Lupus Elephantiasis,

A Thesis for the degree of Doctor of Medicine (Edin. Univ.)

By

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Edinburgh.
For the opportunity of examining the cases on which the paper is based, I desire to record my thanks to the members of the staff of the Chalmers Hospital, the Royal Infirmary and of the Royal Hospital for Sick Children, as well as to Mr. Alexis Thomæ.

Edinburgh, 29th April 1873.
So much has been written, at home and abroad, representatively and descriptively regarding Lupus, that at the outset I think it desirable to explain that this subject has commended itself to me as one affording scope for interesting investigation owing to several cases having come under my notice (while Resident Physician & Surgeon in the Chalmers Hospital and latterly while a Clinical Lecturer in the Royal Infirmary) which showed unusual developments beyond the ordinary appearance of Lupus ulcers, to developments which rendered diagnosis and especially treatment more difficult, and which seem, in this country at least, not to have been satisfactorily described.

The subject of Lupus being so extensive, I desire to confine myself to the investigation of a form of Lupus or Tuberculosis of the skin characterized by elephantoid hypertrophy of the lower extremity.
I consider myself fortunate in having met with the cases to be described, as they present the features of the disease in a marked manner. It may be well to commence the study of the subject by relating a case which may be taken as an illustration of Lupus olethastis in its commencement.

Janet Allison, aged 8, came under notice first in November 1891 at the Surgical Outpatient Department of the Sick Children's Hospital.

The following are the notes taken at that date: She is a fairly well nourished child, but her hands and feet have a marked tendency to hardness and Coldness. The cheeks are somewhat puffy, especially about the lower eyelids and bilateral conjunctivitis, as well as Chronic Cerema of the
The nasal surfaces are present. The patient was brought to hospital on account of the condition of foot to be presently described, of which unfortunately no history could be obtained.

On the left foot the second and third toes are greatly swollen, so that they press closely against each other and the adjacent toes. The swelling mainly involves the skin. Structures, presents a tinge which colour with a variable tinge of blue and is in parts covered by a yellow crust. On raising this, a granulation surface is exposed, pale and indolent in appearance and giving a clear yellow exudation. Towards the web of the affected toe, the thickening and infiltration of the skin have spread for a little distance to the dorsum of the foot. The surface of this skin is red and shining compared with the normal adjacent skin. Halfway between the toes anterior to the is a small circular patch of similarly thickened skin, presenting the same
characters. The general lymphatic glands on the same side are somewhat enlarged.

While the child was under observation, she suffered from repeated and recurrent attacks of what could only be described as facial erysipelas, characterized by high temperature, general ill ease and very marked swelling and redness of the face. It appears that she previously had suffered from these attacks, which were regarded by her friends as the cause of the persistent flabby condition of the face.

The treatment consisted of thorough removal, by means of knife and spoon, of the affected skin of the face and foot.

Microscopic examination of a section from the diseased area revealed the following: (crossing out)

The surface epithelium shows most active proliferation. The horny layer is heaped up on the surface and the Kélc-Malkophé is seen sending down processes into the Corium and
and subcutaneous tissue which are finger-like, branching, interlacing in parts and enclose cell nests; in fact the process of epithelial overgrowth is precisely similar to, and scarcely to be distinguished from, commencing epitheloma. The corium is immensely thickened and is almost exclusively occupied by granulation tissue presenting the most typical histological characters of tubercle. Here and there are solitary tubercular granulations, but they are mostly present in the form of a diffuse infiltration replacing the proper elements of the corium and towards the surface coming into direct contact with and penetrating the epidermis here and there. Characteristic giant cells are present but not in any great number. At parts the continuity of granulation tissue is interrupted by areas of recent hemorrhage and in parts the sweat glands may be recognised. Numerous young capillaries are also present. Sections were specially stained with Carbolie Fuchsin and examined for bacilli, but with
After removal of the affected tissues in the manner described, the surface, under iodoform dressing, healed soundly, exhibiting a series of depressed bluish scars. The cervical lymphatic glands diminished in size, and the general condition of the young patient greatly improved.

I believe that had this case not been promptly treated in the method described, the local condition would have progressed and ultimately shown the appearances of the advanced cases hereafter described.
The following case presents the features of the Lymphatic Elephantiasis condition in an advanced stage of the disease:

Annice Atkins, aged 17, came under the care of Dr. Badenoch in Mr. Duncan's Ward in the Royal Infirmary in September 1890. She is a native and always been a inhabitant of Newcastle. The family history is apparently satisfactory. Patient was healthy as a child, until she had a mild attack of measles shortly before the age of five. After she was quite convalescent, the little toe of the right foot became inflamed and sore. Her mother considered this unimportant at first, but in spite of all treatment she did not get well until six months had elapsed. After a short interval of apparent health, she developed a series of small abscesses under the chin below the chin (Fibrolever).
These continued to discharge over a period of nine months. A number of small contained sears now mark the locality.

