*nos.* Flexion to one side is less common—*pleurosthotonos;* while spasm of the muscles of the abdomen may cause the body to be bent forward—*emprosthotonos.* In very violent attacks the thorax is compressed, the respirations are rapid, and spasm of the glottis may occur, causing asphyxia. The paroxysms last for a variable period, but even in the intervals the relaxation is not complete. The slightest irritation is sufficient to cause a spasm. The paroxysms are associated with agonizing pain, and the patient may be held as in a vise, unable to utter a word. Usually he is bathed in a profuse sweat. The temperature may remain normal throughout, or show only a slight elevation toward the close. In other cases the pyrexia is marked from the outset; the temperature reaches 105° or 106°, and before death 109° or 110°. In rare instances the temperature may reach a still higher point. Death either occurs during the paroxysm from heart-failure or asphyxia, or is due to exhaustion.

**Diagnosis.**—Well-developed cases following a trauma could not be mistaken for any other disease. The spasms are not unlike those of strychnia-poisoning, and in the celebrated Palmer murder trial this was the plea for the defence. The jaw-muscles, however, are never involved early, if at all, and between the paroxysms in strychnia-poisoning there is no rigidity. Certain cases of the so-called cephalic tetanus in which there is difficulty of swallowing might be mistaken for hydrophobia, but in this disease there is never the stiffness of the jaws nor paroxysms in which the cervical and dorsal muscles are affected. In tetany the distribution of the spasm at the extremities, the peculiar position, the greater involvement of the hands, and the condition under which it occurs, are sufficient to make the diagnosis clear.

**Prognosis.**—Two of the Hippocratic aphorisms express tersely the general prognosis even at the present day: "The spasm supervening on a wound is fatal," and "such persons as are seized with tetanus die within four days, or if they pass these they recover."

The mortality in the traumatic cases is not less than eighty per cent. (Conner); in the idiopathic cases it is under fifty per cent. According to Yandell the mortality is greatest in children. Favorable indications are —late onset of the attack, localization of the spasms to the muscles of the neck and jaw, and an absence of fever. Most of the cases of Rose's head tetanus, the so-called *tetanus hydrophobicus*, recover.

**Treatment.**—The patient should be kept in a darkened room, absolutely quiet, and attended by only one person. All possible sources of irritation should be avoided. Veterinarians appreciate the importance of this complete seclusion, and in well-equipped infirmaries there may be seen a brick padded chamber in which these cases are treated.

When the lockjaw is extreme it may be impossible to feed the patient, under which circumstances it is best to use rectal injections, or to feed by a catheter passed through the nose. The spasm should be controlled by chloroform, which may be repeatedly given at intervals. It is more satisfactory to keep the patient thoroughly under the influence of morphia given hypodermically. Chloral hydrate, bromide of potassium, Calabar bean, curara, Indian hemp, belladonna, and other drugs have been recommended, and recovery occasionally follows their use. As the toxic agents appear to be produced by bacilli at the site of the lesion, thorough cleansing and antiseptic treatment should be carried out.



## XXV. SYPHILIS.

**Definition.**—A specific disease of slow evolution, propagated by inoculation (acquired syphilis), or by hereditary transmission (congenital syphilis). In the acquired form the site of inoculation becomes the seat of a special tissue change—*primary lesion.* After an interval of two or three months constitutional symptoms develop, with affections of the skin and mucous membranes—*secondary lesions.* And, finally, after a period of three, four, or more years, granulomatous growths develop in the viscera, muscles, bones, or skin—*tertiary lesions.*

### I. General Etiology and Morbid Anatomy.

The nature of the virus is still doubtful. Lustgarten found in the hard chancre and in gummata a rod-shaped bacillus of 3 or 4 $\mu$ in length, which he claims is specific and peculiar to the disease. This organism closely resembles the smegma bacillus, which is found beneath the prepuce, but from its occurrence in gummatous growths it is hardly possible that they can be identical. Further observations are required before the question can be considered settled.

Syphilis is peculiar to man, and cannot be transmitted to the lower animals. All are susceptible to the contagion, and it occurs at all ages.

