

Forlanini¹ expresses himself against the causal connection of kerion Celsi with trichophyton. He asserts that kerion may pass through all its stages without the presence of the fungus; also that the rapid recovery speaks against the parasitical nature. The process begins between the cuticula of the hair and the internal root sheath with exudation as vesicles, later the hair is altogether lifted and separated from its root, as the hair bulb is implicated. In the further course, subcutaneous abscesses arise through the implication of the adjoining epidermis and the corium. Herein were found giant-cells, only exceptionally fungi; nor were the latter present in the pus, the contents of the vesicles, the crusts, the scales, and the hair itself. Experimental inoculations were without effect. In but a single excised piece of skin one solitary hair was found with trichophyton.

ANATOMY.—In herpes circinatus the trichophyton is seated in the upper and lower horny cell layers, rarely in the rete; thence it penetrates along the hair between it and the internal root sheath in the hair follicle, the fungus forces the cuticula apart and crowds into the hair shaft, thereby only the outlines of the hair becomes clearly visible, while its substance is destroyed by the penetrating, longitudinally extending mycelium. The fungi do not force themselves in deeper than the upper end of the hair bulb; the hair papilla, the connective-tissue wall of the hair follicle, the subcutaneous connective tissue are not attacked, and the external and the internal root sheaths are entirely intact. There are no symptoms of inflammation in the skin (Taylor), while Thin finds the cutis and rete in an inflammatory condition. Robinson² finds the upper part of the external root sheath of the hair plentifully, the corium and the subcutaneous tissue only sparsely set with spores, a few spores are around the root of the hair and within it.

According to Balzer,³ the fungus is seated at first on the normal cuticula, then the hair sheath and root are penetrated by threads (mycelia) containing conidia, and thence the fungus extends into the hair, when the spore-bearing mycelia disintegrate into segments. Subsequently the whole hair, excepting the medulla, is filled with conidia, and finally is destroyed by them, the cuticula disappearing.

The forms presented by the trichophyton are very manifold. In the scales of the red patches on hairless parts the mycelia are more plentiful than the conidia. The former are simple or anastomosing threads with small lateral sprouts; their length is very variable as is their width; the narrowest exhibit septa only at very long intervals, the broader are divided at more or less short intervals, and in each septum there are one or more different-sized pale or glossy nuclei with nuclear corpuscles; many of the mycelia, besides, look as if sprinkled with fatty granules. The conidia are variable in size and shape: round or flattened, with doubly contoured membrane, pale sparse protoplasm, often a very large nucleus with yellowish lustre in which one or more nuclear corpuscles can be discovered only with difficulty and not always. The hair-stumps, the surface of which is covered with innumerable, generally irregularly arranged conidia, are comparable to the favus scutulium as regards the number of fungi. Within the hair are mycelia and rows of conidia running parallel to the longitudinal direction of the hair. The mycelia here are extraordinarily clear and possess an indescribable variety of forms. But nowhere was I enabled to see what Kaposi describes, namely: "that the threads are composed of long dumb-bell shaped cells, between each two of which a small round body is inserted which in some threads is organically united with the long cells, in others only loosely

¹ Annal. de Dermat., 1880, abstract from the Italian special journal.

² Arch. of Dermat., viii., p. 406.

³ Arch. génér. de Méd., 1881, p. 407.

adjoins them, or alternating with the former, aids in representing only a disconnected chain of elements." By the penetration of the fungi, the square corneous flakes of which the hair is composed are overgrown from all sides and loosened.

DIAGNOSIS.—Although herpes circinatus, tonsurans, sycosis parasitaria, kerion Celsi are only various stages of the same process, it is desirable to keep them apart so as to facilitate the survey of the differential diagnosis. Herpes circinatus is liable to be confounded with: 1. Pityriasis rosea (Gibert); the latter lacks the circle of vesicles, its peripheral extension is very rapid, with equally rapid spontaneous recovery in the centre with light yellowish discoloration of the skin; no loss of hair, no fungi, short duration of the affection; 2. With psoriasis; the latter is distinguished by plentiful white layers of scales on a reddened basis, the patches are inclined to take on a symmetrical arrangement; 3. With circinate syphilide; in this the centre is completely normal or darkly pigmented, sunken, atrophic; the peripheral infiltration has a brownish red color, is firm, generally scaleless or covered with smooth thin scales, without itching; 4. With orbicular eczema; this occurs chiefly in scrofulous children, has no tendency to spread peripherally, never shows any formation of vesicles, has larger lamellar scales, attacks by preference the hands and face, often symmetrically.