There then developed an ulcerated afflative surface on the inner side of the right thigh which began in the form of small lumps on points; these afterwards ran together forming one sore which spread round at the margin and healed in the centre. This only healed up to last six two years, the result being a white smooth scar measuring 10.5 x 7.6 cm on a level with the surrounding skin and confined to the fatty tissue (fats?)

During this time she was very delicate and was constantly in bed.

Soon after a similar sore developed on the inner side of the right leg, just below the knee, which also spread at the margin while healing took place in the centre. This continued increasing for five years, when healing occurred. The scar measuring 13 x 14 cm and being white, raised above, surrounding
Skin, thickened, and nodulated, as well as adherent to the subjacent tissue.

Before the above healing took place, when the patient was twelve years old, the leg began to swell about the middle of the calf. The swelling gradually extended down to the foot, with the result that three years ago, the patient was unable to get on her boot.

The ulcer and the swelling were always present in the spring, although the general health and sexual development appeared satisfactory.

Blisters would form on the skin of the leg and foot, purple and discharging watery fluid, "a fresh one appearing after one burst." Hairs and warty thickenings, now or less, and flower-like, appeared on the dorsum of the toes.

Last year an ulcer formed on the dorsum of the little toe. It did not heal and the process now is visibly affecting the toes. On the back of the calf there formed a number of similar ulcers about twelve months ago, and these are still open.
Eighteen months ago, a Newcastle Surgeon advised amputation.

The following was the condition of patient in December, 1879:

This is a pale ill-nourished girl but not anaemic. Her hands and feet are usually cold, there being a sub-normal temperature of 94°. The pulse is 72.

No crumbling of nails is present.

The following are the measurements before treatment:

<table>
<thead>
<tr>
<th>Right leg</th>
<th>Left leg</th>
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<tbody>
<tr>
<td>Mid thigh</td>
<td>36 cm</td>
</tr>
<tr>
<td>Knee patella</td>
<td>30</td>
</tr>
<tr>
<td>Above</td>
<td>30.5</td>
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<tr>
<td>Below</td>
<td>30</td>
</tr>
<tr>
<td>Mid calf</td>
<td>33.5</td>
</tr>
<tr>
<td>Ankle, above</td>
<td>26</td>
</tr>
<tr>
<td>Dorsum of foot</td>
<td>25</td>
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</table>

The right leg, as high as the knee, is very considerably swollen, more especially in the region of the ankle and dorsum of the foot. The skin is quite healthy, so far as thigh is considered, but below the knee...
it becomes gradually thick and rough. Several warty masses and rounded button-like masses are seen on the front of leg and on foot. On the back of the calf, are several annular ones with thickened skin edges and large indolent granulation. The centres are bluish, shiny, and of cicatricial character (tuberculous ulcers).

On the dorsum of toes, and extending almost continuously from one to the other, is an ulcerated surface, indolent and soft and not typically leprous. The granulations are very large, solid, and raised together.

On forcible pressure the leg "pits" and the colour leachens, but on the removal of pressure the recovery is very slow.

Treatment. On 24th September, 1879, chrysophan was administered and all the ulcers were scraped thoroughly. Large masses of granulation tissue were removed by seconson and spoon, and the surface was thoroughly "scrubbed" with a strong...
Measurements of Right Leg Before & After Treatment

<table>
<thead>
<tr>
<th>Location</th>
<th>Before</th>
<th>After</th>
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</thead>
<tbody>
<tr>
<td>Mid Thigh</td>
<td>36 cm.</td>
<td>36 cm.</td>
</tr>
<tr>
<td>Above Patella</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Across</td>
<td>30.7</td>
<td>30.5</td>
</tr>
<tr>
<td>Below</td>
<td>30.5</td>
<td>29</td>
</tr>
<tr>
<td>Mid Calf</td>
<td>33.5</td>
<td>29.5</td>
</tr>
<tr>
<td>Ankle (above malleol)</td>
<td>26</td>
<td>22.5</td>
</tr>
<tr>
<td>Dorsum of Foot</td>
<td>2.5</td>
<td>2.2</td>
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</table>
solution of Trichloride of Mercury. Iodoform was then well rubbed in and the limb bandaged and laid on an inclined plane.

