Nineteen of the 119 patients (16 per cent) gave a history of similar "large legs" in female members of their family. The one man in the series presented such a history. Because of the rather

strong family history, and because it was felt that lipedema might represent a peculiar type of body build common to some race (as steatopygia is common among Bushfolk and Hottentots), the nationality, race or place of birth of each patient was noted. The distribution, which roughly corresponds to the cross section of all patients seen at the clinic, is as follows: American, 55; British Isles, 16; Jewish, 16; North Europe, 15; Scandinavia, 7; Canadian, 4; East Europe, 3; South Europe, 2; Negro, 1.

Sex. Only one of the 119 patients who had lipedema was a man. He was 36 years of age and weighed 233 pounds (about 106 kg.). He had noted bilateral swelling of both lower extremities for one year prior to

TABLE II
Lipedema Among 119 Patients

Age at which increase in size of legs was first noted, years*	Patients
Childhood (to 10 years)	8
11 to 20	16
21 to 30	19
31 to 40	23
41 to 50	26
51 to 60	12
61 to 70	6
71 to 80	1
Unknown	8
Weight, pound†	Patients
101 to 120	14
121 to 140	31
141 to 160	35
161 to 180	15
181 to 200	10
201 to 220	6
221 to 240	5
More than 240	3

* Youngest patient 8 years; oldest 71 years. One patient stated onset "in infancy," another "as a girl," and several stated they had "always" had large legs.

† Lowest weight 103 pounds; highest 275 pounds.

registration. He stated that bilateral ligation of the saphenous veins and injection therapy for varicose veins had been performed. When he was seen at the clinic, obesity of the legs and buttocks was prominent. Minimal varicosities were present. There was no pitting edema. The patient stated that female members of his family had similar-appearing "fat legs."

Age of Onset. The age of onset of the increase in size of the legs was determined from the history (table 2). In most instances a definite age of onset was not noted on the history but was calculated from the patient's statement as to the duration of the enlargement, which in many instances was at best a rough approximation. A study of the table indicates no greater frequency of onset during the decades embracing the menarche or menopause than in other decades.

Pain. Forty-eight of the patients (40 per cent) complained of pain in the lower extremities. It was commonly described as an ache which was constant or which occurred only while the patients were on their feet for substantial periods of time. The distress involved the legs below the knees and, occasionally, the feet. Tenderness was common.

Obesity and Body Build. Fourteen patients weighed less than 120 pounds (about 54 kg.), and two patients weighed more than 270 pounds (about 122 kg.). Table 2 shows the distribution of the 119 patients according to weight, and demonstrates that overweight may or may not be present. Specific mention of prominent malleolar fat pads was made in 17 instances. Occasional mention was made that the large legs had been first noted with the onset of generalized obesity. Frequent mention was made that moderate reduction of weight had had no effect on the apparent size of the hips or extremities.

Fifty consecutive patients were studied in an attempt to get an idea of the general body build by correlating the height of the individual with her weight. The mean height in this study was 63 inches (about 160 cm.), and the mean weight was 151 pounds (about 68 kg.). This would suggest that this group was of the sthenic type of body build.

Presence of Pitting Edema. Twenty-eight of the 119 patients (24 per cent) had minimal to mild pitting edema. Eleven of the patients aggravated, only during warm summer months.

volunteered the information that the swelling of their legs was present, or

Presence of Varicose Veins. Forty-two (35 per cent) of the patients had varicose veins. In almost all instances these varicosities were minimal. Only three patients presented ulcers of chronic venous insufficiency. Two patients had had previous injection treatment for varicose veins. Incompetent varicose veins in the greater or lesser saphenous systems were noted in 11 patients (9 per cent). In nine of these 11 patients the incompetency was designated as being in the greater saphenous vein.

History of Thrombophlebitis. Twelve of the patients (10 per cent) related a history of previous thrombophlebitis and six (5 per cent) presented areas of chronic indurated cellulitis. The indurated cellulitis was considered a complication of the associated chronic venous insufficiency and not of the lipedema.

Basal Metabolic Rate. Basal metabolic determinations were made in 30 of the 119 patients. In 27 of these 30 instances, the basal metabolic rate was less than 0 per cent, that is, between minus 1 and minus 22 per cent. None of these patients had clinical evidence of myxedema. In only three instances was the basal metabolic rate elevated. The basal metabolic rate of one patient who had exophthalmic goiter was plus 40 per cent. Another patient had an adenomatous goiter with hyperthyroidism; the basal metabolic rate was plus 20 per cent. The third patient had a basal rate of plus 16 per cent without clinical evidence of hyperthyroidism.

Accuracy of Diagnosis. Thirty-seven of the 119 patients were seen originally by consultants particularly skilled in peripheral circulatory disturbances. In 17 of the remaining 82 cases the diagnosis was correctly made by consultants in other diagnostic sections of the clinic. The tentative diagnoses that had been noted prior to examination by one of the consultants in the peripheral vascular section were as follows in 65 instances: lymphedema, 19; venous insufficiency with obesity, 11; lymphedema praecox, five; lymphedema or lipedema, five; "swollen" legs, five; lipodystrophy, four; venous insufficiency, four; obesity, three; edema, three; Milroy's disease, two; no diagnosis, two; lymphedema with adiposity, one; old leg injury, one.

These diagnoses indicate the frequency with which the syndrome of lipedema is confused with vascular disease affecting the lower extremities, especially lymphedema or venous insufficiency. If one keeps in mind the clinical features of lipedema, such errors in diagnosis should occur less frequently.

Associated Neurosis. Thirty-four of the 119 patients (29 per cent) were concerned about their "large legs" to the extent that actual neurosis had developed. This group typically was either very sensitive about the appearance of their legs, or interpreted the enlargement to be evidence of some grave disease.

SUMMARY

Lipedema of the legs is a syndrome characterized by fat legs and orthostatic edema. A clinical evaluation of 119 patients with lipedema has been presented. The condition is often confused with vascular diseases affecting the lower extremities, especially chronic venous insufficiency and lymphedema.

Of the 119 patients, all but one were women. A similar condition often occurs in other members of the family. The majority of the patients were overweight, a preponderance of the excess fat being in the lower half of the body. In most instances this represented an exaggeration of the normal female configuration.

The age at which an increase in the size of the legs was first noted could not be accurately determined, but there was apparently no greater frequency of onset during the decades of the menarche or menopause than in other decades.

Discomfort in the legs, consisting of diffuse pain, tenderness and aching distress, was a prominent symptom in about one-half of the group.

Chronic indurated cellulitis and stasis lesions did not occur unless there was an associated, coincidental chronic venous insufficiency. The basal metabolic rate was usually less than 0 per cent, but none of the group had clinical evidence of myxedema.

Mild to marked anxiety concerning the appearance of the lower extremities and possible serious significance of the edema was usual. About one-third of the patients presented evidence of neurosis.

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