Herpes tonsurans, when circumscribed, is easily distinguished from pityriasis simplex, eczema squamosum, by the discoloration, dryness, and fragility of the hairs, the presence of small misshapen hair-stumps; it appears generally in circumscribed plates. When more diffuse, and associated with secondary crust formation, the distinction is more difficult; but even here there is no lack of broken and, in the case of dark hair, discolored hairs and others surrounded with white small sheaths of scales. In persons whose hair is cropped very short, the diagnosis can often be made only with the aid of the microscope. Area Celsi leaves the skin smooth as ivory and glossy, only here and there are very thin, slightly colored small hairs clubbed at the ends.

Sycosis parasitaria and kerion Celsi in their slighter degrees can easily be confounded with idiopathic sycosis, but the former sets in with round, red, more or less flaking spots, with or without a circle of vesicles, as well as in places resembling pityriasis alba with the characteristic hair-stumps; after a brief existence, rapidly spreading into the healthy surroundings, it produces deep, soft, phlegmonoid infiltrations with pustulation around the hairs; it forms spongy cutaneous nodules provided with openings (corresponding to the lost hairs) the secretion from which is very profuse; while idiopathic sycosis, in its slow progress, deposits smooth, often very hard infiltrations; at times the infiltration is but very slight and there is hardly anything except pustulation around the hairs; there is an absence of the red, circumscribed, desquamating spots. In some cases, the nodules of sycosis parasitaria, by their deep color, bear some resemblance to tuberculo-ulcerous syphilide; but in such cases the usually rapid springing up of multiple sycosis tubercles, their soft, almost fluctuating consistence, their quick pustulation around the hairs obviate any mistake. Lymphadenia cutanea (mycosis fungoides) rarely occurs in the face alone, and is distinguished from parasitic sycosis existing only on hirsute regions by multiple tubercle formation on the whole body; besides the former forms more smooth, slightly scaling or serum-discharging tubercles; while in the latter, irregularly tuberosus proliferations and pustulation around the hairs are rarely absent.

Eczema marginatum is distinguished from ordinary eczema by its curved outlines; besides, around the large eczematous surface there are frequently larger or smaller moist, pustular, or squamous places. Furthermore, in the latter both the superficial alterations (desquamation, reddening, weeping, fissures, etc.) and the great infiltration of the sub-

cutaneous connective tissue are generally developed in equal intensity; while in eczema marginatum there is comparatively little desquamation, pale to brownish color with great thickening of the skin; besides, fresh trichophytinuous rings arise on previously healed, discolored portions. Eczema of the genital region attacks by preference the whole scrotum primarily and from there the other parts, while in eczema marginatum mainly the thighs and only the lateral parts of the scrotum form the first site of the affection. Eczema marginatum often resembles squamous infiltrated chronic eczema in every particular in its external appearance, so that only the etiological factors determine the difference.

TREATMENT.—Herpes circinatus often needs nothing but energetic washing with soap, or several repeated paintings with tar, chrysarobin, or pyrogallic acid ointments, or one of the ointments or solutions enumerated under psoriasis or favus; even painting with ink (sulphate of iron) has at times acted very favorably.

In the treatment of herpes tonsurans we must not count on a cure in a short time. Even in the most favorable case, the treatment consumes months, as well as a subsequent stage of several months after apparent recovery, as a single diseased hair may effect the reinfection of the entire scalp. All the hairs on a diseased spot without exception are removed by epilation, and it is advantageous to extend the epilation even to the hairs at some distance. According to Bazin, epilation should be preceded by painting the skin with oil of cade so as to reduce the pain of the operation. The diseased hairs often break off, leaving the stump closely packed with fungi, hence the epilation must be often repeated. After the epilation, performed in different sittings, the diseased patches are painted or rubbed with solution of corrosive sublimate, tar, chloroform, chloral hydrate, pyrogallic acid (5 to 10 per cent), chrysarobin ointments, etc. To cause the hairs to be cast off by suppuration by means of the application of croton oil, I hold to be an unsuitable procedure. Not until the hair can be readily withdrawn without breaking, when the skin has acquired a smooth pale appearance, may we permit the hair to grow unhindered.

The same treatment is applicable to parasitic sycosis and kerion Celsi, viz.: epilation and the employment of the above-named solutions and ointments; where there are very violent phlegmonoid inflammatory symptoms, emollient cataplasms are indicated; besides Zeissl's sulphur paste may be used with good result where the cutaneous infiltration is extensive; when subcutaneous abscesses exist they must be incised. While parasitic sycosis exists, it is to be recommended not to permit shaving, by which the fungus might easily be transferred into healthy follicles.

