

THE CHANCRE.

Transmission to animals.

Peculiar to the human race.

Prognosis.

A constitutional disease. General symptoms usually occur in about six weeks after the appearance of the sore, and very rarely delay longer than three months.

Effects of treatment.

Improves under the influence of mercury.

THE CHANCROID.

Transmission to animals.

May be transmitted to the lower animals.

Prognosis.

Always a local affection; the general system never infected.

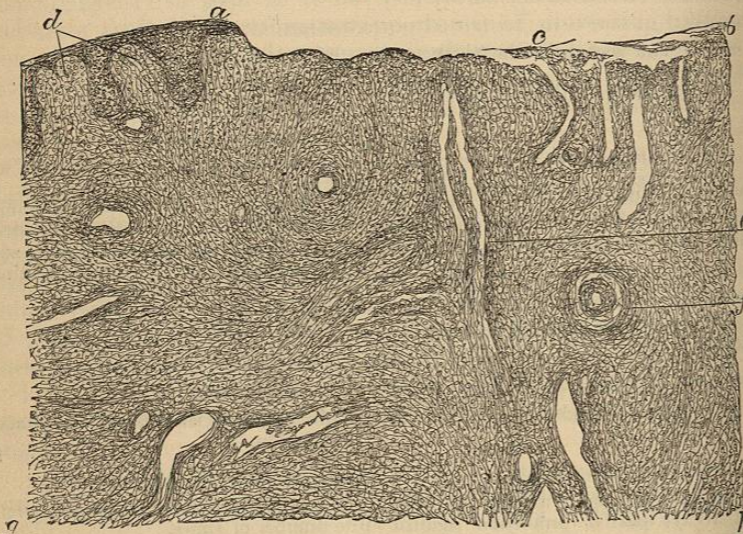
Effects of treatment.

Treatment by mercury always useless, and, in most cases, injurious.

PATHOLOGICAL ANATOMY.—Kaposi gives the following account of the microscopical appearances of sections of a chancre:

"In the histological investigation of the hard chancre, the point of greatest interest is the minute anatomy of the induration. In a

Fig. 116.



Section of a Chancre, Hartnack, *oc. 3; obj. 4.* (After Kaposi.) *a b*, surface of the ulcer. The indurated mass beneath, to the base of the section *g*, is uniformly infiltrated with small cells. *d*, papillæ hypertrophied and infiltrated with cells. The epidermic layer covering them, becomes thinner and thinner up to *a*, where it disappears. At *c* and *b* are seen remains of the epidermis, and, beneath an infiltrated papilla, which can only be recognized by its ascending vessels. In the indurated mass are several vessels with thickened walls and contracted calibre. *e*, a vessel cut longitudinally. *f*, a vessel cut transversely.

perpendicular section, the microscope shows a uniformly and thickly distributed deposit of cells in the papillæ and in the corium throughout its whole thickness down to the subjacent cellular tissue. This cell

infiltration is limited somewhat abruptly at the sides and below, and is surrounded by a coarse (œdematous) tissue of fibres, in which are found irregularly distributed cells containing a large nucleus that strongly refracts the light.

"Under a higher power the infiltrated cells of the induration are roundish, corresponding in size to granulation cells, but generally somewhat smaller, with one or two nuclei and a finely dotted protoplasm evidently overlying the inclosed nucleus.

"The cells are deposited in a network of narrow meshes, whose walls are thin and somewhat sharply outlined. Corresponding to the surface of the ulcer, the network and its cell-deposit is irregularly exposed. Here, as well as in the parts lying nearest the surface, the cells are mixed with numerous isolated nuclei, small shrivelled cells, larger cells filled with granular elements, and free nucleoli.

"The papillæ, Fig. 116, *d*, at the sides of the ulcer are preserved, but are thickened, club-shaped, and infiltrated with cells extending from the corium. The rete between them and especially over them is much thinned. At several points on the surface of the ulcer are remnants of the epidermis and the rete, lying on the infiltrated corium. At still other points traces of the papillæ are seen with indications of the slings of the vessels, Fig. 116, *c b*.

