CHAPTER XXVI.

HEREDITARY SYPHILIS.

The words congenital and infantile are used to designate this variety of syphilis; the former lacks precision, and the latter may be applied with equal propriety to the hereditary and the acquired forms. The term *hereditary syphilis*, therefore, seems preferable. According to Kassowitz,[1] one-third of all children procreated of syphilitic parents are dead born, and of those born living twenty-four per cent. die within the first six months of life. We may understand why the lesions of hereditary syphilis are so severe and extensive, and why its fatality is so great, when we consider how early in fœtal life the specific virus exerts its influence, and how thoroughly it must be diffused through the organism of the embryo.

In the majority of cases of hereditary syphilis, symptoms appear about the third week of life. Some authors have observed a postponement of symptoms until the end of the first year or even later, but in my experience the twelfth week has been the utmost limit.

In case of the infection of both parents, the disease is likely to be transmitted in an intense form, resulting in the death of the fœtus or in the early manifestation of symptoms.

There are few exceptions to the rule that the severity of the disease decreases with each succeeding child. The danger of the death of an infected child diminishes as it grows older, and freedom from symptoms until after the sixth month justifies a favorable prognosis. Death results most frequently in cachectic children, and from gastro-intestinal affections, which are to a great extent dependent on visceral lesions.

Syphilis is generally transmitted only to the second generation; exceptionally, in case of excessive activity of the disease in the first inheritor, it may appear even in the third generation. The course of hereditary syphilis differs in many respects from that of the acquired disease. The latter always begins by the development of a local lesion, which is followed by a definite secondary period of incubation, at the expiration of which constitutional manifestations appear, while the hereditary disease presents no initial lesion and cannot be divided into stages. Moreover, while many of the lesions of each are similar, being undoubtedly caused by the syphilitic poison, on the other hand, a large number of those in the hereditary form are merely the result of perverted nutrition, and may occur in any adynamic disease.

[1] Die Vererbung der Syphilis, Vienna, 1876.

Among such lesions[1] may be classed certain affections of the eyes, peculiar osseous malformations, impaired growth of the hair, as well as deafness and deaf-mutism, the ultimate cause of which is unknown.

The lesions of hereditary syphilis are more hyperæmic and active than those of the acquired form, and tend to involve larger surfaces. As a rule, the early lesions are more generally distributed, and are more symmetrical than those which are developed later.

Vesicular and bullous syphilides, so rare in acquired syphilis, are quite common in hereditary, while rupia is almost unknown in the latter. Affections of the nasal mucous membrane, which are infrequent and appear late in the former, are among the earliest and most reliable diagnostic symptoms of the hereditary disease. Visceral affections are much more common in the latter than in the former, frequently being multiple, and coexisting with lesions similar to those of the secondary stage of the acquired disease. Gummatous and connective tissue infiltrations are often developed before birth, and are more diffuse and symmetrical when they appear before the end of the first year of life; when seen after that period, they may present the characteristics of the acquired forms. A peculiar and constant lesion of the ossifying ends of the long bones has been observed during the early months of hereditary syphilis. Certain bone lesions may be developed at a later period which resemble those of the acquired disease. Affections of the nervous system, although more common than has been supposed, are comparatively rare in hereditary syphilis.

Evidences of hereditary taint usually disappear before puberty, although syphilitic lesions, undoubtedly hereditary, have been observed at later periods, and in some instances, after years of apparent latency. The extent to which inherited syphilis furnishes immunity to the acquired form is still undetermined.

The opinion, which has been sustained chiefly by Ricord, Maisonneuve, and Montanier, that syphilis, especially in its tertiary form, may be transmitted to offspring as scrofula, phthisis, or rickets, is utterly untenable.

Syphilis is always transmitted as syphilis, although the cachexia induced by it undoubtedly predisposes the infant to affections of this kind, just as any adynamic disease may do. The prevalence of this tendency, which is quite rare in America, seems to be very marked in Germany, where Kassowitz and Alois Monte found that nearly every syphilitic child became rachitic.

There are not enough facts upon which to base positive conclusions regarding the possible production of tuberculosis by hereditary syphilis. Thoresen, of Christiania, in a monograph on syphilis of the lungs, founded on the study of three hundred and eighteen patients, states that in every case of phthisis in the child there was a history

[1] Dr. T. R. Brown, of Baltimore, Arch. of Dermatol., N. Y., July, 1877, reports four cases of hare-lip and cleft-palate occurring in children with hereditary syphilis. While he does not think that these deformities are etiologically related to the inherited disease, he is disposed to regard them as more than coincidences.

of tuberculosis in the parents. It is very probable that a child who has had a pulmonary lesion of hereditary syphilis may be more susceptible to inflammation of the lungs in after-life.

