look at that old thing." (I had used rather an ancient pencil for him to fix his eyes on.) When I said, "Surely, if I wore special clothes and made passes at you like a magician you would think me an awful show-off?" he replied, "Oh, no; that 'ud be something like!"

Occasionally the effect of suggestion under hypnosis is to convince the patient he is better even when there is no change in his condition, and in two cases of involuntary muscle spasms of the type dystrophia musculorum deformans the patients after a few weeks' treatment insisted that they were very much better and that their movements were greatly diminished, although my own impression was that I had not benefited them at all.

Because the types of case most suitable for treatment for hypnosis have not yet been clearly determined, a hypnosis clinic is apt to get referred to it a rather miscellaneous assortment of clinical debris. Often patients are referred because no other treatment has benefited them. Some are referred quite unnecessarily. I was once asked to see a girl with dermatitis artefacta with the idea of hypnotizing her and finding out what she was doing to her skin, and why she was doing it. Before considering hypnosis I said to her: "Tell me; are you putting something on your skin which makes all those sore places?" She replied: "Well, yes; I do it with hydrochloric acid from my brother's laboratory; you see, if my Dad thinks I'm ill he treats me much more nice." The consultant, when I told him the solution, was most impressed until I explained the method of obtaining it. He admitted that it had not occurred to him.

Because one cannot treat more than about eight cases in a morning, and because some patients may require weekly treatments for two to three months, it is possible to take on only a small number of cases.

Ethical questions are important, depending on the individual conscience of the doctor. My personal view is that parlour tricks of hypnosis, such as producing an anaesthetic area and sticking pins through it, are wrong, and also that hypnosis should not be used for anything but the patients' benefit. For example, the patients who were hypnotized at these lectures were asked, when fully conscious, "Are you willing for me to show your case and its treatment to some doctors at a lecture?" Only those with natural willingness were chosen, and though afterwards they were told under hypnosis that they would feel quite contented and unembarrassed to be shown, it would seem unfair to have inflicted unnatural willingness by the use of hypnosis on those who were otherwise diffident about coming. If a doctor is going to use hypnosis he has got to weigh very carefully everything that is suggested, and keep to a particularly strict ethical code in his dealings with his patients.

In conclusion, I have tried to show that although there are quite a number of drawbacks to the use of hypnosis there is evidence which, though not yet complete or conclusive, shows that more could be done with it, more should be known about it, and that more doctors should use it.

Summary

Hypnosis is worthy of more adequate study by medical men. Publicity and misuse by charlatans may have discouraged serious workers.

Hypnosis is defined as a state of exaggerated suggestibility produced by suggestion. The technique of induction is discussed.

Results are described which indicate that hypnosis may have an effect on skin diseases, including warts, excessive sweating, alopecia, and eczema. The eczema-asthma syndrome of childhood and dermatoses worsened by scratching seem specially amenable. It may be helpful, too, in psychological conditions such as hysteria, anxiety states, and obsessional neuroses.

More work is needed before the value and limitations of hypnosis are defined.

PROGRESSIVE LIPODYSTROPHY

BY

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Progressive lipodystrophy is a rare disease characterized by a slowly progressive symmetrical disappearance of subcutaneous fat from the upper half of the body, with a relative or absolute abundance of fat over the lower half.

Simons (1911) published the first detailed account of the disease, and he named it lipodystrophia progressiva. Cases had previously been described by Weir Mitchell (1885), Barraquer (1906), and others, and the condition is sometimes called Barraquer-Simons disease. Zalla (1920) recognized an atypical form of the disease in a post-mortem case of Morgagni (1765)—a woman of 59 who had died from cerebral apoplexy. Ameline and Quercy (1920) were of the opinion that the Pharaoh Amenophis IV showed signs of the disease.

The onset is usually insidious, and an advanced stage of the disease may be reached before the patient or the relatives are aware of any changes having occurred. Typically, the face is the first part of the body to be affected, and its aspect in an advanced case is characteristic: the temples are hollowed, the zygomatic bones prominent, and the cheeks sunken, frequently showing two hollows on each side—an upper small one and a lower and larger one, separated by a ridge corresponding to the zygomaticus major muscle. When the patient smiles numerous wrinkles appear in the cheeks, giving the appearance of premature senility. In addition the eyes may be deep-set through loss of the orbital fat, and the skin may manifest a pallor which is not explained by examination of the blood. Small wonder that the word "Totenkopf" frequently recurs in the literature to describe this cadaveric facies. Spreading downwards at a variable rate, the process affects the neck, shoulders, arms, and trunk, often ending abruptly at or above the level of the iliac crests. Campbell (1913) measured the downward rate of progression of the disease in his case as being one inch (2.5 cm.) a year. The loss of fat leads to undue prominence of the bones, muscles, and subcutaneous veins, giving the arms the appearance of undue strength; the skin can easily be picked up into folds, but its elasticity is normal.