"Within the cell-infiltrated portion there are but few bloodvessels, the walls of which are notably thickened, and their calibre diminished in size."

These microscopical appearances should be compared with those of the chancroid given on page 392, and their resemblance is so great as to lead Kaposi to say: "It appears to me allowable, from a histological standpoint, to regard the hard chancre as different from the soft only in the intensity and suddenness of the cell-infiltration and cell-degeneration, but not in their essence."

Since Kaposi's observations, however, further light has been thrown on this subject by Caspary¹ and others, but especially by the admirable investigations of Auspitz² and Unna.³

Caspary arrived at the following conclusions: "The essential difference in the structure of the soft and hard chancres consists in this, that in the latter a new growth of connective tissue occurs, which in the former is not developed at all, in consequence of the loss of tissue (de-structive metamorphosis) which is constantly going on. This new formation is characterized, even in recent indurations, by a firm, closely-woven network everywhere inclosing the cells; in old indurations, by entire bundles of fibres which interpenetrate the new growth of cells. The narrowing of the vessels, which I could not demonstrate in fresh cases, appears to me to be the effect, not the cause, of the sclerosis. It appears to me probable that the formation

¹ Vierteljschft f. Derm. u. Syph., Wien, 1876, s. 145.

² Anatomie d. syphil. Initial Sklerose, von Prof. Heinr. Auspitz u. Dr. Paul Unna, Vierteljschft f. Derm. u. Syph., 1876, s. 161.

³ Zur Anatomie der syphil. Initial-sklerose, Vierteljschft f. Derm. u. Syph., 1878, s. 531.

of fibres proceeds from the infiltration cells, and not from the growth of young connective tissue occurring at the periphery, and extends into the interior of the neoplasm, because such a growth has not been found in the interior of the sclerosis. I would look upon the embryonic connective tissue found at the periphery as a kind of capsule caused by reactionary inflammation."

Auspitz and Unna have further studied the changes in the vessels of the mass of induration, resulting in a diminution of their calibre or in their complete obliteration; which they compare to those observed by Heubner in the arteries of the brain; and they express the opinion that in future investigations of syphilitic neoplasms, the condition of the vessels is the chief point for study. As to the manner in which these changes take place, Unna concludes:

1. The fibrous constituent of the cutis, which, through its hypertrophy, occasions the hardness of the initial sclerosis, is composed of pure collagen.¹

2. A sclerosed vessel arises in consequence of the fibrous hypertrophy of the connective tissue of the outer coat (adventitia), attended by the disappearance of the lymph-meshes (complicated with more or less infiltration of round cells), and of the same change in the connective tissue immediately surrounding the vessel.

3. In *endarteritis obliterans syphilitica acuta*, as takes place in the initial sclerosis, the thickening of the endothelium is certainly not the first change. The constant and early implication of the *vasa vasorum* renders it probable that the starting-point is here. Where there are no *vasa vasorum* the pathological process always begins in the outer coat.

4. Still more extended than the typical *endarteritis obliterans* is the closure of the vessels through obliteration of the walls by means of round cells (granulating arteritis). Both processes, independent of each other, combine, and one may, by its excessive development, crowd out the other. The larger vessels are most frequently the victims of *endarteritis obliterans*, the smaller, especially the capillaries, of closure through infiltration.

Figs. 117 and 118, taken from Unna's latest paper on this subject, admirably represent the changes which take place in the arteries. The sections are represented as they appeared after having been prepared and colored.