The healing was rapid, the skin being whole on 10th October. Great diminution was apparent in the size of leg and foot (see opposite page), the measurements after the healing of the surface were as follows:

<table>
<thead>
<tr>
<th>Right leg</th>
<th>Left leg</th>
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<tbody>
<tr>
<td>Buttock</td>
<td>36 cm</td>
</tr>
<tr>
<td>Knee</td>
<td>30</td>
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<tr>
<td>Knee</td>
<td>30.5</td>
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<tr>
<td>Below</td>
<td>29</td>
</tr>
<tr>
<td>Mid calf</td>
<td>29.5</td>
</tr>
<tr>
<td>Ankle</td>
<td>22.5</td>
</tr>
<tr>
<td>Dorsum of foot</td>
<td>22</td>
</tr>
</tbody>
</table>

The scar tissue resulting was very thick, tense, brawny and bluish red. Marks and other thickening of the skin were still present, especially one large elevated, button-like mass, the size of a half-crown situated on the dorsum of foot.
The ankle joint was much more mobile at the date of dismissal from Hospital (10th Oct. 1899).

Microscopic examination of a section of the affected tissue revealed appearances very similar to that case. The tubercules growth in the Commin is well seen, especially rich in cells, and particularly giant cells. In these sections it is well seen how the surface epithelium was projected outwards in the form of Arab-like evaginations. The epithelium on the convexity being ultimately penetrated by the tubercle. At other parts, where the epithelium is much thickened, there are cell-nests similar to those observed in epitheloma.
The following case is another example of Lepra Elephantiasis, or even a more advanced stage of the disease than the preceding:

Janet Fraser, aged 32, wife of miner, residing in S. Africa, was admitted to the Chalmers Hospital in February 1891. The following is the condition of the patient on admission:

She has the appearance of a fairly well nourished woman and does not look anaemic. On the left cheek a small patch of non-ulcerating leucosis, about the size of a sixpenny piece, is visible. There is also, in the region of the left elbow, a distinct lesion, an inch in length, evidently the result of an old tubercular abscess.

She is somewhat troubled with a cough, but examination of the lungs reveals no dulness, though harshness of respiratory sounds and occasional rales at the axillae. No bacilli could be found in the sputum.
The heart and abdominal organs are normal. Examination of the blood shows 4,720,000 corpuscles and 64% haemoglobin. No trace of Filaria Saginaria. Feces could be obtained, the looked for at suitably late hours.

The breathing is somewhat irregular. There is a history of a miscarriage soon after marriage two years ago, but there has been no second pregnancy. No clubbing of the nails is visible. The patient has never been abroad.

There is no history of Syphilis. As far as the family history is concerned, the only point of importance is the death of her sister from Pneumonia at the age of sixteen.

The history of the disease.

The patient as a child was free from any special ailments. At the age of sixteen, while a fit head-wound, she suffered from a severe cold; since then she has always been more or less troubled with a cough.
When seventeen years old, she stated "water gradually gathered in the abdomen" but in the course of twelve months this gradually, without treatment, disappeared. (? Tubercular ascites)

About this time, there developed in the region of left elbow a swelling which seems to have been treated by "sawce" & drainage tubes & as a result a small piece of bone was discharged. A discharge continued for three years, till a second piece of bone came away. The locality is marked by the scar already referred to (Tuberculosis disease of lower end of humerus?)

In the following two years she was able to do the work of a general servant.

At the age of twenty-two however, a redness and swelling, without any known cause, appeared over the joint of the left large toe. The treatment consisted of "leeches and blister"; the skin gave way and a discharge, which continued for eighteen months, commenced. She then came to the Royal Infirmary
where it is stated, Mr. Bell removed
the bone of the toe" (Grecian disease of kline?)
She returned home after a stay of a
few weeks in hospital, but shortly
thereafter, it would be that a swelling
and rawness (ulceration) of the skin
of the large toe and between the toes
developed, and further, from the toes
upwards towards the knee, the Skin
of the leg was the seat of repeated
attacks of "Inflammation" accompanied
by considerable swelling and the
formation of vesicles, which ultimately
blistered. (Epipelas ?). The ulcerated surface
in the region of the toes and the
swelling, from this time, seem to
have continued very, very slowly to
increase without causing the patient
any local pain. Above the
knee a reddness, hardening and swelling
developed, this hardness and swelling
have gradually increased since.
While the disease was slowly
advancing, the patient began to undertake
a greater amount of housework than usual
and, simultaneously, the skin of the leg between the knee and ankle, as the patient remarks, "enlarged and later in part broke in several parts. The appearance was that of numerous areas of small granulation-like projections of the skin surface, from toes to knee, invading both the front and back of the leg.

