

## CHAPTER VI.

### POISONED WOUNDS.

Dissecting Wounds.—Hydrophobia.—Snake-Bites.—Insect-Bites.

DISSECTING WOUNDS.—During the process of putrefaction a poison is generated which is capable of exciting inflammation in healthy tissues, and of reproducing itself in the circulation, giving rise to serious constitutional disturbances. The poison is introduced by cutting or puncturing the flesh with the knife used during the progress of *post-mortem* examinations, or in the anatomical investigations of the dissecting-room. Wounds of the most serious character may be made by a piece of broken rib or other rough bone.

When putrefaction is much advanced, the system is less likely to be infected. It is an established fact that wounds inflicted in the dissecting-room, when decomposition is nearly at its maximum, are comparatively harmless, while those inflicted in a *post-mortem* examination often destroy life. Whether the material injected in the arteries of subjects about to be dissected modifies the poison or not, is a subject for future investigation.

The disease with which the patient died has much to do with the severity of the disease in the wounded person. Puerperal fever, erysipelas, pyæmia, typhus, etc., are pecu-

liarily dangerous. They seldom fail to produce either local or constitutional poisoning. On the other hand, parturient women are sometimes infected by the poison of the dissecting-room carried on the hands of a physician. Erysipelas, puerperal fever, etc., are not unfrequently developed in this manner.

Debilitated states of the system are favorable to the infection. The influence of the poison is more strongly manifested in every case where the constitution is below par.

In merely local poisoning, the wound shows little tendency to heal, closing for a day or two and then breaking out afresh. Around the wound the integument is thickened, and of a dusky hue. There is an exudation from the cut surface, of a sero-purulent character. This condition of the wound may last for weeks, and even months, healing partially for a time, then breaking out and assuming its original unhealthy appearance.

In another variety the wound, after a lapse of twenty-four or thirty-six hours, becomes hot and painful. A small quantity of sanious fetid pus exudes from the surface. The surrounding integument is red and swollen. In a short time, small red lines may be noticed running up the arm, indicating the extension of inflammatory action to the lymphatic vessels (*angioleucitis*). The arm is swollen and painful. The axillary glands enlarge and often suppurate. Abscesses may form and burrow in the cellular tissues of the arm and chest. The skin is hot and dry, the pulse rapid, and urine scanty and high-colored. When the abscesses open and discharge, great prostration ensues, which may destroy the life of the patient or leave him a helpless invalid for months.

The third class of cases rarely recover. The patient,

within a period ranging from twenty-four to forty-eight hours after the wound is received, is seized with violent chills. These are succeeded by unmistakable evidences of blood-poisoning. The pulse becomes rapid and very small, the countenance anxious, and tongue brown and dry. The integument is of a tawny color, and may be jaundiced. There is profuse perspiration. Meanwhile, the wound becomes very painful; the tissues around it are thickened and infiltrated with pus. Abscesses are not confined to the injured tissue, but may show themselves in any part. The lymphatics are involved as in the preceding case. Delirium sets in, and is soon followed by death. In severe cases, death may occur within forty-eight hours after the infliction of the injury.

*Treatment.*—In wounds of this character, proper precautions should be immediately resorted to in order to prevent the retention of the poison and its subsequent entrance into the circulation. The wound should be washed by holding it under a stream of water for a few seconds. The lips are then applied and the virus removed by suction. There is no necessity for the application of caustics.

The treatment of cases where there is only local poisoning resolves itself into stimulation of the wound by means of carbolic-acid or nitrate-of-silver solutions, and maintaining the health of the patient at a proper standard, by fresh air, good food, and tonic medicines.

In those cases where acute inflammation appears in the wound and extends to neighboring tissues, the wound should be enlarged and cleansed of accumulations of pus with a strong solution of carbolic acid. A poultice of linseed-meal and charcoal may be then applied to the wound, and, if

necessary, to the whole limb. Painting the inflamed lymphatic vessels with iodine has been recommended.