For eczema marginatum Hebra recommends Wilkinson's ointment, which is to be rubbed for six days, morning and evening, into the diseased spots, after which they are bandaged with flannel. Not before eight or ten days after cessation of the treatment is bathing or washing of the parts permitted. Wilkinson's ointment makes the skin very brittle, so that it is easily broken, and therefore its application is often very painful. The method of treatment given for herpes circinatus and tonsurans is here likewise of use.

The diseased nail substance is removed in the same manner as in favus.

DERMATOMYCOSIS FURFURACEA. PYTIRIASIS VERSICOLOR.

Pityriasis versicolor is characterized by brownish spots generally desquamating but slightly in the centre, but easily removed with the finger nail without hemorrhage. The affection is nearly always connected with moderate itching.

The size of the spots is exceedingly variable. Often we see them around a lanugo hair barely the size of a pin's head, slightly if at all elevated above the surface, scattered over the chest, abdomen, and back; in other cases, large portions of the trunk, especially the upper part of the back, are covered with a connected brownish color hardly broken by normal places. Unna¹ reports the occurrence of an acute variety of pityriasis versicolor which heals in the centre and develops into circular and curved forms. The proportionately rarer occurrence of pityriasis versicolor on the neck, face, and hands has its reason probably in the fact that these parts are most frequently and rapidly freed by soap and water of the uppermost epidermis layers in which the fungus has its seat. On the palms and soles it has not hitherto been observed. Aside from the trunk where it is most frequent, the affection is common also in the genital region, in men particularly on those parts of the thigh where the scrotum touches; here the spots often acquire a more brownish red to copper color. In women, it is very frequent in small patches in the pubic region and on the skin of the labia majora. The upper extremity is attacked far more frequently than the lower.

As a rule, adolescents and adults suffer from the affection, old people and children are exempt.

The growth of the spots is exceedingly slow, some medium-sized spots often persisting for years without alteration. At times, in strongly perspiring, obese persons, we observe a more rapid spread of the disease in the hot season. In other cases the affection increases in winter, by reason of the warmer clothing and less frequent bathing.

The contagiousness of the disease is exceedingly slight.

Experimentally, Köbner alone has successfully inoculated pityriasis versicolor on men and rabbits.

So far as known, the hair and nails are exempt from the invasion of the microsporon furfur. The peculiar yellow color of the spots would seem to be due to the yellowish, strongly refractive masses of conidia which are always present in large numbers. In the centre of larger spots, where there is generally a visible sparse branny desquamation, a more smoky gray color prevails. The discoloration has its seat only in the uppermost horny layers, for when this brownish layer is removed by gentle scratching or friction—and it readily comes away in larger or smaller lamellæ—a dull gray colored skin is exposed. This sign is one of the best for differentiating this from all other pathological discolorations of the skin originating in the deeper layers of the rete or in the cutis, and which had been classed with pityriasis versicolor under the name of chloasma.

ANATOMY.—The fungus of pityriasis versicolor was first described in 1846 by Eichstedt and named microsporon furfur by Robin. It is very characteristic by the arrangement of the conidia, very plentifully present in the scales and lamellæ. The conidia are generally round, of variable size, usually somewhat smaller than the red blood-corpuscles, have a strongly lustrous, large, round, yellowish nucleus (at times provided with dark granules) which is situated in the centre of the bright transparent protoplasm, the latter being inclosed in a doubly-contoured membrane. The conidia are arranged in nests or conical heaps, closely crowded together. Around them in confused intermixture lie the mycelia, usually pressed close together. The latter are threads of various width and moderate length constricted at long intervals, running in wavy or curved lines but never branching; on slight pressure they disintegrate into single oblong, sometimes curved segments. The latter are clubbed here and there, one of their extremities often

¹ Vierteljahrsschr. f. Dermat. u. Syphil., 1880, Heft 2 u. 3.

appears as a knob-like bright swelling, at times they contain isolated lustrous granules, in other places we see in them rows of oblong-oval nuclei looking like vacuolæ and containing dark nuclear corpuscles; some segments are short and sausage-shaped, others taper to a point at one end, on others we see at various places indentations nearly uniform on both sides. Some threads are rather narrow and filled with dark, larger or smaller granules, while others appear altogether pale and vacant.