**Modes of Infection.**—(1) In a large majority of all cases the disease is transmitted by *sexual congress*, but the designation *venereal* disease, *lues venerea*, is not always correct, as there are many other modes of inoculation.

(2) *Accidental Infection.*—In surgical and in midwifery practice, physicians are not infrequently inoculated. It is surprising that infection from these sources is not more common. I have known personally of six cases. Midwifery chancres are usually on the fingers, but I have met with one instance on the back of the hand. Lip, mouth, and tonsillar sores result as a rule from improper practices. Wet-nurses are sometimes infected on the nipple, and it occasionally happens that relatives of the child are accidentally contaminated. One of the most lamentable forms of accidental infection is the transmission of the disease in humanized vaccine lymph. This, however, is extremely rare. The conditions under which it occurs have been already referred to (see Vaccination).

(3) *Hereditary Transmission.*—This may be, and is most common,

from (*a*) the father, the mother being healthy (sperm inheritance). It is, unfortunately, an every-day experience to see cases of congenital syphilis in which the infection is clearly paternal. A syphilitic father may, however, beget a healthy child, even when the disease is fresh and full-blown. On the other hand, in very rare instances, a man may have had syphilis when young, undergo treatment, and for years present no signs of disease, and yet his first-born may show very characteristic lesions. Happily, in a large majority of instances, when the treatment has been thorough, the offspring escape. The closer the begetting to the primary sore, the greater the chance of infection. A man with tertiary lesions may beget healthy children. As a general rule it may be said that with judicious treatment the transmissive power rarely exceeds three or four years.

(*b*) Maternal transmission (germ inheritance). It is a remarkable and interesting fact that a woman who has borne a syphilitic child is herself immune, and cannot be infected, though she may present no signs of the disease. This is known as Colles's law, and was thus stated by the distinguished Dublin surgeon: "That a child born of a mother who is without obvious venereal symptoms, and which, without being exposed to any infection subsequent to its birth, shows this disease when a few weeks old—this child will infect the most healthy nurse, whether she suckle it or merely handle and dress it; and yet this child is never known to infect its own mother, even though she suckle it while it has venereal ulcers of the lips and tongue." In a majority of these cases the mother has received a sort of protective inoculation, without having had actual manifestations of the disease.

A woman with acquired syphilis is liable to bear infected children. The father may not be affected. In a large number of instances both parents are diseased, the one having infected the other, in which case the chances of fœtal infection are greatly increased.

(*c*) Placental transmission. The mother may be infected after conception, in which case the child may be, but is not necessarily, born syphilitic.

**Morbid Anatomy.**—The *primary lesion*, or chancre, shows: (*a*) A diffuse infiltration of the connective tissue with small, round cells. (*b*) Larger epithelioid cells. (*c*) Giant cells. (*d*) The Lustgarten bacilli, in small numbers. (*e*) Changes in the small arteries, chiefly thickening of the intima, and alterations in the nerve-fibres going to the part (Berkeley). The sclerosis is due in part to this acute obliterative endarteritis. Associated with the initial lesions are changes in the adjacent lymph-glands, which undergo hyperplasia, and finally become indurated.

The *secondary lesions* of syphilis are too varied for description here. They consist of condylomata, skin eruptions, affections of the eye, etc.

The *tertiary lesions* consist of circumscribed tumors known as gummata, and of an arteritis, which, however, is not peculiar to the disease.

*Gummata.*—Syphilomata develop in the bones or periosteum—here



they are called nodes—in the muscles, skin, brain, lung, liver, kidneys, heart, testes, and adrenals. They vary in size from small, almost microscopic, bodies to large, solid tumors from three to five centimetres in diameter. They are usually firm and hard, but in the skin and on the mucous membranes they tend to break down rapidly and ulcerate. On cross-section a medium-sized gumma has a grayish-white, homogeneous appearance, presenting in the centre a firm, caseous substance, and at the periphery a translucent, fibrous tissue. Often there are groups of three or more surrounded by dense sclerotic tissue. They are usually very firm and hard. Histologically, a small gumma consists of a granulation tissue composed of rounded cells. Owing to insufficient blood-supply, coagulation necrosis takes place in the centre with the formation of a fibro-caseous material, while the growth extends at the margins with the gradual production of fibre-cells. Ultimately the central caseous part may be absorbed, and healing takes place with the development of a fibrous scar.

