THE CLINICAL SYMPTOMS AND TREATMENT OF CHRONIC SUBCUTANEOUS FIBROSIS.

BY

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With the exception of a short article bearing the title "De la Paralysie," by A. Kjellberg, of Stockholm, which appeared in the "Annales des praticiens" for 1890, and in which reference is made to a previous description by Professor Salin, also of Stockholm, I have been unable to find any systematic account of this condition. Cases illustrating the clinical aspect of it have often been reported as "symmetrical diffuse lipoma," "symmetrical fatty tumours," or "diffuse fibro-fatty tumours"; and Dercum, in 1892, in an article entitled, "Three cases of a hitherto unclassified affection resembling in its grosser aspects obesity, but associated with special nervous symptoms—Adiposis dolorosa," described a fatty condition more generalised than these, which he regarded as a special and previously unnoticed disease. The cases on which he based his description all occurred in women past middle life, who had gradually developed masses of fat in the subcutaneous areolar tissue, these masses being irregular in their position and distribution, and very painful on pressure.

Owing to the involvement of the nerves, the fibrous tissue at the affected parts is painful on pressure, and is subject to aching or pain similar to that which Price describes as characteristic of the morbid anatomy, and expresses the opinion that the condition is due to changes in the peripheral nerves.

Dercum, on the other hand, had attributed its causation to an alteration in the function of the thyroid, and seemed to regard it as allied to myxoedema. A description of "adiposis dolorosa" (Dercum's disease) is now included in most of the recent textbooks, where it is variously classified under nervous diseases, constitutional diseases, obesity, and so forth. I am very doubtful, however, if it can be rightly ranked as a special disease. The condition was well known to me clinically for some years before I became acquainted with Dercum's description of it, and I had come to conclusions different from his regarding its nature and etiology and the significance of the symptoms. These conclusions, stated before, are that the morbid condition is a very common one, and consists essentially in chronic subcutaneous fibrosis; and that the cases of which Dercum has described under the names "adiposis dolorosa" are merely those occurring in people with a large amount of subcutaneous fat.

The excessive development of the subcutaneous fat is not an essential part of the morbid process, but on an accidental addition to it. The essential morbid condition is, as before said, a very common one, and occurs quite independently of obesity or stoutness. It consists in an irregularly spread, patchy, chronic inflammation of the subcutaneous connective tissue, which involves also the small peripheral nerves and blood vessels.

The condition is in fact one of so-called "chronic rheumatism," but which might be better designated as "chronic subcutaneous rheumatism." The former is a clinical, the latter a pathological, term, and neither indicates a disease, but rather a condition secondary to several antecedent diseases.

In two former papers I have described at length the pathology and symptoms of "chronic rheumatism," and I need only repeat here that, like the other fibrous tissues of the body, the subcutaneous connective tissue is the seat of chronic inflammatory changes as the result of acute rheumatism and influenza especially, but also after general gonococcal, various mucous colitis, and other imperfectly recognized causes.

On microscopic examination of such a patch, the fibrous tissue is found to be thicker and denser than normal with numerous fibroblasts, the small nerve twigs running through it are in a condition of interstitial inflammation, and the small blood vessels show periarteritis and endarteritis, the whole being evidently the result of a reaction to local irritation. It is extremely common at all ages and in both sexes, and is quite independent of obesity.
The implication of the nerves gives rise to symptoms usually designated as "rheumatic"—aching, pain, stiffness, neuralgias, numbness, tingling, a feeling of chilliness, fatigue after exertion, muscular latitude, and often a marked want of vigour and energy. These last symptoms are sometimes so prominent that the condition is very frequently, but erroneously, diagnosed as "neurasthenia." The chief sensations can be readily felt and are usually very tender on pressure. When much subcutaneous fat is already present, or is afterwards deposited in persons suffering from subcutaneous fibrosis, the symptoms just mentioned tend to be of an aggravated character. Further, the hypertrophy of the connective tissue leads to certain peculiarities in the arrangement of the subcutaneous fat.

Normally fat is deposited evenly throughout the areolar tissue; it is not nodular or lumpy, and is not specially tender on pressure; but in persons with subcutaneous fibrosis it tends to form in more or less lumpy masses round the hypertrophied connective tissue, and to lie in rolls if very abundant (Fig. 1). In merely plump people the masses are palpable and very tender on pressure or pinching, while in the very stout they form veritable tumours of varying sizes (Fig. 2). These may be lobular and lumpy, or more diffuse and fibro-fatty in character.