Certain hereditary tubercular lesions, of late development, present features somewhat similar to those of lupus, but there is no pathological relation between the two diseases, nor is it proved that the latter is of frequent occurrence during the course of hereditary syphilis.

The Duration and Progress of Hereditary Syphilis.

The duration of hereditary syphilis depends altogether upon two conditions: the intensity of the diathesis, and the treatment. It is not uncommon for children to present mild and superficial symptoms for a few months or a year, and then become blooming and healthy, never again to be affected with syphilitic lesions. Again, severe and extensive lesions may be exhibited during the early months, which relapse at irregular intervals in an equally intense but more limited form for a few years; or syphilitic lesions may be developed from time to time until the tenth or twelfth year, perfect health being established after that time. In very chronic cases symptoms may recur more or less frequently until puberty. My observations lead me to the conclusion that they do not appear after that date. In general, the severity of hereditary syphilis is expended within the first few years, and subsequent lesions, although possibly extensive and deep, do not show the malignancy of early ones.

The course of hereditary syphilis is equally chronic as that of the acquired disease, and is even more irregular and uncertain. For this reason the lesions cannot be arranged in chronological order, and a precise division of the disease into stages is likewise impracticable. Visceral and superficial lesions frequently coexist; the interval between early and late lesions may be but a few months or even many years.

As in the acquired form, so in hereditary syphilis, the extensive superficial exanthems are peculiar to the first months of the disease. With these may coexist lesions of the mucous membranes, of the bones, or of the viscera. Relapsing syphilides are usually less extensive than the first eruption, and their lesions are less numerous. They may be composed of either papules, pustules, or vesicles, the eruption being polymorphous or made up of one variety of lesion. The course of these relapsing syphilides may be even more chronic than that of the first eruption, and the interval between the two may be a few weeks or several months. Sometimes the second rash appears before the complete disappearance of the first. It may be said that these relapses of general eruptions are, as a rule, peculiar to the first two or three years of the disease. Subsequent eruptions are of another order, more profound, more localized, and less likely to relapse. These later orders of dermal lesions may be papulo-tubercular, or perhaps pustular, but in general they are tubercular, tuberculo-ulcerous, and gummatous.

These cases of late development are rather rare, although I have seen fully two dozen in which such lesions have appeared at the third, sixth, eighth, twelfth, fifteenth, and twentieth years. In fully one-half they occurred between the fourth and twelfth years, in three-eighths between the third and fifth, and in the remainder between the twelfth and twentieth years. It is very rare to see dermal lesions extensive and superficial after the second or third year, they being usually profound and limited, and in this respect differing from those of the acquired disease.

In the majority of cases the development of visceral lesions takes place in intra-uterine life, and their course after birth is retrogressive. The principal organs attacked are the liver, the lungs, the brain, and the kidneys. Our knowledge of the frequency and extent of their development after birth is incomplete. Besides the cutaneous and visceral lesions of the first year or two, other syphilitic affections are frequently observed. In many cases the diaphyso-epiphyseal lesions of the bones appear during intra-uterine life and run their course in the early months of the disease, possibly relapsing at a later period; or they may appear for the first time during the first year of life. From the fourth up to the twentieth year the shafts of the bones may be affected by periostitis, and joint affections often occur.

The lesions of the mucous membranes are, like those of the skin, superficial and often extensive in the first years of life; at later periods they are circumscribed, profound, and destructive. Occasionally iritis, choroiditis, or retinitis occurs, generally between the third and sixth years, while we observe that keratitis may appear at any time up to the fifteenth or even twentieth year.

In the somewhat rare cases of hereditary syphilis presenting cerebral and nervous symptoms, it has been noted that such symptoms and nutritional affections of the cranium, teeth, etc., begin in the early years of life and leave more or less marked traces.

The severity of hereditary syphilis exhausts itself within the first three years of life; whatever symptoms are manifested after that time are developed in the most chronic and irregular manner. Therefore, if any division of the disease into stages were to be made, the first four years might be considered the first stage, or the period of the disease proper, the second stage extending from that time indefinitely, but not beyond the twentieth year.

The Process of Procreation.