Opium is freely given to relieve pain and to produce sleep. Easily-digested nutriment, such as beef-tea and chicken-broth, is to be administered *ad libitum*. Stimulants are sometimes necessary. The treatment for the third variety is similar, with the addition of stimulants used freely, and large doses of quinine.

- *HYDROPHOBIA.*—Phobodipson, rabies, canine madness, lyssa, and a variety of other terms, have been used to designate this malady. It has been known from the earliest historical periods. The disease attacks man and many of the lower animals. Dogs, cats, and wolves, are most subject to its ravages. Cows, goats, pigs, and horses, are occasionally afflicted. It occurs at all seasons of the year, without reference to climate or temperature, appearing in the winter season as well as in "dog-days." The nature of the poison is unknown. It is transmitted from one animal to another by means of the salivary secretions introduced through wounds inflicted by the teeth. Other secretions in the body are said to be harmless and unable to transmit the disease.

The period between the inoculation and the development of the disease is subject to considerable variation. Generally it appears between one and two months. Cases have been recorded (hardly with sufficient authority, however, to establish them as facts) where the disease remained latent for twelve or fifteen months.

Billroth mentions an old superstition which attaches great importance to the number nine, and gives the disease a tendency to develop on the ninth day, ninth week, or ninth month, succeeding the injury.

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Rabies in the dog is divided by Virchow into three stages: 1. The melancholic; 2. Furious; and 3. Paralytic. The animal affected loses its appetite—shrinks from water and ordinary food—endeavors to hide in his kennel, and can with great difficulty be coaxed out. The head droops, and the eyes are bloodshot and heavy. There is great thirst, and water is not refused.

In the second stage the animal yelps or howls, and runs wildly about, biting at every thing. The tongue hangs from the mouth, and the eyes are congested and wild.

In the third stage emaciation is apparent and rapidly progresses, great exhaustion supervenes. Little effort is made to move, and the saliva dribbles from the mouth. In walking, both hind-legs are dragged on the ground as if paralyzed. Death ensues in from four to eight days from the commencement of the disease.

HYDROPHOBIA in man has many of the characteristics just described.

A person bitten by a mad dog is usually on the watch for some manifestation of the disease. The wound may heal readily, but the dread remains. If the cicatrix begins to inflame and is painful, and other signs appear which show that his fears are about to be realized, the depression of spirits and anguish are intensified. All cases are preceded and accompanied by this terror. It is one of the characteristics of hydrophobia.

As the disease progresses, the skin becomes hot and dry, the pulse rapid, and lacking strength. There is much thirst. In two or three days from the first manifestation of the disease the muscles of the throat, and especially those concerned in deglutition, become stiff and sore. Attempts at

swallowing are followed by spasmodic contraction of these muscles, and of those concerned in respiration. These convulsive movements increase in frequency, excited by the smallest provocation. Slamming doors, cold currents of air, pouring water from one vessel to another, or changing the bedclothes, brings them on. In some cases there are general convulsions. Thirst is intense, and the unfortunate patient does not relieve it for fear of choking or renewing the spasms. Sometimes there are small pustules under the tongue (Marschetti). The patient's countenance expresses all his terror. The eyes are staring and bloodshot. A thick saliva is constantly thrown from the mouth. The voice is husky. As the end approaches, the skin becomes cold and clammy, the pulse almost imperceptible, and the respiratory movements irregular. A convulsion may terminate life by involving the muscles of respiration, or the patient may die gradually from exhaustion.

After death, the fauces, throat, and lungs, are dark-colored and congested. In some cases, there are congestion of the cord and effusion into the ventricles of the brain. There is nothing definite in any of the lesions to indicate the specific action of the virus.