The arteritis will be considered in a separate section.

## II. Acquired Syphilis.

**Primary Stage.**—This extends from the appearance of the initial sore until the onset of the constitutional symptoms, and has a variable duration of from six to twelve weeks. The initial sore appears within a month after inoculation, and it first shows itself as a small red papule, which gradually enlarges and breaks in the centre, leaving a small ulcer. The tissue about this becomes indurated so that it ultimately has a gristly, cartilaginous consistence—hence the name, hard or indurated chancre. The size attained is variable, and when small the sore may be overlooked, particularly if it is just within the urethra. The glands in the lymph-district of the chancre enlarge and become hard. Suppuration both in the initial lesion and in the glands may occur as a secondary change. The general condition of the patient in this stage is good. There may be no fever and no impairment of health.

**Secondary Stage.**—The first constitutional symptoms are usually manifested within three months of the appearance of the primary sore. They rarely develop earlier than the sixth or later than the twelfth week. The symptoms are: (*a*) *Fever*, slight or intense, and very variable in character. A mild continuous pyrexia is not uncommon, the temperature not rising above 101°. The fever may have a distinctly remittent character; but the most remarkable and puzzling type of syphilitic fever is the intermittent, which often leads to error in diagnosis. The fever may come on within a month after exposure and rise to 104° or 105°, with oscillations of five or six degrees (Yeo) A remarkable case is reported by Sidney Phillips, in which pyrexia persisted for months, with paroxysms resembling in all respects tertian ague, and which resisted quinine and yielded promptly to mercury and potassium iodide. Although usually a secondary manifestation, the fever of syphilis may occur late in the disease.

(*b*) *Anæmia.*—In many cases the syphilitic poison causes a pronounced anæmia which gives to the face a muddy pallor, and there may even be a light-yellow tingeing of the conjunctivæ or of the skin, an hæmatogenous icterus. This syphilitic cachexia may in some instances be extreme. The red blood-corpuscles do not show any special alterations. The blood-count may fall to three millions per cubic millimetre, or even lower, and the hæmoglobin to forty or fifty per cent (Hayem). No characteristic organisms have been found in the blood.

(*c*) *Cutaneous Lesions.*—Skin eruptions of all forms may develop. The earliest and most common is a rash—*macular syphilide* or *syphilitic roseola*—which occurs on the abdomen, the chest, and on the front of the arms. The face is often exempt. The spots, which are reddish-brown and symmetrically arranged, persist for a week or two. Next in frequency is a *papular syphilide*, which may form acne-like indurations about the face and trunk, often arranged in groups. Other forms are the *pustular rash*, which may so closely simulate variola that the patient may be sent to a small-pox hospital. A *squamous syphilide* occurs, not unlike ordinary psoriasis, except that the scales are less abundant. The rash is more copper-colored and not specially confined to the extensor surfaces.

In the moist regions of the skin, such as the perinæum and groins, the axillæ, between the toes, and at the angles of the mouth, the so-called *mucous patches* develop, which are flat, warty outgrowths, with well-defined margins and surfaces covered with a grayish secretion. They are among the most distinctive lesions of syphilis.

Frequently the hair falls out (alopecia), either in patches or by a general thinning. Occasionally the nails become affected (syphilitic onychia).

(*d*) *Mucous Lesions.*—With the fever and the roseolous rash the throat and mouth become sore. The pharyngeal mucosa is hyperæmic, the tonsils are swollen and often present small, kidney-shaped ulcers with grayish-white borders. Mucous patches are seen on the inner surfaces of the cheeks and on the tongue and lips. Sometimes on the tongue there are whitish spots (leucomata), which are seen most frequently in smokers, and which Hutchinson regards as the joint result of syphilitic glossitis and the irritation of hot tobacco-smoke. Hypertrophy of the papillæ in various portions of the mucous membrane produces the syphilitic warts or condylomata which are most frequent about the vulva and anus.