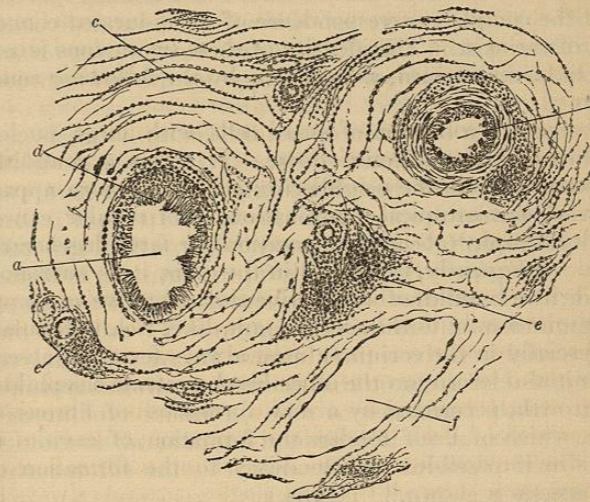
In Fig. 117 are seen sections of an artery (a), a vein (b), and a lymphatic (f). In the tunica intima of the artery the nuclei of the endothelium are very marked and appear to project more than usual into the lumen. The whole intima is in a swollen condition. The media is also swollen and, like the intima, more yellow than normal; the nuclei of the muscular fibres are sharply shown. Round cells, in rows and in groups, are first seen at the border line between the media and the adventitia, and especially at a spot where a clear lumen

¹ For the properties of "collagen," see Dalton's Treatise on Human Physiology, 6th ed., 1875, p. 91.

is seen to be thickly and concentrically surrounded by round cells, and where also a small nutrient vessel enters as far as the media. The adjoining portion of the adventitia is more thickly infiltrated with round cells than elsewhere.

The same appearance is presented in the adventitia of the vein: thick bundles of connective tissue, separated by isolated round cells

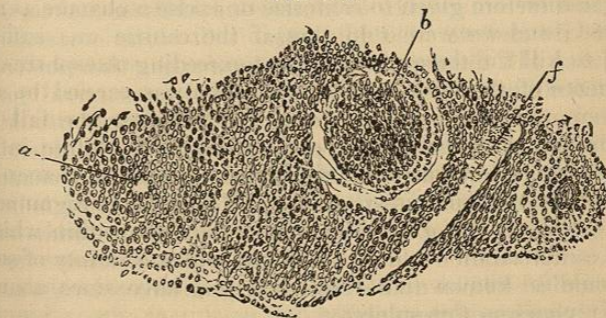
FIG. 117.



Section of an artery, vein, and lymphatic, highly magnified.

and regions of the same, but the round cells are here generally more abundant, and in the upper quadrant especially they completely mask the structure of the media. The most striking appearance,

FIG. 118.



Similar sections showing obliteration of the artery and vein.

however, in the vein, is the exuberance of the endothelial cells, which changes the shape of the lumen to that of an irregular pentagon. In marked contrast to this is the condition of the lymphatic endothelium,

which is not at all changed. Several small vasa vasorum (*e, e*) are seen thickly surrounded and partially closed by round cells: The surrounding cellular tissue (*b*) presents hypertrophied fibrillæ and round cells.

A later stage of the above process is shown in Fig. 118, in which *a* is probably an artery, *b* a vein, and *f* a lymphatic. The first two are obliterated, or nearly so, while the last is unaffected.

Virchow,¹ in his celebrated work on the Pathology of Syphilis, advocated the complete correspondence of an indurated chancre with a gumma of the skin. The identity of these two lesions is not now, however, to be maintained, as is shown by the following comparison of the two.

"A gumma is a collection of small cells with large nuclei, lying in a network of fine connective tissue. It forms a roundish mass, whose separation from the neighboring tissues is more apparent on gross than on microscopical examination. Its regular course is to undergo dry atrophy (cheesy degeneration), or fatty degeneration and ulceration. Frequently, especially in the cutis, it is surrounded by sclerosed, brittle bundles of connective tissue, but we can apply the name of gumma only to the central, gum-like, richly cellular mass, which, especially in the corium, almost always forms an abscess.