The study of hereditary syphilis is much simplified by a clear understanding of the process of procreation, which is described by Haeckel[1] as follows: "The nature of fructification rests essentially upon the truth that the male procreative cell becomes intimately blended with

[1] Anthropologie oder Entwickelungsgeshichte des Menschen, Leipzig, 1875, p. 138. Quoted by Kassowitz.

the female amœba-like ovule. By this means, in the first place, the ovule is incited to further development, and, secondly, the transmission to the child of the hereditary qualities of both parents is effected. The male procreative cell entails upon the child the individual character of the father, and the female ovum transmits hereditarily to the new being the characteristics of the mother."

The embryo, resulting from the union of these two germinating cells, is nourished and matured in the womb of the mother, through the utero-placental circulation. The influence of the father upon the fœtus is limited to the supply of organic cells at the time of fecundation; that of the mother continues in a modified form through the period of gestation. Since numerous facts support the idea of the transmission to offspring of mental and physical qualities, we are warranted in assuming that diseases, among them syphilis, may be likewise inherited, the sperm cells of the male and the ovule of the female being the conveying media. Hereditary syphilis may, therefore, be derived from one or both parents, since it originates in the procreative cells of either male or female.

Influence of the Father.—So many undoubted instances of the transmission of syphilis from father to child have been reported, that further evidence is scarcely needed. The risk of contagion from the father is great in proportion to the activity of his symptoms. If procreation takes place while he is in the first period of incubation, the child will escape, and may do so even during the secondary period of incubation, but infection is more probable as the latter stage advances. Probably, his malign influence begins with the evolution of constitutional manifestations.

There is abundant evidence that, if the disease is not treated, the sperm cells will retain the syphilitic virus through the first year, since temporary and spontaneous latency of the disease is observed only at a later period. On the other hand, mercurial treatment may so modify the disease, that the child will escape even within the first year. We see frequent examples of this, when men recently syphilitic and compelled to marry, are put under an active mercurial course, and within a year become fathers of children who never show the slightest evidence of syphilis. Rare instances occur, in which the disease, although unmodified by treatment, infects the system of the father so slightly, that the fœtus escapes even during the first year.

Mercurial treatment, however, is the most potent means at our command of finally eradicating the disease. Without it, the danger of transmitting the disease to offspring usually persists up to the fourth year of syphilitic contagion. By faithful pursuance of a mercurial course, the probability of the procreation of healthy children is increased from year to year.

The effect of mercury is not always permanent, especially if it is employed in only a single brief course during the first year. The sperm-cells of the father having as a result of treatment ceased to procreate syphilitic children, the disease may, on the cessation of

treatment, again become active and the next child or children may in consequence be syphilitic. This fact has been conclusively proved by a number of cases reported by Kassowitz,[1] and also in two cases under my own observation,[2] in both of which the father was syphilitic and the mother healthy. Seven children were born, of whom the first five were syphilitic, the sixth perfectly healthy, and the seventh markedly diseased. In this case the mother was healthy, and the disease of the father was uninfluenced by treatment until after the birth of the fifth child, when he was under active treatment, which was abandoned after the birth of the sixth.

Our chief points of guidance, in estimating the probable influence of a syphilitic father upon his offspring, are the degree to which the disease has affected his system and its amenability to treatment. It is well to add that the earlier a mercurial course is begun, the greater will be its effect upon the disease and the more complete the future immunity of the patient. When the symptoms are trifling, we should not assume that the sperm-cells are healthy; on the contrary, we should insist upon an active and prolonged course of treatment.

Those rare cases, in which distinct evidences of syphilis are shown, such as gummata, nodes, palmar psoriasis, etc., without any indication of transmission of disease to offspring, have merely the local relics of an exhausted syphilis, which give them no immunity from fresh contagion.

Although the paternal influence in transmission is now generally acknowledged, there are authorities who still claim that the disease is derived exclusively from the mother. This theory, now known as that of Cullerier, who was one of its prominent advocates, is based upon observations which were rendered imperfect by failure to appreciate the facts, that syphilis may be influenced by treatment, and that the disease has periods of true latency.

In support of this view, Cullerier cites the cases of two men, who, in the early stages of syphilis, underwent treatment, one even to salivation, and of many healthy women who bore, within a year of marriage, perfectly healthy children. In the light of our previous studies, the explanation is very simple. Moreover, Cullerier's articles show that he has seen syphilitic mothers produce diseased children, and has failed to learn the condition of the father, whose influence on the offspring is almost as powerful as that of the mother, and he has, therefore, reached a dangerous and false conclusion. It is useless to consider in detail the arguments and cases of those who follow in the same line, chief of whom are Follin, Notta, Charrier, and Oewre. I would advise a perusal of the criticism upon this theory, and upon the cases offered by its advocates, in the admirable work of Kassowitz.