(*e*) *Other Lesions.—Iritis* is common, and usually affects one eye before the other. It develops in from three to six months after the chancre. There may be only slight ciliary congestion in mild cases, but in severer forms there is great pain, and the condition is serious and demands careful management. *Choroiditis* and *retinitis* are rare secondary symptoms. Ear affections are not common in the secondary stage, but instances are found in which sudden deafness develops, which may be due to labyrinthine disease; more commonly the impaired hearing is due to the extension of inflammation from the throat to the middle ear. Epididymitis is an occasional secondary lesion.



**Tertiary Stage.**—No hard and fast line can be drawn between the lesions of the secondary and those of the tertiary period; and, indeed, in exceptional cases, manifestations which usually appear late may set in even before the primary sore has properly healed. The special affections of this stage are certain skin eruptions, gummatous growths in the viscera, and amyloid degenerations.

(*a*) The late *syphilides* show a greater tendency to ulceration and destruction of the deeper layers of the skin, so that in healing scars are left. They are also more scattered and seldom symmetrical. One of the most characteristic of the tertiary syphilides is rupia, the dry stratified crusts of which cover an ulcer which involves the deeper layers of the skin and in healing leaves a scar.

(*b*) *Gummata.*—These may develop in the skin, subcutaneous tissue, muscles, or internal organs. The general character has been already described. When they develop in the skin they tend to break down and ulcerate, leaving ugly sores which heal with difficulty. In the solid organs they undergo fibroid transformation and produce puckering and deformity. On the mucous membranes these tertiary lesions lead to ulceration, in the healing of which cicatrices are formed; thus, in the larynx great narrowing may result, and in the rectum ulceration with fibroid thickening and retraction may lead to stricture.

(*c*) *Amyloid Degeneration.*—Syphilis plays a most important *rôle* in the production of this affection. Of 244 instances analyzed by Fagge, 76 had syphilis, and of these 42 had no bone lesions. It follows the acquired form and is very common in the rectal disease in women. In congenital lues amyloid degeneration is rare.

(*d*) *Sclerosis*—Syphilis is an important factor in inducing degenerative changes in certain tissues. In locomotor ataxia the association between this disease and sclerosis of the posterior columns of the cord is far too frequent to be accidental, but the precise relations cannot, with our present knowledge, be explained. With regard to arterio-sclerosis, the part played by syphilis is unquestioned, but the nature of the connection of the two processes remains doubtful.

### III. Congenital Syphilis.

With the exception of the primary sore, every feature of the acquired disease may be seen in the congenital form.

The intra-uterine conditions leading to the death of the fœtus do not here concern us. The child may be born healthy-looking, or with well-marked evidences of the disease. In the majority of instances the former is the case, and within the first month or two the signs of the disease appear.

**Symptoms.**—(*a*) *At Birth.*—When the disease exists at birth the

child is feebly developed and wasted, and a skin eruption is usually present, commonly in the form of bullæ about the wrists and ankles, and on the hands and feet (pemphigus neonatorum). The child snuffles, the lips are ulcerated, the angles of the mouth fissured, and there is enlargement of the liver and spleen. The bone symptoms may be marked, and the epiphyses may even be separated. In such cases the children rarely survive long.

(*b*) *Early Manifestations.*—When born healthy the child thrives, is fat and plump, and shows no abnormity whatever; then from the fourth to the eighth week, rarely later, a nasal catarrh develops, *syphilitic rhinitis*, which impedes respiration, and produces the characteristic symptom which has given the name *snuffles* to the disease. The discharge may be sero-purulent or bloody. The child nurses with great difficulty. In severe cases ulceration takes place with necrosis of the bone, leading to a depression at the root of the nose and a deformity characteristic of congenital syphilis. This coryza may be mistaken at first for an ordinary catarrh, but the coexistence of other manifestations usually makes the diagnosis clear. The disease may extend into the Eustachian tubes and middle ear and lead to deafness.

