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## CLINICAL LECTURES,

IN COURSE OF DELIVERY DURING THE PRESENT SESSION

AT GUY'S HOSPITAL,

BY BRANSEY B. COOPER, ESQ. F.R.S.

(Published with Permission of the Lecturer.)

MONDAY, MARCH 15, 1841.

LECT. XIII.—On *Gangrene; with Cases.*

GENTLEMEN,—There is a very interesting case now in the house, in which gangrene has undergone a natural process of separation, by what is termed spontaneous amputation. I shall read you the notes of this case, and then make what incidental remarks may suggest themselves, with regard to its peculiarities, enlarging a little on the causes of the condition termed mortification, gangrene, or sphacelus, simply premising that the proximate cause in every case is cessation of the circulation in a part, and what are usually termed the causes, are merely the various agencies by which this cessation may be accomplished. These are the notes of the case as handed to me by my dresser:—

“Catherine Green, aged 18, a girl of delicate and highly irritable habit, was admitted into Martha ward Jan. 27, 1841. She stated that she was an inmate of the South Institution, Walworth, where, a few days previous to her admission to this hospital, and during the severe frost in the middle of January, she was ordered to sweep the snow off some part of the building; after doing which she found her feet excessively cold, and suffered much pain in them. She then complained to the matron, who ordered her feet to be put into hot water, and gave her a glass of wine. She still continued to suffer very severe pain in her feet, extending up the leg; and on the “taking-in day,” was admitted under Mr. Cooper. On examination, the feet were found of a dark livid hue, with several vesications filled with serous fluid upon them. Sensation was very much impaired, and though wrapped in flannel, they were nearly cold. Her countenance was anxious, and her pulse very weak. Her feet were ordered to be kept enveloped in warm blankets, and aromatic spirits of ammonia, with camphor mixture, to be given every four hours, with some Dover's powder at bedtime. Under this treatment the parts seemed inclined to recover themselves; but they soon relapsed into their former condition. Ammonia and bark were ordered, with warm poultices to the feet.

On the 13th of Feb., seventeen days after her admission, the line of demarcation between the dead and living structures began to show itself, just above the ankle-joint. The medicine, causing nausea, was discontinued, and ten ounces of wine per diem ordered instead, with one-third of

a grain of muriate of morphia at bedtime. The dead parts continued to separate satisfactorily, leaving a healthy granulating surface behind, and the gangrene increased in depth as it extended downwards, till at the junction of the tarsal bones with the tibia, on the right leg, and the cuboid and navicular with the astragalus and calcis on the left, vitality entirely ceased, and a spontaneous amputation was effected. On Friday, the 5th of March, Mr. Cooper completed the separation of the left foot by dividing those ligaments which were not quite detached. No hæmorrhage followed, and the stump was ordered to be dressed with the warm-water dressing. On the following Monday Mr. Cooper removed the other foot, with the exception of the astragalus and calcis, the removal of which he deferred for a few days, as the ligaments which unite these bones to the tibia and fibula were not sufficiently destroyed to admit of easy separation, and the poultices were ordered to be continued on this foot. Within the last few days she has had a slight attack of fever, for which a mixture composed of sol. of acetate of ammonia, wine of tartarised antimony, and camphor mixture, was ordered. Her pulse is now about 120, and very irritable; and on compressing the arteries a small degree of hardness is perceptible. The heart's action is excited, and the beats are sharp; her tongue clean, and bowels open. The only pain she now complains of is in the back, produced by her long continuance in the recumbent posture. The granulations are healthy, and her appetite is improving.”

Here, then, is a case of gangrene from exposure to cold, one of the very common causes of the condition; but you will observe, that the cold was not very intense, nor the exposure long continued; there must, therefore, have been some constitutional cause predisposing this patient to be thus affected, as the physical cause alone is not sufficient to account for it, numbers of persons being exposed to a greater degree of cold, and for a longer period with impunity. In some cases cold is so intense, or, speaking more correctly, heat is so rapidly abstracted, that the blood is coagulated, and the exposed part converted into a solid icy mass; but more commonly, in this country, cold does not produce gangrene in this direct manner; it depresses the nervous powers of the part so greatly, that the softer textures cannot support the reaction which invariably comes on as the first effects of the cold go off. In Russia and America the complete freezing of the part of which I have spoken, is very common, and well known by the name of “frost-bite.” It occurs without the affected person being aware of it; and I remember once when travelling in a sledge in Canada, with the thermometer 32° below zero, that one of my ears was frost-bitten. I did not know it,

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but the country people who passed did, and kept pointing to their ears, an action at which, as you may suppose, I was considerably surprised. However, on arriving at the posting-station they told me what it was, and began rubbing it between their hands with snow, which becomes exceedingly painful as the circulation begins to be re-established. If instead of this warmth had been applied, the ear would certainly have been lost; and you will see that the hot blankets applied to this girl is just the very opposite of what should have been done, for heat should always be communicated in the most gradual manner possible. By premature warmth you bring on too violent reaction, and gangrene almost certainly ensues.