Although the mammary fat may disappear, the glandular tissue is unaffected, giving the breasts a curiously hard nodular feel. The hands are not involved.

Simultaneously with this change there may be an excessive deposition of fat over the hips, buttocks, and legs, often ending abruptly at the level mentioned above. The disproportion between the two halves of the body is so marked in some patients as to give them the appearance of being composed of two entirely different individuals.

The feet are rarely affected, possibly because of the pressure of the shoes (Wilder, 1928), and the adiposity may end abruptly at the level of the malleoli.

The term "progressive" has been regarded as inappropriate on the grounds that the fat atrophy does not, except in rare cases, spread to involve the other half of the body and also because the disease undergoes

spontaneous arrest after a variable length of time when all the fat has disappeared from the affected areas. Moreover, the disease may be arrested before that stage is reached, and Bonzanigo (1937) reported regression and not progression in his follow-up of Tramèr's (1918) case.

Alternative names for the disease have been suggested, such as cephalothoracic lipodystrophy (Marañón and Soler, 1926) and lipomatosis atrophicans (Günther, 1920), but have not gained general acceptance.

The accumulation of fat in the lower half of the body occurs almost exclusively in the female and resembles that which not uncommonly occurs in middle-aged and menopausal women. It may precede, coincide with, or follow the disappearance of fat from the upper half, and is symmetrical and progressive, being particularly noticeable over the buttocks and lateral aspects of the thighs. Many authors regard it as being more apparent than real because of the normal tendency for fat to be deposited in those parts, and because of the contrast provided by the wasted upper half of the body. There would appear to be a series of gradations of fat accumulation, varying from what may be considered to be a normal female secondary sex character to the grotesque adiposity of the lower half of the body manifested by Meyer's (1922) case.

Male cases are less common than female, and usually show fat atrophy without concomitant hypertrophy.

Literature

Several forms of the disease have been described. Laignel-Lavastine and Viard (1912) reported a case in which the fat hypertrophy of the lower half was asymmetrical and preceded minimal atrophy of fat from the upper half; alternatively, all four extremities may be affected (Patton, 1945), or the legs may be wasted while the upper half of the body remains normal; rarely, the atrophy may be generalized.

Familial occurrence is rare. van Leeuwen (1933) reported the disease in three sisters. Igersheimer (1948) stated that

the uncle of his patient had lipodystrophy. Bauer (1924) observed the death's-head facies in several members of the family of a patient with lipodystrophy. Barraquer-Ferré (1935, 1949) described the disease in three successive generations.

A large number of patients complain of little apart from their altered distribution of fat, and lead healthy lives. Some find their facial appearance distressing. Formerly tuberculosis used to be suspected because of the emaciation. Several complain of tiredness or weakness; some feel cold in warm weather, particularly in those parts of the body which have lost their fat pannicle; others complain of excessive perspiration. Psychological symptoms are common, but there is no particular psychiatric disorder peculiar to the disease. Because of their facial appearance, patients tend to avoid crowds, and one in particular had a dislike of mirrors.

Physical examination of the various systems, including the central nervous, is usually normal. The muscles and bones are normal and electrical reactions of nerves and muscles unaltered. X-ray examination of the skull in 18 cases showed the sella turcica to be normal in 13, small in 2, slightly enlarged in 1 but not altered in shape, while in Ewserowa's (1929) case an arrow-shaped exostosis projected upwards from the posterior clinoid process. In one of Christiansen's (1922) cases there was excessive excavation without signs of destruction.

There are no laboratory procedures diagnostic of the disease. Hansen and McQuarrie (1940a) were able to estimate the tissue lipids in a case one hour after death, and concluded that the deficiency of fat was due to a lack of neutral fat fatty acids in the tissues. The only constant pathological finding is the absence of subcutaneous fat in the areas affected. This was first demonstrated in a skin biopsy performed by Simons (1913). In spite of taking the biopsy right down to muscle fascia, there was no macroscopic evidence of fat; microscopically, the only demonstrable traces were in the sebaceous glands and hair roots. The dermis and epidermis are otherwise normal, and Marañón and Cascos (1930) found the cutaneous nerves microscopically normal. Absence of fat in the omentum was reported by Grantzow (1934) and Wilkinson (1941). The disease is never fatal; there are only eight post-mortem reports in the literature, and in these cases the patient