From that time the areas have very gradually become more prominent and hyperemic, the surface invasion and the limb increased in size.

The process, apart from the intercurrent inflammatory attacks, has given the patient no pain, nor has there been any loss of flesh or obvious change in the patient's general appearance. The great enlargement of the leg has necessitated the frequent use of a couch during the day, but otherwise she feels able for household work.

Local Condition: Both lower limbs are unusually
enlarged from the foot to the knees but especially the left, on which indeed the swelling extends to the foot and trochanter. Both limbs pit on pressure.

On the right leg, the skin is practically normal except for the following patches:

Three on the dorsum of the foot, two of which are scarcely raised thickening of the skin - circular, hard, blue in colour and scaly on the surface, the third over the kneecap of the great toe is much larger (about the size of a half-crown), the others the size of a sixpence) and more thickened. The third area is of a red colour, is cracked across the line of the joint and in part discharges, and in part is covered by an excreta-like crust.

In addition, other patches, showing different stages of the same process, are situated on the knee (anterior aspect) on the middle of the inner aspect of the thigh and just above the popliteal space. There are no waists or vesicles, nor is
The skin itself thickened.

The left leg:

The greater part of the skin of this limb is affected with a peculiar form of thickening which in parts has led to the destruction of the surface epithelium.

Along the face there is to be seen a hard, red, patch of previously ulcerated skin. The thickening of the skin commences in patches, which enlarge by extension of their margins. The appearance is that of granulation tissue forming beneath the skin, thinning the latter and appearing through it in the form of spots or button-like masses. A considerable quantity of sticky yellow discharge moistens the surface.

These patches tend to die in the centre and show a bluish-pigmented nodulated scar.

The largest patch involves the entire circumference of the lower half of the leg. A similar area affects the dorsum of the toes. The nails are loose and altered in appearance, while the toes are abnormally increased in size.
Another large area, similarly affected, is to be seen on the anterior aspect of the knee. Here also healing is taking place in the centre, while the disparity extends at the margins.

There are several large patches on the thigh, some merely in the stage of thickening, others just commencing to permeate through.

Leaply, any part of the skin of the left leg is normal; scars or actual patches occupy nearly all its area. The skin throughout is tightly stretched, without any foldings or varicose thickening but here there is hypoplasia.

No enlargement of the inguinal glands or of the femoral glands is present.

The goutation from the surface of the leg was submitted to special laboratory examination and was found to be serum.

The following are the measurements of the limbs:

<table>
<thead>
<tr>
<th></th>
<th>Left</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thigh</td>
<td>67 cm.</td>
<td>41.7 cm.</td>
</tr>
<tr>
<td>Calf</td>
<td>41.7 cm.</td>
<td>35.5 cm.</td>
</tr>
<tr>
<td>Great toe</td>
<td>26.5 cm.</td>
<td>26 cm.</td>
</tr>
</tbody>
</table>
Under Cocain one of the more prominent nodules was excised. Of these sections were prepared and showed the following microscopical characters:

An active growth of the surface epidermis is obvious as in the previous case, but without any appearance of ulceration. The appearances suggest more chronicity than those of the former cases. Beneath the epidermis, and as far as the section extends (6 millimetres) in depth, the corium is occupied by discrete and confluent tubercular granulations, with most characteristic giant cells and accompanying epitheloid and small round cells. The intervening tissue is more fibrous in character than in the preceding specimen and is in parts of sarcoide structure, including here and there the remains of connective structures.

The earliest tubercles are observed developing in connection with the walls of vessels, occupying the capillae of the corium. All stages in their formation and
The change they subsequently undergo may be observed.

Treatment

To extent to which disease has advanced obviously rendered any operative interference, short of amputation, almost inadvisable.

Hence in hospital, the treatment of this patient consisted of rest elevation and bandaging of the limb, alongside daily cleansing of the surface with alcohol and Boracic lotions.

Subcutaneous injection of Koch’s Tuberculin were tried also. The reactions were very decided: the characteristic rigor with subsequent sickness and headache occurred after nearly every injection.

The patient further complained of pain in the affected limb and an increase in the Erysipelas eruption was visible.

The patch on the patient’s face showed the well-known local reaction of a Lupus area. One of the Series of temperature charts is seen opposite.
While under treatment in hospital, a red patch, about the size of a crown-piece, appeared on the chin, about the middle of the anterior aspect of the thigh. There was a decided likeness to lupus-lepros about it, but after a day or two it disappeared.