[1] Die Vererbung der Syphilis, Vienna, 1876.
[2] A Contribution to the Study of the Transmission of Syphilis, Arch. Clin. Surg., N. Y., Sept., 1877.

We think we are fully warranted in adopting the conclusion that *the father may transmit syphilis to his offspring.*

The Influence of the Mother.—In order that syphilis may be conveyed by the mother, her disease must be constitutional. When impregnation occurs later than within two weeks of the evolution of general manifestations, the fœtus is almost inevitably affected, and the activity of the disease in the child will be in proportion to that of its early stage in the mother, unless the disease has already been modified by active mercurial treatment.

Statistics show that such embryos rarely reach maturity, abortion occurring usually from the fifth to the seventh month, sometimes as early as the third.

In such cases, in addition to the disease of the ovule itself, the nutrition and growth of the fœtus, which depend upon the richness and purity of the mother's blood, are impaired in proportion to the severity of the disease in the mother, although her specific syphilitic influence ceases after conception.

The claim, which our own experience tends to confirm, is made by Fournier and others, that syphilis affects women more profoundly than men, and that it induces in them, more frequently and more severely, a condition of chloro-anæmia. Women, in this condition, becoming pregnant, are, doubtless, very likely to abort, while, on the contrary, an embryo, profoundly syphilitic, may reach maturity. Under these circumstances, treatment probably does not cure the disease of the fœtus, but may act upon it indirectly by improving the condition of the mother.

In many women, however, as in some men, the course of syphilis is very mild, and, during the whole secondary period, an appearance of perfect health is retained.

The blood of such women is, of course, not profoundly altered, hence the nutrition of the child is relatively good. This point will be more fully considered.

Since arbitrary rules, regarding the parental influence in the transmission of syphilis, cannot be laid down, I shall give merely the general results reached in the experience of reliable observers, supplemented by my own.

The frequent observation that the product of conception, occurring while either parent is in the early and active stage of the disease, is intensely syphilitic or fails to reach maturity, and that healthier children are produced as the disease of the parent becomes less severe, is ground for the assertion that the severity of the syphilis in offspring is in proportion to its activity in either or each parent at the time of conception. Thus, if a syphilitic woman becomes pregnant, or if the disease is derived from a man, in whom it is active, the first fœtus may live only to the third month. Without treatment, the next pregnancy may have a similar result, gestation possibly being a little longer.

As the disease becomes modified by time or treatment, a living

but syphilitic child may be born; in succeeding pregnancies the traces of the disease fade, until, finally, healthy children may be produced.

This gradual extinction of the disease is to be expected only when it is left to run its own course. Modified by treatment, it may offer many irregularities, a very striking instance being presented, where a third or fourth child shows more evidences of syphilitic taint than its predecessors.

The power of hereditary transmission peculiar to the mother depends, as in the case of the father, upon the state of the syphilis in her organism, similar periods of latency, both spontaneous and due to mercurials, being met with in the female. If her system, at the time of conception, is temporarily free from syphilitic influence, her ovules are capable of producing healthy children.

The number of syphilitic children which a woman may produce varies. In some cases, of a mild character, healthy children may follow the birth of one or two infected ones. In other cases, particularly in those partially or entirely untreated, there may be six or more.

As a rule, after the lapse of six years, the influence of the disease has become so feeble that the risk of transmission is extremely slight.

Mercurial treatment seems to have quite as marked an effect in eradicating the disease and in diminishing its transmissibility with women as with men.

We have seen, in the case of the father, that the disease may be temporarily so modified by treatment that healthy children will alternate with those diseased. The same is true of the mother.

The rare occurrence of a syphilitic woman giving birth to twins, one diseased and the other healthy, seems difficult of explanation, but is doubtless due to the infection of one ovule alone.

Much light is thrown upon this apparent anomaly, by the fact that certain syphilitic cells or molecules may be temporarily confined to parenchymatous organs, while the system at large remains exempt.

We come now to an interesting question: *Can syphilis be conveyed through the utero-placental circulation?*

This mode of transmission is now pretty generally admitted, but many discrepancies are found in the statements of its advocates.

It is claimed by some that the transmission of syphilis to the child depends upon the occurrence of the mother's infection during the first half of pregnancy, while others regard the latter half as the dangerous period. It seems singular that this theory has been accepted at all, in view of the prevalence of so much uncertainty and lack of precision.

The question, however, is a very simple one, namely: Can the syphilitic virus of the mother be conveyed through her blood to the child?

The experiments of Pellizzari have conclusively proved that the