Many stout patients have normal fat in some places and lobulated in others. The latter arrangement seems to be determined by the preceding overgrowth of fibrous tissue, as is well illustrated in the condition of the middle part of the anterior abdominal wall often induced by previous pregnancy. During the pregnancy the fibrous tissue is hypertrophied in patches, and around these fatty nodules form which can be readily felt and are usually tender on pressure. If the person is very stout and the face is involved, there is a superficial resemblance to myxoedema, for which it is sometimes mistaken.

In middle-aged and elderly people Heberden’s nodes and stiffness of joints are often found associated with the other symptoms. The association of fat with the fibrosis is certainly much more common in women than in men, probably because they have a larger amount of subcutaneous fat normally. One of my female patients weighed 20 st. 5 lb., another 16 st. 4 lb., and a third 16 st. 11 lb., but none of them was obese.

The abdomen, flanks, hips, thighs, shoulders, and upper arms are in general the parts most affected, but sometimes fat is also deposited in the face, forearms, hands, legs and feet, either diffusely through the hypertrophied fibrous tissue in lobules.

Where there is a large amount of subcutaneous fat the secretion of sweat is interfered with, but in most cases the amount of perspiration is normal.

The morbid anatomy is very simple. When excised portions of subcutaneous tissue are examined microscopically, the fibrous tissue, the peripheral nerves, and the blood vessels are found to be in a condition of chronic interstitial inflammation; the fat cells are normal in appearance. Figs. 3 and 4 show such patches of inflamed fibrous tissue embedded in fat cells.

In some cases the fibrous tissue is much denser than in others. The condition is analogous to fibrosis of the lung, liver, kidney, or ligaments, and, as in these cases, is due to chronic local irritation from the toxins of germs or more definite chemical bodies.

The most suitable name to apply to the condition is probably the pathological one of "chronic subcutaneous fibrosis," but, as already mentioned, the term "panniculitis" has been previously employed. I have never noticed any abnormality of the thyroid gland.

To sum up:
1. Chronic inflammation of the subcutaneous connective tissue is a very common affection.
2. It is secondary to various acute and chronic infections.
3. The implication of the small peripheral nerves in the chronic inflammatory process gives rise to sensations of aching, stiffness, numbness, fatigue, etc.
4. When persons already stout, or who afterwards become so, are affected as above, the fat tends to form larger or smaller masses round the hypertrophied connective tissue.
5. These masses are often very painful on pressure owing to the nerve twigs being in a condition of interstitial neuritis.

6. The fatty masses are deposited mostly in the ordinary situations of fat accumulation.
7. The condition described by Descemet as "adipositas dolorosa" cannot be ranked as a special disease.

Treatment.

Cases of subcutaneous fibrosis can be treated with a considerable degree of success if treatment is gone about in the proper way and is persevered in.

In the popular notion of massage, daily exercises, directed to stretch the altered fibrous tissue and to accustom it to movement, along with an habitually active and as far as possible open-air life.

If all this is systematically carried out for some months the inflamed tissues tend to shrink and the extremity liability to become painful on exertion or exposure to cold and wet, and the patient is restored to comparatively good health. Some cases get practically well, many are improved, and in all considerable benefit is assured. An habitually active mode of life with plenty of outdoor exercise is necessary to maintain the improvement.

The massage must be given firmly and so as to reach the affected parts. It is always painful at first, and should be given only by those who have had experience of similar cases. What probably happens is that the massage lessens or gets rid of the local neuritis, and favourably affects the inflamed small blood vessels, so that exudation...
is not so apt to occur from them. It is commonly said to
act by improving the flow of blood and lymph locally, but
there is no exact knowledge on these points.
In stout or plump people the principles of treatment are
the same, but in them we have to deal with two distinct
conditions—the fatness and the chronic fibrosis. The
inflamed fibrous tissue is relatively in very small amount
compared to the fat round about it, and, thus embedded, it
is a hopeless business to try and reach it and its inflamed
nerves and vessels by means of massage.
Massage under such conditions is quite ineffective, and
often unbearably painful.
The first step in treatment is to get rid of the super-
abundant fat, and this is best accomplished by a more or
less strict diabietic diet, and the administration of thyroid
gland or liquid extract of *Fucus vesiculosus*. Exercises
can be commenced at once and massage somewhat later,
or the latter can be instituted gently from the beginning,
and increased in vigour as it becomes less painful. Unless
the obesity can be substantially reduced, the prospects of
improvement are very slight.
The paroxysmal neuralgic pains, which are sometimes
very severe, and accompanied by a palpable hardening and
swelling of the fibro-fatty tissue in the neighbourhood,