Post-mortem Cases of Lipodystrophy

Author	Sex and Age	Principal Findings	Thyroid	Suprarenals	Pituitary	Sex Organs	Thymus	Nervous System
Husler (1914)	M 14	Cerebrospinal meningitis	Rich in colloid	Large, with whitish medulla; cortex rich in fat and pigment	—	Infantile	Persistent	—
Weber and Gunewardene (1919)	F 13	Pyæmia secondary to mastoiditis	Rather large; very rich in colloid; micros: slight fibrosis	Less lipid than normal, but not significantly	—	Ovaries normal	Vestigial	Brain normal
Zalla (1920)	F 59	—	Normal	—	Sella enlarged. Cystic tumour of pituitary	—	—	—
Sarbo (1921)	F 16	Encephalitis	—	—	—	—	—	Changes in corpus striatum
Marburg (1928)	F 36	Septic angina	—	—	Very active; numerous chromophil elements; increased colloid masses of pars interna	Ovaries fibrosed; uterus normal	—	Chronic inflammatory changes in Gasserian ganglion
van Leeuwen (1933)	F 24	Osseous cysts, otosclerosis, secondary sarcoma	Normal	Normal	Normal. A little pigment in pars nervosa	Ovaries large; L. ovarian cyst; uterus infantile	Absent	—
Hansen and McQuarrie (1940b)	M 9	Diabetes mellitus; cirrhosis; chronic fibrosis of spleen, pancreas, and lymph nodes	—	—	—	—	—	—
Lawrence (1946)	F 32	Diabetes mellitus; enlarged liver, spleen, and lymph nodes	Normal	Normal	Normal	Two large ovarian cysts (simple serous) removed 3 weeks previously	—	—

had died of other conditions (see Table). There were no consistent abnormalities of the nervous system or endocrine glands.

It may be necessary to differentiate lipodystrophy from the condition known as facial hemiatrophy. Normally this is not difficult because of the unilateral nature of the latter disease and the fact that bone and muscle may be involved as well as fat. However, difficulty may arise in distinguishing lipodystrophy affecting only the face, particularly in the male, from the form of facial hemiatrophy known paradoxically as bilateral facial atrophy. The correct diagnosis may be reached only by observation over a long period of time, as shown by Christiansen's (1914) case of lipodystrophy, which, six years previously, had been demonstrated as a case of total facial atrophy. In Wolff and Ehrenclou's (1927) case lipodystrophy and facial hemiatrophy coexisted. Schlesinger's (1905) case of bilateral circumscribed facial atrophy has been regarded by Meissner and Ries (1953) as a genuine case of lipodystrophy.

Aetiology

The aetiology is obscure, and of the many theories advanced none adequately explains the regional nature of the disease and its diametrically opposite effects in different parts of the body. Barraquer-Ferré (1949) regards the condition as being a syndrome due to a variety of causes.

A disorder of the nervous system in the form of a tropho-neurosis was postulated by Simons (1911, 1913) and Ziegler (1928), the latter regarding the occurrence of nervous phenomena as being too common for chance. Other authors attribute trophic nerve disturbances to changes in a fat-regulating centre in the mesencephalon or diencephalon (Leschke, 1924; Pollak, 1930)—in particular, in the floor of the third ventricle (Berger, 1932). According to Baxter *et al.* (1948) the defect in the centre may not manifest itself until other factors, such as trauma, pregnancy, the menarche, or menopause, supervene. Hoff (1950) noted the association of mid-brain diseases with lipodystrophy. Klien (1921) drew attention to the frequent occurrence of sympathetic disturbances in cases of lipodystrophy. In his opinion fat atrophy was the result of abnormal involution of the pineal gland, and he tried to explain the occurrence of sympathetic disorders on this basis. He regarded the hypertrophy of fat below the waist as a secondary sexual characteristic of puberty.

Barraquer-Ferré (1949) regarded a functional disturbance of the hypothalamus as the primary cause of the disease. Reporting the hitherto unknown occurrence of the disease in three successive generations, he postulated a heredo-degeneration of the hypothalamus with liberation of the cervico-thoracic sympathetic.

A congenital mesenchymal defect was postulated by Simons (1913). Frank (1923) explained the association of osteopsathyrosis infantilis and lipodystrophy in his case on the grounds of a defect of the whole mesenchyme originating early in embryonic life. Igersheimer (1948) thought that this defect might become hereditary, giving rise to one or more congenital abnormalities. Weber and Bode (1930) classified lipodystrophy with the congenital-developmental dystrophies.