Strange as it may seem, hydrophobia is sometimes imitated for mercenary purposes. A case of this kind was admitted to Ward 9, Bellevue Hospital, in the winter of 1867. The patient stated that, when seven years of age (he was then twenty-five), he was bitten by a mad dog. One year afterward, symptoms of hydrophobia manifested themselves. He recovered from that attack, but exactly one month afterward at "the full of the moon," he was affected in a similar manner. This peculiar tendency to a monthly re-

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currence kept up for two or three years, and then ceased up to within two years of his first appearance. At that time they again commenced, and had continued at irregular intervals until his admission to the hospital.

While in the reception-room, awaiting transference to the ward, an orderly approached him with some water, which immediately threw him into a convulsion. He writhed violently on the floor, throwing the arms and legs about in every direction. The saliva collected in the form of foam around his mouth, and he howled and yelped like a "mad dog." The convulsion lasted for two minutes. At its termination he seemed to be quite exhausted, but was able to walk to the ward.

Shortly after his admission, and while in a convulsion, he was seen by Dr. Flint, who advised the application of hot water to the skin. The patient did not wait for the remedy, but recovered immediately. Finally, after a close questioning, he confessed the fraud, and admitted that for many years he had practised the game successfully, making considerable capital out of it.

This man's story was told with such an appearance of candor, that it was hard to doubt at least his own faith in the reality of the disease.

*Treatment.*—A wound inflicted by a dog suspected of madness should be washed and sucked as in ordinary dissecting wounds, and afterward thoroughly cauterized. Complete excision of the part is better, in most cases, than destroying the tissues by cauterization. Previous to the washing and excision, some recommend that a ligature be placed tightly around the limb, above the wound, in order to prevent absorption of the poison. On the arm or leg the

procedure is useless, because the circulation through the deep veins cannot be completely stopped. If placed on the fingers or toes, it may answer. In the bitten parts the excision should extend some distance into the healthy tissue, and the wound be subsequently cauterized. The actual cautery is the best, but the most painful.

When the disease is fully developed but little can be accomplished. Stimulants can be given in large quantities by enema, and other liquids in like manner. Opiates and anæsthetics should always be administered to relieve the pain and distress, and decrease the convulsive movements. As the wound has again become inflamed and painful, hot disinfecting poultices, sprinkled with laudanum, will be serviceable. Free discharge should be kept up continually.

*SNAKE-BITES.*—Among the principal venomous reptiles may be enumerated the whip-cord snake, cobra de capello, rattlesnake, viper, and adder. The bites of the first two produce a fatal result more quickly than the others. Rattlesnake-bites stand next in order of virulence. Viper and adder bites are fatal only to very young animals, or to children of tender years. In the more deadly classes the symptoms following a bite, and the action of the poison, are the same.

Rattlesnake-bites are not uncommon in the Southern and Western States, and the mortality attending them is very great.

The venom of this reptile is contained in a small sac situated at the base of the sharp tooth or fang. The tooth is channelled throughout its centre to make a place of exit for the poison. When the tooth is inserted into the tissues, the

poison-sac is compressed, and the venom ejected into the wound.

The person bitten is overcome, either immediately or after the lapse of a few minutes, by a feeling of faintness and great depression. The pulse becomes feeble, rapid, and intermittent. The pupils are dilated; there is some pain over the abdomen, vomiting, and sometimes purging. Delirium is present in most cases. The extremities and surface of the body are cold and clammy, respiration is catching and difficult. Coma comes on, grows rapidly deeper, and terminates in death.

The wound, shortly after the bite, swells rapidly. In one case it assumes a dark-red color, in another a bluish-black. A few patches of a light color may be intermixed. There is a sharp, intense pain in the wound, which extends up the limb, generally in the course of the principal nerves. Inflammation extends to the neighboring tissues, and, if the patient live long enough, diffuse suppuration may occur, and abscesses form throughout the limb.