Diagnosis.—The brownish color, as well as the slight desquamation and ready removability of the uppermost layers with the finger nail, will easily obviate confounding with similar efflorescences on the trunk, such as macular syphilide, pigment remnants after other eruptions, brownish warts, and other more deeply seated pigment anomalies. More difficult, often quite impossible without microscopical examination, is its differentiation in the inguinal and upper femoral region from intertrigo, particularly in male persons who perspire very freely. From extensive patches of lichen acnéique pityriasis versicolor is differentiated by the more brownish than yellowish color, the absence of small nodules and crusts in the periphery of a large patch. Pityriasis rosea rarely reaches in its centre so great a discoloration as to be confounded with pityriasis versicolor; besides, the former is distinguished by the red circular border and the acute course.

TREATMENT.—In the treatment of pityriasis versicolor, it is essential to cause the more rapid casting off of the uppermost layers in which the microsporon has its seat. In doing so, however, it is not always possible to remove at the same time those fungi seated around the point of exit of the lanugo; this probably is the reason why pityriasis versicolor again spreads even after very energetic therapeutic measures. Frictions with green soap followed by energetic ablutions in the bath, repeated several days in succession, are useful in treatment. Furthermore, frictions with ointments of chrysarobin ten to twenty per cent, pyrogallic acid five to ten per cent, salicylic acid five to ten per cent, thymol five per cent, sodium subsulphate ten to fifteen per cent, etc. Likewise with oil of cade, Wilkinson's ointment, and tincture of iodine.

ERYTHRASMA

Is the name given by v. Bärensprung¹ to a disease confined to the inguinal and axillary regions; it is contagious, presents the appearance of pityriasis rubra in the form of roundish or rosette shaped, sharply demarcated spots, and which he attributes to the fungus described by Burchardt,² the so-called *Microsporon minutissimum*. Oscar Simon³ has endeavored to show that the erythrasma is an intermediate step between pityriasis versicolor and herpes tonsurans.

While pityriasis versicolor in the inguinal region is an almost daily occurrence, erythrasma manifests itself more rarely in its pure forms. It represents a large, dry, reddish brown, often copper-colored surface covered with branny scales; its margin often surrounds the detached epidermis in a circle. Beside it are frequently several similar or more orange colored or pale reddish yellow spots with irregular outlines, barely the size of a five-cent nickel. The scales can be removed only in the shape of a fine flour. In them we find rather short, narrow (not half the width of those in pityriasis versicolor), very pale, slightly curved, or stiff and very long threads at times composed of two or three segments.

¹ Ann. d. Charit., 1862, Bd. x.

² Med. Zeit. d. Vereins f. Heilk. f. Preussen, 1859, No. 29.

³ "Localisation der Hautkrankheiten."

In other rare cases, some of the larger threads consist of rosary-like, closely adjoining, flattened small segments, the segmentation of which becomes visible only on very attentive inspection. The greatest transverse diameter is barely 0.6 micromill., in most cases they are narrower. Their length is exceedingly variable. We also find, by the side of long threads, others twisted in wave lines, of different lengths, but always very narrow and pale. Where the network is most dense and confused, the threads are the smallest. Lateral branching of the filaments is nowhere to be seen, any more than the formation of conidia. In their reproduction they seem to stand nearest to the schizomycetes. Some long threads are distinguished by a strong lustre at their end which is at times curved into a hook. The scales contain besides a number of small bacteria and heaps of zooglœa.

Burchardt has described the fungi in chloasma as follows: The threads are neither straight nor curved, their breadth is $\frac{1}{1200}$ mm., the length is very variable, the longest $\frac{1}{8}$ to $\frac{1}{12}$ mm.; but most of them are much shorter, $\frac{1}{200}$ mm. and less, so that they form the transition to the granules, the diameter of which equals the breadth of the threads. The threads are neither branching nor segmented. The granules are piled into irregular heaps and give a dusty appearance to the epidermis cells on which they lie; often the outlines of the granules are not distinct. Many granules and shorter threads move on the addition of potash lye or acetic acid. The threads become most distinct after having been long acted upon by potash lye. Burchardt found the same threads and granules in the urine of the patient in question.

From these reddish brown spots there are all possible transitions into the coffee-brown spots of pityriasis versicolor. In accordance therewith, we also see the elements of microsporon furfur become ever more plentiful and more easily distinguishable from those of erythrasma near them. Like pityriasis versicolor, the affection is very liable to relapses.

The *treatment* of the affection is the same as that of pityriasis versicolor.