On 11th April 1892, at her own request, patient was discharged from hospital.

At that date, the measurements were:

- Mid thigh 46.8 cm
- Calf 35
- Ankle 25.5

Compared with (on admission):

- Mid thigh 51.7 cm
- Calf 41.4
- Ankle 26.5

The papules were much less prominent and hyperemic, while at the margins a white line of encroaching cellulitis was evident. Subsequent inquiries elicited that the patient died from "sarcoid" a year after leaving hospital.
The following case is one of hypertrophic tuberculosis of the skin, in the region of the Malleoli, which presents certain similarities to the previous cases without having reached the Elephantiasis stage.

John Watson, aged 19, Railway Engineer, residing near Kinross, was sent to Ward XIII, Royal Infirmary, in March 1892, owing to the condition of the foot to be presently described.

He is a strong, active, well-developed man. There is no history of alcoholism or syphilis. His father is said to be a healthy ploughman, but his mother, whom I saw at Kinross, suffers from typical tubercular ulcers on face and arm, as well as from a diseased ankle joint.

History. Ten years ago he is said to have had, after exposure to cold, "Bronchitis & Inflammation of the lungs." A week
a two afts recovery from this illness, it seems a small lump, about the size of a bean, appeared under the skin, just below the external malleolus of the right ankle. Poultices were applied; the skin gave way and a long continued discharge began. A process of healing and breaking down continued for nearly four years; thereafter the surface sealed. The submaxillary lymphatic glands on the right side then enlarged, suppurred and finally ruptured; a characteristic scar is left.

About six years ago, a similar nodule in the former developed over the internal malleolus. A gradually increasing, scabulation-like nodular surface (as represented in the photo & drawing) resulted. The patient has throughout continued at his work, which, however, owing to the necessary walking, he kept up an irritation.

Three years ago, an inflammation and apparatus involved the lymphatic vessels running up the inner side of the thigh, as far as the groin. There are a series of characteristic scars
now been in this situation.

**Local Condition:**

The affected area on the inner side of the right ankle is a somewhat triangular patch, measuring at its base 10 cm and vertically 8.6 cm, with the center coinciding to the internal malleolus. This area is raised almost half-an-inch above the surrounding skin, which is livid and shining in appearance. This lividity extends up towards the middle of the leg and resembles that seen in the ordinary variolar ulcers. The surface has a tuberculous granuliform-like appearance owing to a large number of projecting nodules, many of which have become confluent. A yellow sticky fluid exudes and, here and there where it has dried, appears as a light yellow crust, contrasting in colour with the red and in parts shored up to a livid appearance of the rest of the surface. Here and there between the nodules, pin furrows of cicatricial tissue. On the outer side of the ankle, a corresponding area
measuring 10.2 cm. vertically and 8.5 cm. in width, is occupied by thickened scar tissue and evidently the site of an antecedent lesion, similar to that on the inner side of the same ankle. The surface here and there shows slight yellow crusts of a very thin nature.

The treatment consisted of a thorough scraping of the diseased surface. This proceeding enabled me to see that the condition was a tubercular infiltration of the true skin, extending down to the fascia and projecting through the latter in the form of penetrating processes.

Appropriate dressings of the surface assisted the healing, and the patient was able to leave the infirmary with a well-fomed scar at the site of the diseased area.
The last case I purpose drawing attention to, is an example of what is commonly known as Lupus Erythematosus. Though in Elephantiasis it is present, it is allied in some respects, to the preceding cases.

Hugh Kendall, at 12, school boy, was admitted to Ward X, Royal Infirmary, on 4th April 1892.

He is a robust active, healthy looking boy. His family history does not show any tubercular tendency in any of the members.

At the age of two he had diphtheria and five years ago measles. Immediately after recovery from the latter, it is stated, a small red rash appeared over the inner side of the left knee. This has gradually enlarged and on account of it the patient has been brought to hospital.

The patch is quite large (see diagram), is situated on the inner side of the left knee and extends from the middle of the patella to the tubercle of the femur (9 cm), and
from a little above to a little below, the level of the patella. It measures
it's vertical extent 6 cm. and is, roughly speaking, circular in shape. The centre, which
is on the same level as the healthy skin
beyond the patch, is occupied by flaked
scar tissue, while towards the margin
the patch is very distinctly raised above
the level of the surrounding skin. This
is due to a thickening in the skin itself
immediately beneath the epidermis, but
the patch is freely movable on the subjacent
structures. This thickening is due
to a number of confluent rounded nodules or
masses, feeling like small round shot under
the finger. The epidermis over these is
thick, flaked and partly covered with
crust and scales. The most recent
nodules are at the extreme margin of the
patch, showing the extension of the area
by the formation of fresh nodules at the
margin. The centres of some nodules
are translucent, owing to the "Apple-jelly"
condition of the interior.
The femoral lymphatic glands on the left
side are distinctly enlarged (probably tick-bite). On the posterior aspect of the same leg are two patches of altered skin, having the following characters and position:

The larger, situated in the middle line of the back of the thigh just below the fold of the buttock, is roughly triangular (4 x 2.5 cm.) and entirely occupied by nodular thickenings of skin resembling with a glazed sebaceous surface of bluish red colour. Above this and close to the natal cleft, is the second patch referred to, circular, 2 cm. in diameter, and consisting of one hard central nodule also covered by glazed sebaceous epidermis of bluish red colour.

On the inner side of the instep close to the ball of the great toe, is a small thickened patch of skin with a scar in the centre and close beside it, a long curvilinear scar of a former wound.

TREATMENT

The application of Embrocation Cantharides to the affected area produced no permanent improvement and recourse was therefore
had to thorough scraping of the surface as in the previous case; and within a month the patient was able to leave the Infirmary with a sound cicatrix.

Microscopical Examination of sections of the affected area shows the following:

The proliferation of the surface epithelium did not exhibit the tendency to grow down as in the preceding cases, but rather projects on the free surface in the form of small papillary nearly projections, each papilla structurally representing a papilloma. In the corium, as in the other sections, numerous discrete masses of vascular granulation tissue are present, and for the most part, occupy the zone immediately beneath the epidermis, with the cells of which the intercles are in contact. The sight cells are comparatively few in numbe.
Clinical Features of Lupus Eulphanticus.

From having only observed the small number of cases recorded in the preceding pages, I am not prepared to furnish anything like a complete account of the clinical features of the disease.

Being a form of Tuberculosis of the skin, the disease under consideration exhibits many features similar to those met with in Tubercular lesions generally. To one seeing the disease for the first time, the appearances presented are certainly striking and differ very remarkably from those exhibited by other members of the Lupus family. Like Lupus Vulgaris, it commences in early life and particularly in early adult life. It occurs in the members of families with a tendency to Tubercular disease, and evidences of past or present Tuberculosis in some other part of the body are not uncommonly present in the patient.
It is quite peculiar among the members of the Lupus family, in regard to the sites for which it shows a preference. All the cases I have had to do with have had the lower extremity as the seat of the lesion.

As far as I am aware no case is recorded in which the trunk has been affected, and the face the favorite seat of Lupus vulgaris has never, so far as my knowledge, been the site of the disease, although in certain cases of "Potato Moc" recently observed there have been certain features similar to those presented by the cases described.

It is very probable that, for the development of Elephantiasis, as a sequel and complication of Skin Tuberculosis, the vascular arrangement of the extremities is an essential factor. The Elephantiasis element of the disease would appear to be a consequence of the locality and not a result of anything peculiar in the disease itself.

The upper extremity is reported by certain observers to have been the seat of the disease, but the appearances are much more
Typically developed in the case of the lower extremity.

In the lower extremity, the disease would appear to commence with the development of a lupoid form of tuberculosis in the region of the toes and their extensor aspect, and in the vicinity of the nails. The early stages show appearances very similar to, and indeed indistinguishable from, those of ordinary lupus. The tubercular deposit forms at one or more points, and from this apex spreads out to involve new areas of skin. It does not at first show any tendency towards ulceration. Sooner or later the toes come to be swollen, shapless and clasp closely apposed to each other. Then ulceration has occurred and healing has followed, the toes may become adherent. The nails themselves show changes, becoming softened and partially detached as the local changes progress. Extreme chronicity is a characteristic of these changes.

During the progress of the disease, secondary for...
of tubercle not infrequently are found to appear in the course of the lymphatics of the affected limb; such are observed especially as tubercular nodules and thickening on the dorsum of the foot and on the inner side of the leg and thigh, reaching as high as the vertical chain of inguinal glands, which themselves are decidedly enlarged.

From time to time one of these lymphatic foci may become enlarged, soften, and ultimately come to discharge by rubbing externally, thus resulting in the well-known tubercular sore, which, ultimately healing, leaves a characteristic pigmented scar as seen in my own cases.

This involvement of the lymphatics of the limb would seem to be an important factor in the production of the lymphatic dropsy or elephantiasis of the extremity.

It is especially in such cases as have been described, that these sores along the course of the lymphatics have been very prominent features.

