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A CASE OF TRICHOPHYTIC GRANULOMATA.

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UNDER the title "Extensive Ringworm with Ulceration of the Umbilicus" I gave an account of the early history of the present case (1). The patient has been under observation off and on since then, and his later history seems worthy of record. I append a brief abstract of the early notes.

On October 5th, 1905, the patient, James C—, then aged 14 years, was sent to me at the London Hospital on account of a large ulcer of the umbilicus. On his being stripped it was at once seen that in addition to the ulcer there was a peculiar scaly condition of the skin of the trunk and extremities which further examination proved to be ringworm.

The boy was born and had always lived in the East End of London, in Limehouse. His father and mother were healthy. The father was a water-side labourer. He had never been out of England, and so far as I have been able to ascertain, there had been no contact with people who had been abroad. A sister, aged 21 years, suffered from the same disease. She had been affected for fifteen years, the boy for eight. No other members of the family had had any skin-affection.

The patient was well until 1897, when he was noticed to be suffering from "ringworms" of the body. So far as I could gather the disease was left untreated and gradually spread until the whole trunk and parts of the limbs were affected. An illness, said to be scarlet fever, followed, and from this he apparently made a rapid recovery. During the next year a swelling appeared about the

umbilicus, and this broke down and formed an ulcer, for which he was treated at a general hospital in 1903. The ulcer was then about the size of a half-crown piece. It was dressed with ointments and apparently healed up, but speedily broke down again and had given trouble ever since. In July, 1905, it began to enlarge, and in October he was brought to the London Hospital. Very little attention had been paid to the boy's health, and the conditions under which he had been living were very bad.

FIG. 1.

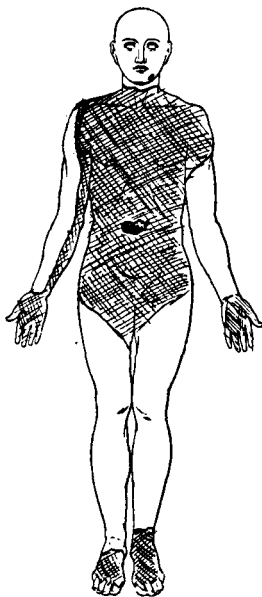
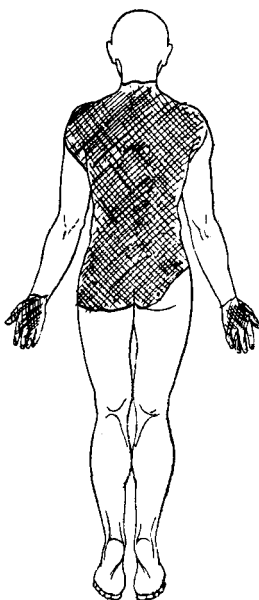


FIG. 2.



James C— (front).

James C— (back).

Extent of eruption in 1906.

On admission to the hospital the most striking feature of the case was a large reniform ulcer at the umbilicus. The ulcer was nearly three inches in its transverse diameter, and an inch and a half vertically. The margin was greatly thickened and indurated, and the edge undermined. In parts a probe could be passed under the edge for one third of an inch. The ulcer was half an inch deep in the middle. The base was irregular and covered with a yellowish-brown moist slough. There was a thin, yellowish purulent discharge. On the right wrist there was a circular infiltrated patch the size of a

penny. This resembled a local tubercular infection. It had never ulcerated.

The skin of the whole of the trunk was scaly. The scales were small, adherent, and of a brownish tint, and on close inspection raised red lines of papules in rings could be seen. These were most marked on the abdomen and lower part of the chest. The area involved in the scaly eruption is shown in the annexed diagrams (Figs. 1 and 2).

All the finger-nails were rough, thickened, opaque, and of a brownish tint in their distal parts. The thumb-nails were also involved, but to a less degree. The toe-nails were unaffected. With the exception of a small patch the size of a shilling on the left side of the chin the face was free.

The eruption itched a great deal, and the boy was constantly scratching.

The patient was well developed, but thin and anæmic. There was no evidence of visceral disease.

Scrapings taken from the skin and nails showed a large quantity of mycelium and some spores. The fungus did not differ microscopically from the common endothrix. Some of the exudate from the ulcer was examined by Mr. Twort in Dr. Bulloch's laboratory, and he obtained pure cultures of the fungus.

Dr. Colcott Fox was kind enough to make cultivations from some of the material, and he reported that the fungus was undoubtedly an endothrix. The colour was pale buff, and the crater was well marked (Fig. 10).