"The initial sclerosis, on the other hand, presents a syphilomatous, new cell-growth, permeated by a new formation of fibrous connective tissue, which of itself renders the formation of cavities of considerable size impossible. No tendency to the formation of even miliary abscesses is shown." (Unna.)

TREATMENT OF THE CHANCRE.—It was formerly supposed that a chancre was at first a mere local affection, and that the general circulation did not become contaminated until some days after the appearance of the ulcer; and hence that its early and complete removal was capable of averting infection of the constitution. The advice was therefore given to cauterize or excise a chancre as soon as it appeared; and we were told that, if the caustic was sufficiently powerful to kill the tissues to an extent exceeding the sphere of specific influence of the virus, or if the excision was carried to a sufficient extent, a simple wound would be left after the fall of the eschar, and our patient would be preserved from syphilitic infection. This treatment, known as the "abortive treatment of chancre," was supported by the distinguished names of Ricord and Sigmund, who assigned the *fourth day after contagion* as the limit within which destructive cauterization could be employed with a certainty of success; but it should be known that these surgeons have since abandoned their early views on this subject.

Belief in the efficacy of "the abortive treatment" never could have been entertained had it not been for confounding the chancroid and syphilis, whereby surgeons were led to believe that when a pa-

¹ Ueber die Natur der constitutionell-syphilitischen Affectionen, 1859.

tient whose chancroid had been cauterized escaped general syphilis, *post hoc ergo propter hoc* his immunity was due to the cauterization.

A chancre is never a mere local lesion, as is proved by its period of incubation, by the analogy of other morbid poisons, and by the fact, as shown by repeated experiments, that its destruction within a few days and even a few hours *after its appearance* fails to avert constitutional infection.

The average duration of the incubation of a chancre is, moreover, from two to three weeks. During this period the inoculated point remains in a state of quiescence and exhibits no traces of inflammation; hence the subsequent appearance of the chancre can only be ascribed to the reaction of the absorbed virus. It may be remarked, in passing, that this period of incubation renders the conditions of the so-called abortive treatment (cauterization within four days *after contagion*) impracticable, since the sore very rarely appears until the time specified has elapsed; and the same consideration increases the probability that Ricord and Sigmund, in their "thousands" of supposed successful cases, really applied the method only to the chancroid. Experiments with other morbid poisons prove that absorption is almost instantaneous. Bousquet inoculated the vaccine virus, and immediately applied cups and washed the parts with chlorinated water without preventing the evolution of a pustule.¹ Renault, surgeon of the Veterinary School at Alfort, inoculated horses with acute glanders, excised the part and applied the actual cautery one hour afterwards, yet the animals died of the disease.² Similar experiments with the sheep-pox virus proved that its absorption does not require more than five minutes. Hence analogy would show that the syphilitic virus also reaches the general circulation almost instantaneously after its implantation beneath the epidermis.

We have still farther evidence of direct experiment. Numerous cases are recorded in which destructive cauterization within a few days, and *even a few hours after the development of the chancre*, has failed to avert constitutional infection. Diday has thoroughly cauterized chancres within four days and a half, and others within five days, and secondary symptoms have still appeared. In another case, occurring in a patient who had watched himself with the greatest care from day to day and almost from hour to hour, the chancre was not developed until a month after the sexual act, but the abortive treatment was applied within *six hours* of its first appearance; the sore healed in the course of three days, but secondary symptoms appeared three weeks afterwards.³ More recently,⁴ Diday has reported several additional cases.

It was desirable that thus much should be said in deference to any of our readers who may have imbibed their only notions of venereal from the teachings of authorities a few years ago; but the "abortive

¹ Traité de la vaccine.

² Académie des sciences, 1849.

³ Gaz. méd. de Lyon, 1 mars, 1858.

⁴ Annuaire de l' syph. et d. mal. de l' peau, Paris, année 1858, p. 134.