It would seem that the lymphatics become extensively blocked, both by the occurrence...
of Tubercular Lymphangitis and by processes of Cavitisation occurring at the different foci.

In these cases of Lupus Elephantiasis one is generally able to collect a history of acute or subacute attacks of lymphangitis and in some instances such have been described as elephantiasis. Similar attacks appear to occur also in tropical elephantiasis.

The swelling of the limb is quite peculiar and is totally different from that of ordinary elephantiasy, as it does not commence at the distal extremity of the limb but, as will have been noticed in the description of the cases, may begin in the leg or calf and only later affect the other parts of the extremity. In this respect there is a resemblance to tropical elephantiasis, in which the lumps are supposed to be extensively knotted and included.

Quite lately I had the opportunity of examining an advanced case of tropical elephantiasis in which the entire left lower extremity was enormously enlarged, from the calf to the ankle, but the foot was remarkably free.
Cases of Lupus Elephantiasis have been recorded in which the size of the limb was increased threefold.

The edema further differs from ordinary edema in being firm, more solid, persisting only on forcible pressure and varying but little with the upright or recumbent posture of the patient. Even prolonged confinement to bed does not cause disappearance of the enlargement.

Once Elephantiasis has developed, the tubercular lesions in the skin become altered in their appearance, and differ altogether from those of Lupus or any known form of Skin Tuberculosis.

The affected areas of skin present a tuberous or nodular appearance, due to the formation of large masses of evacuated granulation tissue forming beneath the skin, thinning the latter and appearing through it in the form of knobs or button-like masses, which are covered by a thin, shiny, bluish-red epidermis. At the summit of these knobs, this epidermis tends to give way and a sticky
serious exudation escapes, often in considerable quantity. Here and there the exudate on the surface, forming scales and crust. As will be afterwards described, these nodular masses of granulation appearance, consist of very characteristic tubercular tissue. 

So far, the function of the limb, or indeed the state of the general health is probably but little interfered with. The patient is able to continue at his or her usual avocations, and does not appear to suffer in any way except for the weight and bulk of the extremity.

In the course of years, the condition may gradually progress with intervals of exacerbation during which partial healing may occur, but there is always the possibility that at points, especially when the skin is broken and exposed, the tubercle may take on more active growth and cause further local disfigurement and destruction. Thus for instance in the case of the bee mentioned the tubercle has spread to the deeper tissue and brought about the destruction of the
changers of even the toes themselves.
In the long bones as a rule considerable periosteal overgrowth and thickening also exist, similar to that in Chronic ulcers and in Elephantiasis of the limbs from other causes. The further history of the disease depends on a variety of factors, for example, the patient may become afflicted with tubercle in other parts of the body which may, if in the vagina, lead to death. In only one of my cases did the disease of the extremity interfere with the patient's life, namely, Case 3 where both limbs were involved, one to an advanced degree and where the associated sepsis resulted in the occurrence of gangrene which led to the death of the patient.
Pathological Anatomy of Leptospirosis

The observations I have to offer under this head, are based upon an examination of the portions of the tissue, removed, in the different cases, which have come under my notice. They refer therefore chiefly to the identification of Tubercles, as the essential element in the disease, to its distribution in the skin and the results produced in the structures of the skin. As far, I have been unable to obtain an extremity affected with the disease, by amputation or after death, and I am therefore not in a position to give a complete account of the Pathology of the disease as a whole.

In relating my cases, I have referred to the microscopical appearances of the affected skin areas, and it will suffice if I recapitulate the main facts brought out by these observations:

The Sores are most characteristic Tubercular granulations and diffuse Thrombi
infiltration, replacing the proper elements of the Corium and extending from immediately beneath the epidermis to the subcutaneous tissue.