There seemed to be little doubt that the ulcer at the umbilicus was caused by the fungus. Microscopical sections of the edge showed a simple inflammatory infiltration.

The boy was in the hospital off and on for nearly two years. During that time a very large number of flat button-like lesions, varying from 2 millimetres to 2.5 centimetres in diameter, developed. Many of them were cured by the injection of carbolic acid. Some were scraped away, and strong antiseptics applied to the base. The lower portion of the left ear ulcerated and sloughed. The scalp remained quite free.

Iodine, chrysarobin, and many other antiseptics were used, and finally all the lesions cleared up, the umbilical ulcer healing after

prolonged immersion in a boric acid bath. The nails were removed by operation, and the beds dressed with a weak iodine solution.

The granulomatous eruption left extensive scars, the largest and thinnest being about the umbilicus. It is noteworthy that at no time was the hairy scalp affected except where the disease had extended from the left auricle.

The patient remained apparently well for a long time, though the nails never resumed their normal appearance. A second time the patient was admitted to the hospital (1908), and the nails were again removed and the bases dressed with iodine. He then passed out of sight and was at work. In November, 1911, he again attended the hospital, and was then suffering from a fresh outbreak of the granulomata. This had lasted for several months. There were large tracts of dry scaly eruption similar to those previously described, and in a good light it was easy to see that upon the dry scaly areas there were ringed, slightly raised papules covered with scales. In the right axilla there was an extensive granulomatous eruption of triangular shape and reddish-brown colour. It was covered with small rounded nodules except in the centre, where there was an ulcer of irregular outline, with undermined edges closely resembling the umbilical ulcer present in 1906. From the irregular base of the ulcer there exuded a thin sanious fluid. In the left groin there were numerous flat button-like nodules of a purplish-brown colour with smooth dry surface. These had identical characters with the lesions previously described. It was evident that the disease followed exactly the same course as on the former occasion. The fact that the nails have never been cured I took to be the cause of the recurrence. The patient was shown at the Royal Society of Medicine on November 16th, 1911, and he was then seen by Dr. Sabouraud, who very kindly offered to make cultures of some of the material and report upon them.

Nodules were removed from the axilla and submitted to Dr. Turnbull, who made the following report of the microscopical appearances.

The surface of the piece of skin is irregular, deep clefts passing into the centre. There is a thick layer of horn upon the surface. In places this is infiltrated by polymorphonuclear leucocytes. Many of the clefts are filled by desquamated horn- and pus-cells. Other clefts lose their epithelium and end in abscesses. The periphery of these abscesses is occupied by a granulation-tissue consisting chiefly of large



FIG. 3.—Granulomata in right axilla. Scars of old lesions.



FIG. 4.—Granulomata in left groin. Scaly eruption in both groins and scars of old lesions.

TO ILLUSTRATE DR. J. H. SEQUEIRA'S ARTICLE ON A CASE OF TRICHOPHYTIC GRANULOMATA.

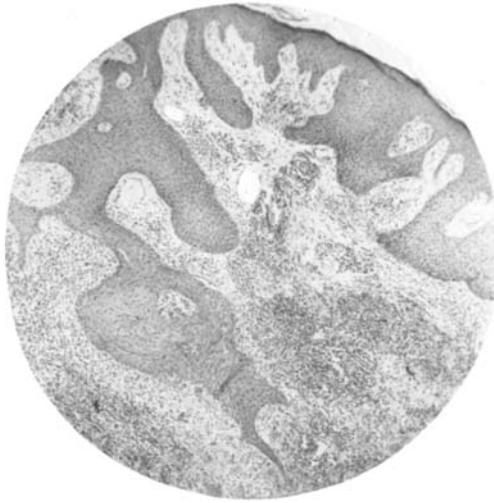


FIG. 5.—Section of granuloma under low power.

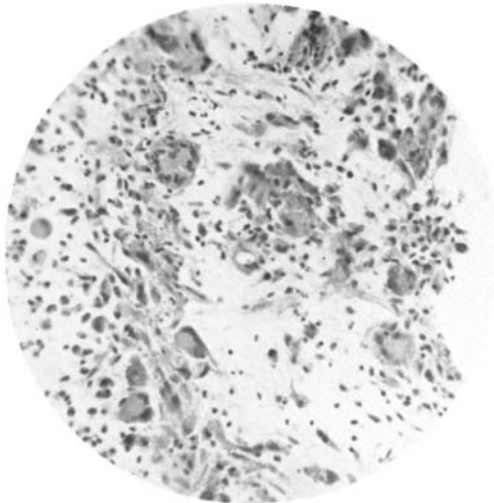


FIG. 6.—Section of granuloma under high power showing giant-cells.