Trauma and mental shock were precipitating factors in some cases. Klien's (1921) case was aggravated by trauma. Parmelee (1949) stated that in 23 out of 95 cases the onset followed an acute infection. One case followed an injection of tetanus antitoxin.

Disturbances of general metabolism have been blamed. Murray (1952) draws attention to the frequent association of diabetes and abnormal sugar-tolerance curves with the disease. Harris and Reiser (1940) examined the fat metabolism in their case and found normal absorption but deficient oxidation of fat and an abnormal rise in serum fat after a fat meal. They suggested the possibility of a general fault in metabolism, together with any local changes which might be present in the tissues. Local abnormalities of the

fat itself were regarded by Capper (1932) as explaining the regional nature of the disease.

The association with endocrine defects is frequent and complex. Their variety and contrast were regarded by Sprunt (1923b) as being evidence against an endocrine aetiology. Moreover, the regional distribution of the fat atrophy cannot be explained on a purely endocrine basis. Various authors have overcome this by postulating an endocrine aetiology for the fat hypertrophy and an unknown or nervous aetiology for the fat atrophy.

Thyroid dysfunction varying from hyperplasia of the gland to thyrotoxicosis and auricular fibrillation was found by Murray (1952) to be present in 16 out of 21 cases. On the other hand, Christiansen (1922) reported the association of lipodystrophy and myxoedema in two cases.

Harris and Reiser (1940) state that there is some evidence of gonadal or pituitary dysfunction as shown in the occurrence of menstrual abnormalities and genital hypoplasia. The predilection of the disease for women, the effect of the menarche and menopause in initiating or exacerbating the disease, the typical female distribution of the fat accumulation, and the frequent menstrual disorders have suggested to some authors an ovarian dysfunction. Pregnancy may be the starting-point of the disease (Bøe, 1935) or may accelerate its progress (Berger, 1932). Other authors, however, refuse to implicate the gonads and report cases with no unusual disturbances of menstruation, pregnancy, or lactation and giving birth to normal children.

Treatment

There is no specific treatment. Insulin, extracts of thyroid, ovary, and pituitary, ultra-violet light, massage, and thyroidectomy have all been tried and found to be of no value. Cases have been treated in hospital with rest, overfeeding, and massage, but, with the exception of one of Sprunt's (1923a, b) patients, who regained some of her lost fat, the resulting weight gain has inevitably occurred in those parts of the body already abundantly covered with fat. Various local measures have been adopted with the object of improving the facial appearance. Holländer (1910, 1911) treated two patients with subcutaneous injections of a specially prepared mixture of human fat and mutton suet and obtained good results, but the injections had to be repeated because of absorption of the fat. Subcutaneous paraffin injections (Christiansen, 1914, 1922; Campbell, 1916) also gave good cosmetic results, but paraffin has been objected to on the grounds of ulceration of the skin and ejection and because of its carcinogenic effect.

Fat transplantation from the buttocks to the face was recommended by Professor Schmieden in Simons's (1913) case, but was not performed. Baxter *et al.* (1948), however, treated three patients with transplants of large dermal grafts with a small amount of fat and obtained cosmetic improvement, but biopsy of the cheek four months post-operatively in one case showed absence of fat. It would appear, therefore, that fat from a distant part of the body not involved in the lipo-atrophy undergoes the same process as the local fat when transplanted. Bøe (1935) designed a dental prosthesis with expanded wings to fill out the cheeks. Photographs of his cases show excellent results and he further claimed that they improved physically and mentally, even regaining some of their lost fat. Meissner and Ries (1953) used the inert synthetic substance "perlon," finely spun into a ball 4 cm. in diameter, rather like a cotton-wool ball, and inserted it through an incision in the naso-labial fold into the subcutaneous tissue of the cheek. Three months later there had been no complications; photographs show a marked improvement in the appearance of the patient.

Case Report

A married woman aged 26, a 6-gravida, booked at the antenatal clinic of Queen Charlotte's Hospital on October 7, 1953. L.M.P., August 3; E.D.D., May 10, 1954.

Obstetric History.—1948: spontaneous abortion at three months. 1949: normal delivery at 37 weeks of a live baby weighing 6 lb. 8 oz. (2,950 g.); glycosuria detected on one occasion only at four months. 1950: intrauterine foetal death at 37 weeks, followed by spontaneous delivery of a macerated foetus weighing 7 lb. 8 oz. (3,400 g.); the placenta weighed 2 lb. (907 g.); no post-mortem examination of the foetus performed because of maceration; three pints (1.7 litres) of Group O Rh-negative blood given for a post-partum haemorrhage of 50 oz. (1.4 litres). 1952: spontaneous delivery at 36 weeks of a macerated stillborn foetus weighing 6 lb. 12 oz. (3,060 g.); no obvious foetal abnormality; no Rh antibodies detected during pregnancy. 1953: spontaneous abortion at three months; urine and B.P. stated to be normal. The age of the menarche was 15. The periods were regular and normal, 5/28.