Typical Giant Cell systems, with reticulated processes and peripherally distributed nuclei, are readily seen. At the surface, the epidermis is bulged, thinned and in some parts, penetrated by the erupting granulation tissue, the surface then becoming punctating and discharges. Here and there, on the other hand, the surface epidermis shows the most active proliferation, the horny layer being heaped up on the surface, and the Retzi Molluscus, greatly thickened, sending down prolongations into the Corium. These processes are finger-like, branching and interlacing, and here and there enclose cell nests. They have a very close resemblance to those seen in Commencing epithelium in Lupus; however, they are secondary or consecutive to the tubercular growth of the deeper structures, while in Cancer they are primary in origin; further is the ease of the former only that epithelium which is in contact with the altered Subepithelial
tissue is affected.
In the deeper parts, the Tubercular granular tissue invades the different tissues with which it comes in contact, connective tissue, sweat glands, blood vessels and lymphatics. Peripherally the Tubercle spreads by direct extension at the margins, and also by lymphatic dissemination.
It may be pointed out, that the characters of the Tubercular lesion are practically identical with those met with in Lupus generally and in Tubercle of other tissues.
A number of sections were stained with Carbolic Fuchsin for the purpose of identifying the Tubercle Bacilli, but the search was not successful. This however is not a proof of the absence of the Bacilli as only a limited number of sections were examined and sufficient evidence otherwise of the Tubercular nature of the lesion rendered recourse to experimental inoculation unnecessary.
Concerning the interesting question of the mode of infection of the skin with tubercle, the evidence I have been able
to gather is not sufficiently conclusive to admit of the precise explanation of such a process. In certain of the cases, I observed, where the skin lesion was the only tuberculosis disease observable in the patient and where it began in the extremities, more especially at the toes and the region of the nails, it appeared to me very probable that the Bacilli entered the skin from without. A foothold once obtained in the Corium, further extension and involvement of lymphatics are merely later stages of the infection. The fact that the local skin lesion in these cases is very different from those in which the disease is secondary to that in other structures (glands, bone, etc.), and where the skin is affected from beneath, may also be regarded as further evidence to support the view that Lupus is a result of infection from the skin.
Differential Diagnosis.

In the fully developed stage of Lupus elephantiasis, the condition most nearly resembles the form of elephantiasis called tropical or elephantiasis malum. The point of difference is that in the former there is in addition tuberculosis of the skin.

I was able to obtain the opinion of a Medical Missionary, from the Coast of China, on one of the most advanced of the cases. It appeared to him, in its general features, very similar to what he had seen in the habit of seeing abroad, but the tubercular ulceration and scars enabled him to differentiate clinically. Great assistance in the diagnosis would be derived by obtaining a history of residence in the tropics, of malarial fever, of lymphatic inflammation, of the skin, or other evidences of tubercular disease.
Regarding the diagnosis of the condition from the Elephantiasis cases referred to by Jonathan Hutchinson as following Phlegmasia Alba Dolens, what has just been said is differentiating the tropical variety is applicable.

Hutchinson remarks: "In some cases of smooth Elephantiasis in women the disease has taken its origin in the oedema which attends pregnancy, or in an attack of Phlegmasia Dolens after delivery. Recurring attacks of hypotrophic swelling in such a patient are essential parts in the development of such an Elephantiasis. Each attack usually leaves the affected region permanently more swollen."

Again certain cases of hypotrophic Lupus of the extremities, with or without Elephantiasis, have a strong resemblance to the papillary surface of epitheliomas especially such as involve the skin of the extremities. The diagnosis
is to be made by careful observation of the ulcerated area, in which evidences of Tubercle will be recognised by anyone of experience. The following points also bear upon the differential diagnosis:

- The association of Lupus elsewhere.
- A tubercular family tendency.
- The extremely slow progress.
- The absence of pain and the patient's age.

An epithelium of a character simulating Lupus would probably be found to be due to some antecedent cause (e.g., irritation).

In any doubtful case, the diagnosis may be confirmed by the excision of a portion of the affected tissue, under Creain anaesthesia, and examination bacteriologically or histologically, or both.
Treatment of Lupus Elephantiasis.

The treatment of Lupus Elephantiasis seems to me to depend upon the same principles that guide one in the treatment of Syphilis disease generally, namely, thorough removal of the affected tissues at the earliest possible moment. To my mind then the correct treatment is free excision, by the knife, of the affected patch or patches of skin so that every fragment of tuberculous tissue is removed. A benevolent article from the thigh or other part according to the method of Thiersch will fill the gap most satisfactorily. Unfortunately, many cases are more advanced and will not admit of such a case of the treatment, and therefore recourse must be had to the sharp spoon but with a less satisfactory result. When Elephantiasis, again, complicates...
Lupus the treatment is still more difficult, and the result less satisfactory. Though rest, elevation, suitable bandaging and massage will cause a considerable diminution in the size of the affected limb, yet the restoration of the extremity to the normal can only be obtained by removal of the diseased structures. This when the affected area is extensive, can only be brought about by systematic excision, or amputation.

Several facts of necessity being attached in herexcision.

Life-saving of the main artery of the limb, does not commend itself to me as a procedure likely to give satisfaction, especially as one of the cases I have recorded became spontaneously sanprorous.

In the event of any case being too far advanced for thorough treatment by knife and spoon, the operative procedure to recommend would probably be Gunipulation.

General treatment, of course, as in other forms of Tuberculosis, has to be borne in mind.
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