TO ILLUSTRATE DR. J. H. SEQUEIRA'S ARTICLE ON A CASE OF TRICHOPHYTIC GRANULOMATA.

giant-cells with ill-defined borders and peripheral nuclei. Their protoplasm is stained faintly and is usually finely, sometimes coarsely, vacuolated. These giant-cells are also found immediately below the basal layer of the epidermis in places where there is no destruction of the epidermis by abscess formation. The rest of the dermis is infiltrated by very large numbers of lymphocytes and plasma-cells together with some eosinophile leucocytes. Where pus is present Gram-positive cocci are found. In the giant-cells there are trichophytic filaments.

Their position is best seen in Twort's stain. They are straight or slightly sinuous rods containing spores, which are usually smaller at one end of the rod than the other or smaller at both extremities. One apparently branched example was found. The spores are barrel-shaped as a rule, typical examples measuring  $7.5 \mu$  by  $3.8 \mu$ . The spores are usually set close together, the adjacent ends being somewhat flattened. In Twort's stain the wall of the refractile spores is stained red, whilst the homogeneous rod in which they lie is apparently green. Where, however, the spores are separated a narrower red rod joins them. In Weigert-Gram the rows of largest spores are

embedded in a deeply stained blue rod. In this stain much narrower, sinuous, unbranched rods are present which are stained in a speckled manner throughout. There are also rods of slightly greater breadth in which occasional small spores are present. The rows of spores can be recognised within giant-cells in sections stained by hæmatoxylin and eosin or van Gieson. In the former stain the wall of the spore is stained by hæmatoxyliu. There are also in the section small groups of spherical bodies which are about the size of a red corpuscle, some

FIG 10.



Photograph of Dr. Colcott Fox's culture made in 1906.

being larger, others smaller. They are stained in hæmatoxylin and eosin and Weigert Gram very like the red corpuscles, but in Gram they retain the stain; in Twort they are pink, whilst the red corpuscles are green. The majority lie in the infiltrated portion of the dermis; some lie amongst the giant-cells. They are not found in contact with the spore-bearing rods. No rods are present in the epidermis.

The fungus as grown from scrapings of the epidermis and found in the granuloma was identified by Dr. Sabouraud as the *Trichophyton plicatile*.



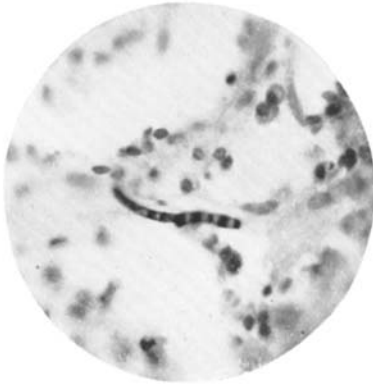


FIG. 7.—Micro-photograph showing mycelium of *Trichophyton plicatile* in tissue. Stained Weigert-Gram.  $\frac{1}{12}$ .

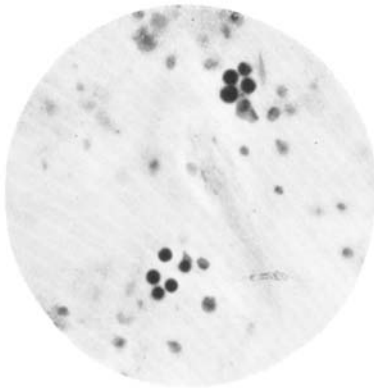


FIG. 8.—Micro-photograph of conidia-like bodies in section. Stained Weigert-Gram.  $\frac{1}{12}$ .



FIG. 9.—Photograph of Dr. Sabouraud's culture of *Trichophyton plicatile* from scrapings taken from Dr. Sequeira's case, October, 1911.

The *Trichophyton neo-endothrix*, variety *plicatile*, was described by Sabouraud in 1909. In his work, *Les Teignes* (2), he states that he had only seen it twice in five hundred cases, both in cases of beard ringworm. The first case was a suppurating ringworm of the beard, the lesion resembling kerion, rounded, indurated, with its surface covered with pustules. The hair was broken short. In the second case the lesions were primarily dry, with red circles covered with broken hairs, but later there developed numerous intra-dermic nodules, discrete and coalescing, and attended with pain.