The *cutaneous lesions* develop with or shortly after the onset of the snuffles. The skin often has a sallow, earthy hue. The eruptions are first noticed about the nates. There may be an erythema or an eczematous condition, but more commonly there are irregular reddish-brown patches with well-defined edges. A papular syphilide in this region is by no means uncommon. Fissures develop about the lips, either at the angles of the mouth or in the median line. These *rhagades*, as they are called, are very characteristic. There may be marked ulceration of the mucocutaneous surfaces. The secretions from these mouth lesions are very virulent, and it is from this source that the wet-nurse is usually infected. Not only the nurse, but members of the family, may be contaminated. There are instances in which other children have been accidentally inoculated from a syphilitic infant. The hair of the head or of the eyebrows may fall out. The syphilitic *onychia* is not uncommon. Enlargement of the glands is not so frequent in the congenital as in the acquired disease. When the cutaneous lesions are marked, the contiguous glands can usually be felt. As pointed out by Gee, the spleen is enlarged in many cases. The condition may persist for a long time. Enlargement of the liver, though often present, is less significant, since in infants it may be due to various causes. These are among the most constant symptoms of congenital syphilis, and usually develop between the third and twelfth weeks. Frequently they are preceded by a period of restlessness and wakefulness, particularly at night. Some authors have described a peculiar syphilitic cry, high-pitched and harsh. Among rarer manifestations are hæmorrhages—the *syphilis hæmorrhagica neonatorum*. The bleeding may be subcutaneous, from the mucous surfaces, or, when early, from the umbilicus. All of such cases, however, are not syphilitic, and the disease must not be confounded with the acute hæmoglobinuria of new-born infants, which Winckel describes as occurring in epidemic form, and which is probably an acute infectious disorder.



(*c*) *Late Manifestations.*—Children with congenital syphilis rarely thrive. Usually they present a wizened, wasted appearance, and a prematurely aged face. In the cases which recover, the general nutrition may remain good and the child may show no further manifestations of the disease; commonly, however, at the period of second dentition or at puberty the disease reappears. Although the child may have recovered from the early lesions, it does not develop like other children. Growth is slow, development tardy, and there are facial and cranial characteristics which often render the disease recognizable at a glance. A young man of nineteen or twenty may neither look older nor be more developed than a boy of ten or twelve. Fournier describes this condition as *infantilism*. The forehead is prominent, the frontal eminences are marked, and the skull may be very asymmetrical. The bridge of the nose is depressed, the tip *retroussé*. The lips are often prominent, and there are striated lines running from the corners of the mouth The *teeth* are deformed and may present appearances which Jonathan Hutchinson claims are specific and peculiar. The upper central incisors of the permanent set are the teeth which give information. The specific alterations are—the teeth are peg-shaped, stunted in length and breadth, and narrower at the cutting edge than at the root. On the anterior surface the enamel is well formed, and not eroded or honeycombed. At the cutting edge there is a single notch, usually shallow, sometimes deep, in which the dentine is exposed.

Among late manifestations, particularly apt to appear about puberty, is the interstitial *keratitis*, which usually begins as a slight steaminess of the corneæ, which present a ground-glass appearance. It affects both eyes, though one is attacked before the other. It may persist for months, and usually clears completely, though it may leave opacities, which prevent clear vision. *Iritis* may also occur. Of *ear affections*, apart from those which develop as a sequence of the pharyngeal disease, a form occurs about the time of puberty or earlier, in which deafness comes on rapidly and persists in spite of all treatment. It is unassociated with obvious lesions, and is probably labyrinthine in character. *Bone lesions*, occurring oftenest after the sixth year, are not rare among the late manifestations of hereditary syphilis. The tibiæ are most frequently attacked. It is really a chronic gummatous periostitis, which gradually leads to great thickening of the bone. The nodes of congenital syphilis, which are often mistaken for rickets, are more commonly diffuse and affect the bones of the upper and lower extremities. They are generally symmetrical and rarely painful. They may develop late, even after the twenty-first year.

Joint lesions are rare. Clutton has described a symmetrical synovitis