The patient had had measles and whooping-cough as a child, and acute nephritis at 16, when she was in bed for three weeks. The family history revealed nothing relevant.

Present Medical Condition.—After her last abortion in April, 1953, she noticed that her buttocks and thighs were becoming plump. Soon after becoming pregnant in August, 1953, she noticed that the bones of the top half of her body were becoming more prominent and that her arms were much thinner. At the same time her buttocks and thighs became even fatter and her legs started to increase in size.

FIG. 1.—Photograph showing prominent zygomatic bones and sunken cheeks.

Gradual progression of this altered fat distribution continued throughout the present pregnancy. The feet were not involved.

From the third month of pregnancy she became very tired, particularly on sitting up, when she felt as if her head would roll off. This feeling disappeared when she lay down and she was in the habit of sleeping every day from 1.30 to 6 p.m. Her arms and legs ached and her arms felt weak

in spite of their muscular appearance. During the pregnancy she began to suffer from attacks of dizziness, which gradually got worse and occurred about once a week. They occurred on standing and lasted about an hour, being associated with a dull ache over the left side of the head and the occiput. There was no sensation of rotation and the attacks were relieved by putting her head down. There was never any loss of consciousness, but at times she felt faint. There was no tinnitus or deafness.

For two or three years she had had intermittent pain around the eyes when "run down" or during a cold. This did not trouble her now. Since her third pregnancy she had noticed blurring of vision in the left eye, which had gradually got worse. The right eye was normal and there was no diplopia.

Her appetite had always been large. Her weight before the present pregnancy was 9 st. 7 lb. (60.3 kg.). Micturition was normal. Her bowels were constipated.

Physical Examination.—Height, 5 ft. 5 in. (1.65 metres). There was a marked disproportion between the upper and lower halves of the body. The face (Fig. 1) showed the typical aspect of lipodystrophy with prominent zygomatic bones and sunken cheeks showing the characteristic hollows on each side. She looked considerably older than her age would suggest. There was a deficiency of subcutaneous fat over the neck, shoulders, trunk, and arms, giving rise in the latter to prominent veins and muscles. The breasts were

well developed and active but lacked fat. The abdominal wall, too, was devoid of subcutaneous fat. At the level of the iliac crests there was an abrupt change. Below this level there was an excess of subcutaneous fat (Fig. 2). The buttocks were large and prominent, the hips rounded, and the thighs and legs abundantly covered with fat. The feet and hands were normal, and there was no oedema of the feet or ankles. The external genitalia were normal.

The respiratory and cardiovascular systems were normal; pulse 72, regular; B.P. 130/70. The thyroid was not enlarged. The tympanic membranes were normal. The liver and spleen were not enlarged. Examination of the central nervous system showed: normal fundi; visual fields full on confrontation; pupils equal and regular, reacting to light and accommodation; external ocular movements full; no nystagmus; cranial nerves normal; muscle power, tone, and co-ordination normal; sensation normal; reflexes present and equal except for doubtful ankle-jerks; plantar responses flexor. Urine: no albumin or sugar. Blood: Group O, Rh-negative; no antibodies; W.R. negative.

Mental State.—She appeared to be normal apart from some shyness, no doubt due to her appearance.

FIG. 2.—Photographs showing excess of subcutaneous fat below the level of the iliac crests.

Course of Pregnancy

On repeated visits to the clinic there was no oedema, the urine remained free of albumin and sugar, and the B.P. was normal, the highest recorded reading being 140/85. Vomiting persisted for the first four months. Thereafter she had heartburn, mostly at night, until the 30th week. She then vomited about 10 oz. (284 ml.) of green fluid nightly for four nights, the vomit being blood-stained on one occasion. She was admitted to hospital and treated with bed rest, a light diet, and magnesium trisilicate mixture, B.P.C., $\frac{1}{4}$ oz. (15 ml.) t.d.s. Her Hb was 86% (Haldane) and fasting blood sugar 57 mg. per 100 ml. There was no vomiting in hospital and the heartburn was controlled. As her appetite was enormous she was allowed to resume a full diet and was discharged home after five days. No barium swallow examination was performed. Pregnancy thereafter progressed normally. At 36 weeks she was admitted for surgical induction of labour on account of her bad obstetric history. On April 8, 1954, a high rupture of the membranes was carried out with a Drew Smythe catheter under general anaesthesia (thiopentone, gallamine triethiodide, nitrous oxide, and oxygen); 36 oz. (1 litre) of clear liquor was withdrawn.

