Archives of Dermatology and Syphilology

VOLUME 38—N. S. VOL. 1 JANUARY, 1920

NUMBER 1

TWO UNUSUAL CASES OF RINGWORM, ONE OF THEM DUE TO A FUNGUS (TRICHOPHYTON ROSA- CEUM) PRODUCING PINK CULTURES *

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Although the monumental work of Sabouraud and his followers has thrown a flood of light on the whole subject of ringworm in the past twenty-five years, this light has shone chiefly for the dermatologist and in some instances apparently rather dimly for him. The general practitioner still gropes in Cimmerian darkness; for him ringworm is still nothing more than bald, scaly patches on the scalps of children or scaly rings on the non-hairy surfaces; eczematoid ringworm and the deep inflammatory trichophytoses of animal origin do not exist for him — they are a *terra incognita* whose borders he has not even seen, let alone entered on. It is only by the persistent reporting the less common forms of the disease that we can hope to teach him that infection by the trichophyton and other nearly related fungi may produce cutaneous diseases with widely varying symptoms presenting none of the clinical features commonly associated with ringworm, and that such infection occasionally produces severe inflammatory symptoms and even, in rare instance, destruction of tissue. It is partly for this reason, but more especially because they present some features of unusual interest to the dermatologist, that the two cases here described are reported.

REPORT OF CASES

CASE 1.—In August, 1917, T. B., about 30 years old, a street car conductor in a neighboring city, presented himself at the skin dispensary of the University Hospital for the treatment of an extensive eruption covering almost the entire right deltoid region and a large part of the right half of the trunk. The eruption consisted of numerous papules and nodules varying in size from that of a hemp seed to that of a split pea. They were dark red and for the most part, discrete. They were most abundant about the posterior borders of large, moderately pigmented areas in which were a few scattered nodules and

*Read before the Forty-Second Annual meeting of the American Dermatological Association, held at Atlantic City, N. J., June 16-18, 1919.

small superficial scars and many of them had small blood crusts on their summits. It was quite evident that the disease was slowly extending backward toward the spinal column, the pigmented parts representing areas over which it had already passed. According to the statement of the patient, and as was evident from the excoriated condition of many of the papules, the eruption was attended by severe itching. The patient's first statement as to its duration was that the disease had lasted three years, but further questioning brought out the

Fig. 1 (Case 1).—Unusual form of ringworm.

fact that five years before there had been "little rings" on the chest which, however, gave him little concern; it was only during the past three years that it had spread extensively and caused annoyance. Apart from the excoriations, the eruption as a whole bore considerable resemblance to a slowly spreading superficial nodular syphiloderm for which it might very readily have been mistaken on a superficial examination.

In addition to the affection of the skin, the nails of the index, middle and ring fingers of the right hand presented marked evidence of disease. They were rough and lusterless, with ragged and broken free borders.

In scrapings taken from the skin and the nails an abundance of mycelium presenting the morphological characters of the trichophyton was readily demonstrated.

Fig. 2 (Case 2).—Unusual form of ringworm due to the *Trichophyton rosaceum*.

It is greatly to be regretted that the study of this unusual case was limited to its clinical features alone, and that no cultures were made of the organism found. The variety of the trichophyton present must, therefore, remain a matter of uncertainty. So far as my own observations go, the case is wholly unique—I have never seen anything

approaching it in its clinical features, nor have I been able to find, after a considerable search, anything in the literature which at all resembles it.

The second case which I have to report was also observed in a patient of the University Hospital Skin Dispensary and, while less striking clinically than the one just described, was especially interesting because of the feature presented by the cultures of the organism found in it.

CASE 2.—F., 28 years old, an Austrian by birth, came under observation in December of last year. He then presented a number of dark red, slightly pigmented round and oval patches, varying in size from that of a coin to that of the hand, situated over the crest of the left ilium, in the pubis, on the buttocks, on the posterior surface of the thighs and in the left popliteal space, this region showing a patch quite as large as the hand. The margins of these patches were decidedly elevated and their surfaces were covered with a scanty, fine, bran-like scale. In addition to these patches there were a number of brownish red nodules the size of shot with a hard dark crust on the summit, scattered about on the posterior surface of the left thigh in the neighborhood of the large popliteal patch. The disease had lasted about eight months and was still extending. He complained of no subjective symptoms of any moment. A diagnosis of syphilis had been made by his former medical adviser, a genito-urinary specialist of considerable repute, and three or four injections of arsphenamin had been given, of course, without any effect on the disease. In scrapings removed from the diseased areas numerous mycelia were readily found presenting the morphology of the trichophyton of which cultures were made to which reference will presently be made. Under strictly local treatment which, as in the former case, consisted of the application of a 2 per cent. solution of salicylic acid in alcohol, the eruption rapidly disappeared, and at the end of three weeks nothing remained but a moderate brown pigmentation. The patient has been under observation for the past six months and there has been no sign of a return of the affection.