![Fig. 5.](image)

often disappear or greatly lessen as the fat becomes
absorbed. This is explainable by diminution of pressure
on the inflamed nerves.
So far as I have been able to judge, hot baths and hot
air have no direct curative effects, but, given before the
massage and exercises, they render them less painful and
probably more effective.
In those cases in which the subcutaneous fibrous tissue
is dense and widespread, with little fat, or the fat evenly
diffused through it, treatment does much less good than in
the other forms. Foot baths, very gentle massage, and
soothing treatment generally are sometimes indicated, as
the patient cannot stand the pain and fatigue of the
more vigorous curative measures, but experience has led
me in this class of case to expect very moderate
betterment.
As regards drugs, I have made careful trial of iodine in
various forms, many antirheumatic and antityphoid remed-
dies, fibrolisin (thiosinamin), so-called ionic medication,
and counter-irritation with a considerable variety of
substances, but, so far, I have not met with any drug
which has the power of dispersing the denser kind of
cirrhotic fibrous tissue.

CASE I.
Woman, aged 33, a cook. Complains of aching and shooting
pains all over her body, and increasing stoutness. She has not
worked for three years, and was regarded as a case of incurable
"neurothesia." She has had rheumatic pains since she was
14 years of age, but they have become much worse of late.
There is a thick layer of fat over the shoulders, backs of upper
arms, abdomen, back, hips, and thighs. The fat is in lobulated
masses, and these are very painful on pressure. In those
regions there is continual dull pain, which at times becomes
sharp and stabbing. Healthy otherwise.

Treatment.—A diabetic diet with a little brown bread, 5 grains
thryoid daily, and massage. Before treatment was begun she
weighed on December 15th, 1909, 10 st. 13 lb., and she measured,
wrist 20 in., abdomen 39 in., and thighs 40 in. (Fig. 5). On
April 21st, 1910, she weighed 8 st. 2 lb, and the measurements
were 27, 33, and 34 in. (Fig. 6). On October 5th she weighed
7 st. 9 lb., the fatty masses had disappeared, and there was no
pain on pressure. She had lost 46 lb.—nearly one-third of her
original weight. She had still rheumatic pain in the lumbar
region, but felt well and was able to work.

CASE II.
Woman, aged 39. She began to get stout during pregnancy
six years ago. The fat was not evenly distributed, but was in
masses in the supraclavicular regions, across the abdominal
wall in ridges, on the hips, along the inner sides of the thighs,
and above the ankles. It was lobular, and very painful on
pressure. The masses in the shoulders and thighs sometimes
became hard and swollen, and then caused pain and a great
feeling of fatigue. She scarcely perspires and often feels very
chilly. Treatment consisted in dieting, along with 5 grains of

![Fig. 6.](image)

thyroid daily at intervals. She was practically well a year
During that time she lost 30 lb. in weight—13 st. 3 lb. to
11 st. 1 lb. The abdominal measurement fell from 33 to 29 in.,
and that of the thighs from 24 to 22 in. The chilly feeling has
gone and she perspires more easily.

CASE III.
Girl, aged 22. In 1903 and 1908 she had attacks of acute
rheumatism. In 1909 she complained of almost constant
aching pain over the thoracic region, arms, and lower limbs. At times the pain became acute. She weighed
8 st. 3 lb., and was plump but not stout. Little palpable masses
of fibro-fatty tissue could be felt in the subcutaneous tissue,
and these were extremely tender on pressure. Her condition
improved under treatment, but only to a certain extent.

CASE IV.
Woman, aged 50. For two and a half years past has noticed
that she was getting stouter, especially over the abdomen and
hips where there were fibro-fatty masses. The face had a
swollen and puffy look, due to increase of subcutaneous fibrous
tissue, and a similar condition was present over the chest and
lower limbs. At times the pain became acute. She weighed
8 st. 3 lb., and was plump but not stout. Little palpable masses
of fibro-fatty tissue could be felt in the subcutaneous tissue,
and these were extremely tender on pressure. Her condition
improved under treatment, but only to a certain extent.
LEUCOCYTIC EXTRACT IN INFECTIVE PROCESSES.