The first stage of labour lasted 15 hours 50 minutes, the second stage 5 minutes, and the third stage 5 minutes. The induction-delivery interval was 28 hours. Spontaneous vertex delivery of a male infant weighing 6 lb. 10 oz. (3,000 g.) occurred on April 9. Blue asphyxia at birth responded rapidly to mucus extraction and oxygen. "Synkavit," 10 mg., was given intramuscularly. There was minimal blood loss.

The puerperium was uneventful, and her temperature was normal. On the seventh day her fasting blood sugar was 65 mg. per 100 ml. After ingestion of 50 mg. of glucose the blood sugar at 30 minutes was 122 mg., at 60 minutes 124 mg., at 90 minutes 92 mg., and at 134 minutes 65 mg. per 100 ml. There were no Rh antibodies on the seventh day. Lactation was established and the uterus involuted well. The baby was normal and showed no signs of lipodystrophy. Its cord blood was Group O Rh-positive and the Coombs test was negative. The patient was discharged home on the ninth day.

She was seen again on May 19. A normal period had occurred one week previously, and she felt quite well. There had been no further increase in size of the legs. On examination there was considerable laxity of the vagina, and the uterus was anteverted, normal in size, and well involuted.

Discussion

The case described above is a classical example of progressive lipodystrophy in which fat hypertrophy of the lower half of the body was real and preceded fat atrophy of the upper half. The onset occurred after a series of stillbirths and abortions, but whether this relationship is causal or fortuitous is difficult to say. Progression of the disease occurred during a subsequent pregnancy, and ceased, so far as could be ascertained at the post-natal examination, after delivery. There was no clinical evidence of thyroid dysfunction. Mentally, the patient appeared normal apart from some shyness. A much greater degree of mental anxiety might have been expected in view of her previous obstetric history. There were symptoms which might possibly have been referred to the central nervous system, but examination of this system was virtually negative. Although glycosuria had been detected once previously, repeated examination of the urine failed to show sugar during this pregnancy. Two fasting blood-sugar estimations were on the low side of normal and a sugar-tolerance curve was normal.

From the obstetric point of view it was difficult to account for her previous obstetric mishaps, there being no evidence of toxæmia, hypertension, rhesus incompatibility, diabetes, or syphilis. Pregnancy on this occasion was normal apart from vomiting and nocturnal heartburn, which responded to simple measures. A barium swallow might have been interesting as a means of excluding a hiatus hernia. A successful outcome resulted from surgical induction of labour at 36 weeks. Lactation was established satisfactorily, confirming the normality of the glandular tissue of the breasts in this disease.

In a search of the world literature I have been able to find details of 205 cases, the highest total hitherto recorded. There were 165 female cases and 39 males, giving a sex ratio of four females to one male. In a case of Reuben *et al.* (1924) the sex was not stated. I have not included four cases without details mentioned by Simons (1913) as having been seen by others, nor the 50 mild cases, also without details, seen by Marañón and Cascos (1930). Christiansen (1922) stated that he saw 15 cases, but he described only 6.

The male patients varied in age from 4 to 50 years, the average being 16.5. In 22 out of 25 (88%) the disease began before the age of 10. Fat hypertrophy of the lower half of the body was a feature in five cases, being associated with a female distribution of pubic hair in one (Gerstmann, 1916) and a female type of pelvis in another (Garciso, 1932); in two of the remainder the genitals were stated to be normal.

The age of the female patients ranged from 31 months to 65 years, the average being 24 years. The age of onset was

stated in 127 cases and varied from 1 to 52, with an average figure of 13.2 years. Onset before the age of 10 occurred in 40.8%, compared with the male figure of 88%. These figures confirm the frequency of the disease in childhood and the early teens noted by many authors in the past.

I have examined the literature for details concerning pregnancy, menstruation, and the state of the genital organs in the reported cases of lipodystrophy. The relevant details are not always provided by the authors, but are nevertheless available in a sufficient number of case histories to be of interest.