CULTURAL CHARACTERISTICS

Cultures were made with scrapings taken from the large patch in the popliteal space on a number of mediums; these presented many interesting features. On all the mediums employed the colonies presented one or more elevations in the center which were quite conical in the beginning, but which soon flattened down and became hemispherical. When there was but one central prominence this was surrounded by a pronounced circular furrow. On glucose agar the borders of the colonies presented a finely rayed appearance; on Franz medium the colonies were limited by an elevated bead-like margin from which numerous fine branching tendrils extended. In fully developed colonies the color was a beautiful pink which varied a good deal in its distribution and arrangement according to the medium on which they were grown. On glucose agar the color first appeared in a broad zone surrounding the central prominences and spread thence

to other portions of the surface, but never appeared on the fringe-like border and was much less pronounced in the center. On Franz medium the color was much more uniformly distributed and more pronounced, but in these colonies too the border remained a pure white. The undersurface of the colonies was on all mediums a deep claret color. Dr. F. D. Weidman, the Assistant Director of the Research Laboratory of the Department of Dermatology of the University, to whom I am indebted for the preparation of the cultures, has furnished me with some data concerning the mode of growth and cultural peculiarities of the organism which are here briefly given:

Nine days after implantation a pure white scanty growth began to appear which on the twentieth day began to assume a faint rosy tint which within twenty-four hours became a decided pink. The development of color was at times irregular and uncertain; certain of the colonies, both those on glucose

Fig. 3.—Mycelia found in scrapings from Case 1. Variety of fungus not determined.

agar and on Franz medium, never developed it, but remained white with a dry powdery surface. The size of the colonies and the rapidity of their growth depended to a considerable degree on the thickness of the nutrient jelly: when this was thin, the growth was slow. Furrowing of the surface of the colonies was only exceptionally observed; in only a single instance were the radial furrows described by Sabouraud and others observed and then only in an old and vigorously growing culture. When the cultures were killed by formalin the color disappeared after a variable period—in one instance it had disappeared completely in nine days, in another only incompletely after five months.

TISSUE SECTIONS

Sections were made of the largest nodule found in the immediate neighborhood of the popliteal patch with the full expectation of finding a follicular trichophytosis, but much to my surprise nothing was found but a well-marked keratosis of the follicle. I am still inclined

to believe that these nodules were the result of invasion of the follicle by the fungus which had afterward disappeared, but this is conjecture only, since no fungus was found.

COMMENT

In 1893, Sabouraud discovered and described a variety of ringworm due to a fungus producing pink cultures to which he gave the name *Trichophyton rosaceum*. He at that time believed the fungus to be identical with one described by Megnin a few years before, found in the favus of fowls. Further study, however, of this organism by Sabouraud, Suis and Suffran convinced them that it was a trichophyton and not an achorion, and therefore distinct from Megnin's fungus, although resembling it closely. According to Sabouraud, the *T. rosaceum* is only rarely a cause of ringworm; he found it only eight times in a total of 800 cases of various dermatomycoses. Since his first account of it, however, cases have been reported by Adamson, Whitfield, Davis and Bolam in England, by Dalla Favera in Italy and by Muijs in Holland. Dalla Favera, studying the varieties of ringworm found in Parma, found it much more frequently than Sabouraud; of a total of 144 cases, six were due to the *T. rosaceum*. It was not limited to the bearded region, but also occurred on the hands and forearms, on the scalp (in two brothers), and, in one instance, it was found in an extensive onychomycosis affecting the fingers and toes. Bolam, whose observations were made in the north of England, saw no less than sixteen cases in the short period of fifteen months. Eight of these were examples of ringworm of the beard, five involved the trunk and extremities coincidently with the beard, and three affected the non-hairy surfaces alone.

CONCLUSIONS

From the foregoing it is quite evident that the *T. rosaceum* is a widely distributed organism, and that it may give rise to all the clinical varieties of trichophytosis. In this connection I may say that I am quite in accord with Dalla Favera when he expresses his belief that it is not possible to establish a correlation between a given form of clinical lesion and a given variety of the trichophyton.

ABSTRACT OF DISCUSSION

DR. CORLETT was much interested in Dr. Hartzell's well prepared paper. The subject of trichophytosis had become revolutionized during the time he had been practicing dermatology, thanks to the work done by Sabouraud, Adamson, some members of this Association and others. Various types had been brought to our attention. He had seen cases resembling the photographs passed around by Dr. Hartzell and thought such an eruption might be readily

Fig. 4.—Culture of *Trichophyton rosaceum*.

mistaken for eczema or other dermatoses. Several years ago his attention was called to the frequency with which trichophyton infection was found between the toes. Dr. L. W. Ladd at that time made cultures and demonstrated that many cases in his clinic were due to the trichophyton and not to eczema as commonly believed.

DR. GILCHRIST said that he had some photographs of an unusual case seen at Johns Hopkins many years ago. The case was that of a man who had had the disease about three months. It appeared first on about the middle portion of the leg, and began as small pustular lesions about the hair follicles. The patch when he saw it was about 3 by 2 inches in size and consisted of a fairly deeply infiltrated lesion around the margin of which were a number of small pustules situated around the hair follicles. Microscopic examination of the hairs from these follicles and also from the more central portion of the disease showed the presence of the ringworm fungus.

On the right side of the neck were a number of small pea to bean sized nodules which looked like "blind boils" but were not painful or inflamed. A number of scars were also present which had resulted from previous similar lesions. Mycelium and spores were found in these nodules, and cultures from two of them showed a purplish fungus in pure culture. He had never seen ringworm lesions present in this form before or since.

DR. WISE asked Dr. Hartzell and the other members whether they had ever seen cases of disseminated lichenoid trichophytosis, as described by Jadassohn. He had been on the lookout but had not seen one proven case.

DR. WHITE said that he had seen two or three such cases in the groin.

DR. HARTZELL stated that he had put a question mark after the name of the fungus, because he was not absolutely certain that it was the trichophyton rosaceum. While it corresponded in some respects very accurately to the fungus described by others under that name, the morphological features differed a good deal. That might be due to the medium employed, a difference in the medium producing a great difference in the morphology of the cultures.

DR. GILCHRIST said that bacteriologists had been filtering all their mediums until now, but it had begun to dawn on them that filtering probably kept out some part of the mediums which might prove to be of very important value in the growth of bacteria. He thought now it was not necessary to filter the mediums, and they might get better results by not doing so.