On microscopical examination the mycelium was found both inside and around the hairs in the form of ribbon-like filaments.

The cultures are remarkably like those of the crateriform type of *trichophyton*. They are white and of cardboard-like consistence with a powdery surface. "The surface," Sabouraud remarks, "gives the impression of a silky material which has been allowed to form folds" (*vide* Fig. 9).

The *Trichophyton plicatile* can be inoculated into the guinea-pig.

Although Dr. Sabouraud had only met with two cases in which he had found the *Trichophyton plicatile*, it is of great interest to know that the fungus is far from uncommon in Copenhagen, for in a recent communication made at the First Northern Dermatological Congress at Copenhagen, Dr. Bang (4) reported that this fungus was the commonest met with in Denmark. He describes four types of lesion produced by the organism:

(1) A dry type with a more or less ringed-form eruption. The affection is pilar.

(2) An impetiginous form often complicated with the following.

(3) A sycosiform variety with a firm infiltration in the skin and deep small suppurative lesions.

(4) A kerion form in which there are round or oval plaques characterised by follicular inflammation.

Dr. Bang reports fifty cases of *Trichophyton plicatile*, of which thirty-nine were in the beard. One case of the dry scaly eruption had lasted for six months; others were of four months' duration.

Trichophytic granulomata appear to develop in two forms. Sometimes there is a common, chronic ringworm, or a more acute lesion upon which a nodular growth develops. In the second type there is a plaque which is studded with nodules. This condition may occur

on the scalp or the beard region, or on the glabrous skin. This form is represented in the case under discussion.

Majocchi (3), in 1883, first described the condition known as *Granuloma trichophyticum*, and most of the cases observed have occurred in Italian clinics. In Majocchi's original case there were neoplastic nodules characterised by epithelioid and giant-cells, and definite trichophytic elements were present in the nodules. Campana described a similar condition in the perinæal and scrotal regions (5). Pini (6), working in Majocchi's clinic, contributed a careful account of a case in 1897. The neoplastic nodules were of almost fibrous consistence, discharging pus, blood, and a yellowish-red fluid. The elastic tissue of the derma was destroyed in the central parts of the growth, and the abscess cavities were surrounded by epithelioid cells and giant-cells. Colombini and Mazza also record cases. Mazza (7) looks upon the trichophytic granuloma as distinct from kerion and from sycosis. He believes the suppuration to be an epiphenomenon. In an important paper Vignolo-Lutati (8) demonstrated that the granulomata develop in the derma and that the follicles are affected. The parasite makes its way into the true skin, and there excites a reaction similar to that produced by the *Bacillus tuberculosis*. Reproductions of plates from Vignolo-Lutati's paper are given in Sabouraud's *Les Teignes*, p. 480, *seq.* Sabouraud himself records a case in which an area upon the back of the hand suggested lepra. The patient came from the Antilles. The supposed leproma was found on microscopical examination to contain a fragment of hair in the centre of each nodule. The hair was infected with the ringworm fungus, and surrounding it was a granulomatous formation. He was led to believe that in all these cases an infected hair was the starting-point of the granulomatous infiltration (9). This does not appear to have been the case in the patient here described. There was no trace of any hair involvement in the sections made, but of course in so long-standing a condition it would be impossible to be dogmatic upon the point.

It is rather curious, considering what is now known of the granulomata caused by sporotrichia and other allied fungi, that granulomatous reactions are not more common from trichophytic infection. It may be that the trichophyta find it difficult to develop deeply in the tissues. The variety of trichophyton does not appear

to be of supreme importance, for Mazza found the Trichophyton violaceum in one case, Sabouraud in one case, while Pini found a trichophyton with a yellow powdery culture in one instance. This last Sabouraud believes to be the *Tr. cerebriforme* or the *Tr. regulare*. Another of Pini's cases gave a snow-white culture, probably the *Tr. gypseum*.

The case I have ventured to describe at so great length is the only one of its type recognised in this country, and possesses features differing from the Continental cases. As regards the source of infection, my impression is that the patient contracted the disease from his sister, who was infected on the hand and arms when I saw her in 1905. She was at the time of her infection engaged in rag-picking, a very dirty occupation, which might bring her into contact with infected clothes from other countries, as the family lived in a poor locality by the riverside in East London. The infection may possibly have come from Denmark.

## REFERENCES.

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  - (9) SABOURAUD.—*Les Teignes*, p. 480, *seq.*
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