Pregnancy

There is only one case of progressive lipodystrophy in the literature in which a detailed account of pregnancy and delivery is given—that of Grantzow (1934). A primigravida of 38 was referred at seven months for termination of pregnancy on account of her death-head appearance and poor nourishment. The patient herself felt perfectly well and had a good appetite. On examination she showed the typical picture of lipodystrophy together with diffuse symmetrical enlargement of the thyroid gland. The breasts were fairly well developed and colostrum was present. The disease was of long standing and no change in fat distribution occurred during pregnancy. It was thought that there was no indication for termination on account of the lipodystrophy, but caesarean section was advised because of the presence of a cervical fibroid the size of a fist lying in the pelvic brim. A transperitoneal cervical section was accordingly performed as labour began and a live baby weighing 2,850 g. was delivered. As the fibroid was on the posterior aspect of the cervix a hysterectomy was performed, together with left salpingo-oophorectomy and right salpingectomy, the right ovary alone being conserved. The wound healed by first intention and the blood pressure remained normal during the puerperium. The patient and her baby were discharged on the 18th day. Lactation failed despite a good start and the baby was fed artificially and developed normally.

Two other patients were pregnant at the time of diagnosis of the lipodystrophy: Herrman's (1916) case and one of Watson and Ritchie's (1924), the latter subsequently being delivered of a plump, healthy baby.

Infertility is not a feature of the disease, and 34 of these patients had been pregnant at one time or another. The patient's facial appearance does not seem to be a bar to marriage. With the exception of one of Marañón and Soler's (1926) cases with a background of syphilis, there was no undue incidence of stillbirths or abortions. In no case did a series of obstetric mishaps immediately precede the onset of the disease, as in my case. The onset was thought to be related to pregnancy in six cases. In only one, however (Bøe, 1935), did the disease begin in pregnancy; in the other five it occurred after delivery, following an interval which varied from two weeks (Serejski, 1937) to 18 months (Rodríguez Arias and Cuatrecasas, 1927). Decourt *et al.* (1936) reported the rapid onset of the disease at the time of weaning, 11 months after delivery, in one of their cases. The effect of pregnancy on the already established disease is variable. Grantzow (1934) reported no change. Ziegler's (1928) Case 2 developed swelling of the face three months after delivery, this disappearing gradually after three months and with it all the subcutaneous fat of the upper part of the body; his Case 3 suffered from a severe puerperal infection, which was followed by enlargement of the legs and hips sufficient to interfere with walking, while the face and upper part of the trunk became thinner. Serejski (1937) reported further wasting of the upper part of the body during a second pregnancy, whereas increase in adiposity followed artificial termination of pregnancy in the cases of Wilder (1928) and Wilkinson (1941). The course of pregnancy and labour is in no way affected by the disease.

Menstruation

The age of the menarche, stated in 58 cases, varied between 10 and 19, the average being 14, a figure closely approxi-

matings that for the average age of onset of the female cases. However, in only two cases (Simons, 1911; Costa, 1939) is the onset of the disease definitely stated to have occurred at the menarche. In Washburn and Sanders's (1932) case it occurred four to five years after the menarche. The effect of the menarche on four established cases was to increase the fat deposition in the lower part of the body. The age of the menopause was given in 14 cases and varied from 39 to 51, with an average of 47. Onset at or after the menopause occurred in four cases. In addition, bilateral salpingo-oophorectomy at the age of 26 was followed rapidly by fat atrophy in Currier and Davis's (1931) case. Hysterectomy and oophorectomy at the age of 40 in one of Cohen and Eis's (1934) cases were succeeded by hyperthyroidism, but not apparently by any change in the lipodystrophy. Wilkinson's (1941) case showed some increase in the size of the lower limbs after the menopause.

Details concerning the menses are available in 70 cases; in 38 of these the periods were regular and normal. Menstrual abnormalities occurred in 32, the type of abnormality being variable; amenorrhoea occurred in nine and heavy or profuse periods in six. "Hyperfolliculinism" was postulated by Barraquer-Ferré (1935, 1949) to explain the association of lipodystrophy with hypermenorrhoea in three successive generations. In 12 cases the periods were scanty and in a further five they were irregular but otherwise normal, the cycle lasting from six weeks to six months. Pregnandiol excretion was normal in the one case in which the investigation was performed. Frigidity was reported by Strauch (1922) and by Wilder (1928).

Genital Organs

Information regarding the genital organs is given in 31 cases. The pubic hair is usually normal, but the external genitalia may be involved in the lipodystrophic process. Disappearance of the fat of the mons occurred in four cases, while in one the mons was larger than normal. Loss of fat in the labia was noted by two authors; on the other hand, Laignel-Lavastine and Viard (1912) reported marked unilateral hypertrophy of a labium minus in their case in which the disease was asymmetrical. The side of the hypertrophied labium, however, was opposite to that of maximum fat hypertrophy of the legs and was probably an incidental finding. Hypoplasia of the uterus occurred in six cases, and a male case of Carrau (1921) also showed genital hypoplasia. Sprunt (1923a) failed to find any evidence of hypoplasia in two cases, and Reuben *et al.* (1924) even reported hyperplasia in one of their cases. Ovarian cysts had been removed in two cases and the only other gynaecological abnormalities were the sequelae of childbirth or infection.