The progress of the case from admission until the line of separation had formed, is omitted in the report; but the usual train of occurrence is, that the cuticle separates, pointing out the death of the cutis, and vesicles form filled with a fetid serous fluid; these burst, and then the cutis is seen black and mortified. The cellular membrane then sloughs; afterwards the muscles, cartilage, and bone, the latter, of course, more slowly, from the large quantity of inorganic matter they contain. As soon as the progress of the gangrene had been arrested, the circulation is established up to the very edge of the dead portion, and a process of adhesive inflammation marked by a red line, called the line of demarcation, separates the dead parts from the living. It is here that the separation of the cuticle and subjacent textures commences, while the bone and tendons separates higher up. You observe there was scarcely any bleeding in this case, and what little there was came from the exuberant granulations of the living part, not from any vessels having been left open by the separation of the mortified parts: indeed the latter occurrence is extremely rare, for the smaller vessels are obliterated by the effusion of coagulable lymph, and the larger ones are also rendered impervious by the coagulation of the blood within them, and the organization of fibrine for a considerable distance above the line of separation. Thus, where the foot is gangrened, not only are the plantar arteries obliterated up to their origin from the posterior tibial, but this trunk is in the same condition up to the next considerable branch it gives off. The only cases where this process is not effected, is in some cases of rapid and malignant gangrene, occurring epidemically, and known as "hospital gangrene."

You see on the table before you a beautiful specimen of what is termed *gangrena senilis*, which has just been sent me by Mr. Ward, of Huntingdon; and I will read you the history of the case, as described by himself in the letter he sent me with the preparation.

"Hannah Morton Storey, æt. 39, of scrofulous habit, and weak constitution, residing at Offord Cluney, four miles from Huntingdon, was confined to her bed, eleven years ago, with carious disease of the spine about the upper dorsal vertebræ. In six or seven months from the commencement of the disease, exfoliation of considerable portions of bone took place at different times, since which time she has suffered little or no pain in the spine, but from weak health and debility she has been almost entirely confined to her bed. There is no paralysis. Amenorrhœa for nine months in the first year of her illness, after which the monthly periods returned, and she continued regular till May, 1840. She again ceased to menstruate till Jan. last, when she was unwell, and again in Feb. There is great distortion of the spine and deformity of the chest in consequence, the sternum projecting forwards very considerably. She is subject to palpitation of the heart, the action of which is very irregular, with indications of hypertrophy, and on examining the chest, an impression is produced that the position of the heart is altered, as though it was pushed out of its place too much to the left side. (I do not say that this is really the case, but it gives this impression.)

In May, 1840, (the time when the monthly periods

ceased) she was attacked with violent darting pain in the calf of the left leg, accompanied by great tenderness, soon after which discoloration of the toes appeared, accompanied by swelling of the whole leg up to the knee, with red spots on various parts of the leg; a line of separation was formed two or three inches below the knee, and the discoloration gradually proceeded up the leg, till the whole leg up to the line became black, as seen in the preparation. She continued to suffer much pain nearly up to the time of its entire separation, which was allayed by muriate of morphine; and on the 5th of Feb. last, nine months from the commencement, when they were moving her to make her bed, the leg dropped off. She attributes the attack of gangrene in the first instance to over fatigue, having a few days before exerted himself more than usual, owing to illness of her mother. Her strength was supported as well as she could afford with nourishing diet. She took tonic medicine occasionally, which, with opiates to allay pain, constituted the whole treatment, and she is now as well in health as she has been for the last seven or eight years. She has a good stump, with a small ulcer upon it, owing to a spicula of bone which has to come away."

This senile gangrene is a kind of spontaneous death of a part depending on deficient arterial circulation, the cause of which may usually be traced to ossification of the principal trunks leading to the limb affected, though some suppose that it may result from debility of the capillaries, with coagulation of the blood they contain, or from a want of power in the heart to circulate blood in the more distant parts of the body. As to the treatment, you must endeavour to sustain the power of the constitution, in order to assist nature in throwing off the dead parts; but it is always better to wait, as it were, on her process, than to expedite it by amputation.

Here are various preparations and wax models, to show you the appearance of gangrene in different states, and in different situations; but the only ones I need notice are these two, which remind me that I have been using the terms *gangrene* and *sphacelus* synonymously, whereas this one is meant to represent an absolute and irrecoverable death, which *sphacelus* is meant to signify; and the other, a state in which the powers of the part are depressed, though not destroyed, still capable of recovery, and this is termed *gangrene*.

## ON THE CURE OF STAMMERING BY A NEW OPERATION.

By J. F. DIEFFENBACH, M.D. Berlin.

(Addressed to the Institute of France.)

THE subject of stammering has, for a long time, attracted my attention, and I was the more desirous of discovering some prompt and radical mode of curing this affection, because I knew that several patients who had been under the care of the most skilful masters, had either received no benefit or quickly relapsed into their former state.

On a sudden the idea struck me that, by dividing certain portions of the tongue, we might produce such a change in the nervous power which directs its movements, as to obtain a cure of stammering. Experience has confirmed, in the happiest manner, the new operation. I was first led to the idea of operating on the tongue by hearing a stuttering person request me to cure him of a squint; this patient was affected with spasmodic strabismus of both eyes; and on paying more attention to this circumstance, I afterwards found that many people were affected with squinting and stammering at the same time. The squinting was of a convulsive kind, and was aggravated at certain periods; so also was the stammering. The momentary difficulty, or complete impossibility of pronouncing certain consonants or syllables varied under certain circumstances. As it seemed to me that the derangement in the mechanism of the tongue depended on a spasmodic condition of the air passages, communicated from them to the tongue, and