By D. MOORE ALEXANDER, M.D.

THE USE OF LEUCOCYTIC EXTRACT IN INFECTIVE PROCESSES.

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The first and third of these cases are almost certainly attributable to preceding attacks of rheumatism, and the fifth to the trauma occasioned by the cotile. The last seven were due to unknown irritant which has affected very widely and insidiously the subcutaneous fibrous tissue and that of many of the joints.

Floyd and Lucas treated 41 cases of lobar pneumonia, of which 5 died and 36 recovered. They report that in a number of cases the disease was apparently shortened, and there was noticeable improvement in the comfort and symptoms after the injections. The toxemia was strikingly reduced, and there was marked therapeutic improvement in treated than in a similar series untreated by this method.

Lambert reports more fully several cases that are included in the series of Hiss and Zinsser. In addition, there were cases of pneumococcal meningitis, both of which died; 3 cases of ulcerative endocarditis with which the leucocytic extract had no effect; 1 case of tertian malaria, whose rigor were stopped for nine days by leucocytic extract; several cases of erysipelas, with the most excellent results; and 1 case of ostitis media.

METHOD OF PROCUING THE LEUCOCYTIC EXTRACT.

The author has employed throughout the method of Hiss and Zinsser for procuring the leucocytic extract from the ileal cavity or from the mesenteric lymph glands. A sterile 10 per cent suspension of Mellin's food in distilled water was injected in amounts varying from 5 to 10 c.c.m., according to the size of the animal, into each pleural cavity of a rabbit. The animal was killed twenty-four hours later, and the fluid exudate removed. Difficulty was experienced at first in obtaining this perfectly sterile until the following plan was adopted.

The skin is removed from the thorax and the ribs laid bare by cutting away the pectoral muscles. The surface of the ribs and intercostal spaces is lightly scored over the whole side of the thorax, 10 c.c.m. of sterile iced serum are withdrawn with a sterile needle is thrust into the pleural cavity, through an intercostal space, usually the seventh or eighth, and the fluid removed by suction. If the cavity be emptied, it is easy to practice; thrust the needle through the opposite pleural cavity, and thus the two pleural cavities may be drawn off through the one external opening. The fluid should be pale yellow with a flocculent haze of leucocytes. Any large masses of fibrin or food must be removed by a preliminary sedimentation. Ten to 20 c.c.m. is the average amount of fluid obtained. The exudate is rapidly placed in sterile centrifuge tubes and centrifugated until a thick grey deposit of leucocytes appears at the top of the tube. This deposit is then removed from the bottom by pipette. The leucocytes may be again centrifugated several times with fresh amounts of normal saline to free them from the last traces of exudate fluid. This is not, however, in the writer's opinion, absolutely necessary, and is usually dispensed with. In any circumstance should arise, such as the presence of a trace of blood. Distilled sterile water is then added in equal volume to the deposited leucocytes, which are well broken up with a pipette or glass rod. The tubes are placed in the incubator at 37° C. for at least four hours. Each tube is then tested for sterility, and, if sterile, the contents of several tubes are mixed and distributed in 10 c.c.m. ampoules, which are placed in the ice chest until required. Leucocytic extract so prepared will remain effective for at least three months.

RECORDS OF TEN CASES TREATED.

1. Streptococcus Endocarditis.—Male, aged 30. An autogenous vaccine had been administered without effect. The patient finally became anemic with a continuous high temperature (102° 5 to 103° 9). Two doses of 10 c.c.m. of leucocytic extract were given. On each occasion the temperature fell to normal and the patient became conscious, recognizing relatives. He died two days after the second injection.

2. Osteomyelitis of Tibia.—Boy, aged 14. (Staphylococcus aureus.) Boy had received several vaccinations with an extract of leucocytes, which were less than a cubic centimeter, an autogenous vaccine, and reacted favourably for a time. A fresh collection of pus threatened, the vaccine was stopped, and 1 c.c.m. of leucocytic extract given three successive days. The temperature, which had been running up to 102° at night, fell to normal by lysis, and remained at normal for nine days, when a small abscess appeared. This was the first case treated with leucocytic extract, hence the small dosage. After the opening of the abscess the boy's temperature fell to normal, and he made an uneventful recovery.