Conclusion

On these findings it is difficult to incriminate abnormalities of the gonads as being a possible aetiological factor in the production of lipodystrophy. In a large proportion of the cases there were no associated obstetrical, menstrual, or gynaecological abnormalities. Where these existed they were diverse and sometimes diametrically opposite in different cases. The disease can occur at a variety of ages, but particularly in the first and early second decade before puberty. Puberty does not accelerate the course of the disease, and in only a few cases is the menopause a precipitating factor. The cause of the disease remains unknown.

Summary

An account is given of progressive lipodystrophy and a further case reported, bringing the total number of recorded cases of this rare condition to 206. The course of a pregnancy in this case, which followed a series of stillbirths and abortions, is described. The literature is reviewed with reference to the association of lipodystrophy with menstrual and gynaecological abnormalities.

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ACTION OF "ECOLID" IN MAN

BY

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The pharmacology of methonium salts, in particular pentamethonium and hexamethonium, was described by Paton and Zaimis (1948), and a study of their circulatory action in man was made by Arnold *et al.* (1949). Wien and Mason (1953) described a further series of ganglion-blocking agents, of which one, pentolinium (pentapyrrolidinium, "ansolysen") exhibited stronger hypotensive activity than hexamethonium.

The use of hexamethonium salts in the treatment of hypertensive disorders has been described by Restall and Smirk (1950), Turner (1950), Campbell and Robertson (1950), Smirk (1950), Schroeder (1951), Freis (1951), Smirk and Alstad (1951), Kilpatrick and Smirk (1952), Freis *et al.* (1952), Rosenheim (1952, 1954), McMichael (1952), McQueen and Trewin (1952), Palmer (1952), Freis and Finnerty (1953), Morrison (1953), and Platt (1954).

The use of pentolinium in the treatment of hypertensive states has been described by Smirk (1952, 1953a, 1953b), Maxwell and Campbell (1953), and Freis (1954).

Smirk *et al.* (1954), Freis (1954), and Bain *et al.* (1955) described the effect of combining reserpine with pentolinium. Use of the combination makes it possible to obtain adequate falls in blood pressure with smaller doses of pentolinium, thus gaining a better control over the blood pressure with fewer side-effects.

There remain a number of patients who are made uncomfortable, mainly by the parasympathetic side-effects of pentolinium. Moreover, reserpine has the disadvantage that it may cause mental depression severe enough to require psychiatric treatment. The study of additional ganglion-blocking agents is therefore desirable, and some encouragement is derived from the observation that methonium compounds differ slightly in the relative degrees to which they impair the activities of the sympathetic and the parasympathetic systems.

Studies of the action in man of eclid have been made (Grimson *et al.*, 1955; Smirk and Hamilton, 1955), and a further study is now reported. This substance, although possessing two quaternary nitrogen groupings, differs structurally from hexamethonium and pentolinium (Fig. 1).

Pentapyrrolidinium
(Pentolinium)

Method

Eclid has been administered by subcutaneous injection (in a 2% aqueous solution, and in a 2% solution in 20% polyvinyl pyrrolidone with 0.5% ephedrine) and also

FIG. 1.—Structural formulae of hexamethonium, pentolinium, and eclid.

by mouth. Its action is compared with that of pentolinium. To maintain uniformity with our earlier observations on hexamethonium and pentolinium, the blood pressure was again measured by the method recommended by the Committee for the Standardization of Blood Pressure Readings (1939).

Forty-two patients, all suffering from essential hypertension (two in the malignant phase), have received trial doses of eclid: 23 had received no previous treatment, and 19 had been under treatment previously with pentolinium. Twenty-seven patients received only short courses of treatment with eclid.

Results

Relative Potency of Eclid and Pentolinium

The relative potency of the two drugs varies for each individual. There were 10 patients who showed similar falls in blood pressure following eclid and pentolinium, administered consecutively: in these 10 individuals the dose of eclid was 2.1 times less than that of pentolinium necessary to produce an equivalent hypotensive effect (Table I). Although these comparisons were not made at a uniform

TABLE I.—Potency of Eclid to Pentolinium Needed to Secure Comparable Fall in Blood Pressure

Case No.:	30	297	34	726	970	207	976	990	983	755	Mean
Eclid	1	1	1	1	1	1	1	1	1	1	1
Pentolinium	1.0	2.5	3.6	2.0	2.1	1.8	2.4 (oral)	1.1	2.5	1.9	2.1