Rattlesnake-bites produce death in from five to ten hours. The *post-mortem* appearances show nothing of the special effects of the poison. Sometimes there is congestion of the brain, with serous effusion underneath the arachnoid and into the ventricles. There may also be congestion of the lungs and mucous membrane of the stomach and intestines. The blood remains fluid in the cavities of the heart in many cases.

*Treatment.*—The wound should be treated in precisely the same manner as a wound produced by the bite of a mad dog; that is, the part should be washed, sucked, excised, or cauterized.

A vast number of internal remedies have been proposed. Bilron's antidote is one which has been strenuously advocated. Dr. W. A. Hammond, after a series of experiments, came to the conclusion that it was a remedy of great efficacy. Its formula is as follows:

R. Potassii iodidi . . . . .	gr. iv.
Hydr. bichloridi . . . . .	gr. ij.
Bromii . . . . .	3 iv.

From ten to twenty drops of this mixture are given every half-hour, until an amelioration of the symptoms is produced.

Arsenic is another remedy highly spoken of. Guaco, Virginia snakeroot, and other medicines of vegetable origin, have also acquired temporary reputation as antidotes. The the most efficacious treatment is to administer large doses of carbonate of ammonia repeatedly in conjunction with enemata of whiskey or brandy. The ammonia can be administered in ten or twenty grain doses every half-hour. Friction to the surface, with hot pieces of flannel dipped in alcohol, is also beneficial.

The poisoned wounds produced by scorpions, tarantulas, centipedes, and other members of this class, are rarely attended with destruction of life.

*Scorpions* have an elongated body and a slender tail, the latter six-jointed. In the last joint there is a sharp sting, which communicates with poison follicles. Scorpions are found in all tropical climates. The largest scorpions are the most venomous.

The tarantula, a species of spider which inhabits Southern Europe, was at one time held in great terror on account

of its reputed deadly influence. The stories of its ravages are, however, not founded on fact.

Centipedes are less dangerous than either of the preceding varieties. The most venomous grow to a length of six inches. A number of poison-claws project from the body. As the insect crawls over the surface, these are inserted into the integument, and the virus introduced. Some writers deny the existence of any special poison in members of this class.

The constitutional symptoms following the bites of these insects are exhibited in the form of headache, vertigo, dimness of vision, and sometimes febrile excitement. The wound, in some cases, is not inflamed; in others, it becomes red and painful, and the inflammation spreads to other parts of the extremity injured, ending in diffuse suppuration.

*Treatment.*—When the wound is cleansed, it should be sponged thoroughly with a strong solution of ammonia, and afterward covered with cloths moistened with the same substance. Brandy may be given internally in conjunction with ammonia.

## CHAPTER VII.

### EXTRACTION OF FOREIGN BODIES.

Foreign Bodies in the Larynx, Trachea, Bronchial Tubes, Pharynx, Œsophagus, Eyes, Nose, Ears, Urethra, Bladder, and Rectum.—Tracheotomy.—Laryngotomy Laryngotomy.—Œsophagotomy.

FOREIGN BODIES IN THE AIR-PASSAGES.—Foreign bodies are usually lodged in that portion of the air-passages known as the larynx. This organ is situated in the median line of the neck, between the trachea and base of the tongue. The anterior margin of its superior opening is guarded by a cartilage called the *epiglottis*. During the act of deglutition, the epiglottis closes the aperture in the larynx, and prevents the entrance of food as it passes over on its way to the Œsophagus. It is raised during the respiratory movements for the free ingress and egress of air.

The trachea commences opposite the fifth cervical, and bifurcates about the third dorsal vertebra into the right and left bronchus. The right bronchus is shorter than the left. Its orifice lies directly under the tracheal canal, so that foreign bodies which pass below the trachea drop in and effect a lodgment. The endeavor to talk, laugh, or respire, with food or other substances in the mouth, is often followed by the entrance of some portion into the air-passages. In talking or laughing, the air is passing out of the lungs, and the epiglottis is raised. Heavy substances contained in the