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CHANGES IN THE SKIN AND ITS APPENDAGES FOLLOWING
LESIONS OF NERVOUS STRUCTURES.

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Read before the Boston Society for Medical Observation.

CHANGES of nutrition may occur in the skin, the subcutaneous cellular tissue, the muscles, the bones or the viscera. I have time now only to refer to the skin and the subcutaneous tissue.

Of the changes in the skin, the simplest is a more or less diffused erythema. Couyba reports two cases; in one, the erythema occurred five days, in the other six days, after the injury. He thus describes the eruption in one patient: "There is to be noticed, on the left knee, a red patch, as large as a two-franc piece. Its surface is quite regularly united, and it is not a simple redness, but rather there is a real elevation of the surface, with marked hyperæmia. By passing the fingers from the erythematous patch to the healthy skin, a slight prominence is felt at its edge." Later, a patch of pigment appeared on the thigh and other patches of erythema. The erythematous patch was hyperæsthetic.

I have seen one case where the erythema was very marked, the skin affected being that of the chest and shoulders, and part of the neck and arms. The skin was mottled, and resembled that of a case of scarlatina. There was no hyperæsthesia. I also reported a similar case to this Society, where the eruption followed an injury to the back, with loss of power in the legs, and hyperæsthesia of the parts covered by the eruption.

Couyba compares these erythematous patches to the "glossy skin," described by Paget and Mitchell. It is not the same. The erythema appeared soon after the injury, was elevated in patches, and, at least in many cases, lacked the glossy character.

Another change in the skin following nervous lesions was observed by Paget and Mitchell, and named "glossy skin." It is thus described by Mitchell: "The skin affected in these cases was deep-red or mottled, or red and pale in patches. The epithelium appeared to have been partially lost, so that the cutis was exposed in places. The subcuticular tissues were nearly all shrunken, and, where the palm alone was attacked, the part so diseased seemed to be a little depressed and firmer, and less elastic than common. In the fingers, there were often cracks in the altered skin, and the integuments presented the appearance of being tightly drawn over the subjacent tissues. The surface of all the affected part was glossy and shining, as though it had been skilfully varnished." "In most of them, the part was de-

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void of wrinkles, and perfectly free from hair." This state of the skin was always accompanied with burning pain; "in no case did it become visible short of two weeks, but usually it preceded the healing of the wound, and not rarely was to be traced to an outbreak of inflammation involving the wound." The duration varies from a few weeks to several years.

I have not seen any of the more acute cases, but the more chronic cases are not uncommon. Perhaps it is not to be expected that civil practice should give opportunity to see the severer forms which follow gun-shot and surgical lesions.

Pigmentation may occur in consequence of nerve lesion. Seeligmüller* reports the case of a child with lesion of the brachial plexus, where the sympathetic was affected. The eye on the affected side was a clear blue, on the other, a greenish grey. There was, also, atrophy of the face on the affected side.

M. Mayer showed to the Berlin Medical Society† a woman, 27 years old, with atrophy of the left side of the face. The color of the skin on the left side of the face was also changed: a yellow spot in the middle of the forehead, a white spot over the zygomatic process, and a white spot, resembling a cicatrix, on the upper lip. Also, there was a small lock of white hair, and a large number of white eyelashes. She had had epilepsy for six years, and for three years neuralgia of the left trigeminus. At about the same time with the neuralgia, the pigmentation began.

A scaly eruption is often seen in certain nervous affections. In the case I shall report, it accompanied neuralgia. It was preceded by œdema, and consequent swelling of the parts with hyperæsthesia. Fischer has seen this eruption follow the tract of the nerve. Instead of a dry, scaly eruption, this may be moist and vesicular, an eczema, or the vesicles may be larger and the eruption be herpetic, or bullæ may form. All recent authors who have written upon this subject refer to these vesicular and bullous eruptions. Charcot‡ reports a case, in which probable lesion of a branch of the radial nerve was followed by an eruption of bullæ on the dorsum of the hand, of the index, middle and ring finger. The bullæ appeared in the neighborhood of the joints, burst, and quickly healed up.

In the *Mémoires de la Société de Biologie* for 1865, Charcot, with Cotard, reports a case of cancer of the vertebræ, where the fourth cervical vertebra gave way on the right. There was an eruption of herpetic vesicles over the whole right side of the neck. The ganglia on the roots of the cervical nerves, and the trunk after the union of the roots were swollen and congested. Under the microscope, no change could be seen in the nerve fibres or cells, but only the increased fulness of the bloodvessels.

Ulcerations are seen to follow lesions of nerves, especially near the nails,§ perhaps due to the irritation of the curved nails. Bed-sores may be mentioned in this connection. The ulcerations in the trachea or bronchi and œsophagus, in cases of aneurism of the aorta, may be due to pressure of the aneurism upon the nerves; the recurrent laryngeal and pneumogastric are especially exposed to pressure. In one

* Berliner Klin. Wochenschrift, 1870, page 313.

† Wiener Med. Presse, 13 Feb., 1870, page 149.

‡ Journal de Physiologie, 1859, page 108.

§ Couyba, page 16.

case, I saw an ulceration or local inflammation in the lower part of the peritoneal cavity over the rectum, and could find no cause for it, all the rest of the abdominal cavity being healthy. The patient was paraplegic.

The nails are variously altered. They are more sharply curved transversely, and the ends may curve over the ends of the fingers; they may be thrown up in ridges, become brittle and break easily, may be changed in color, becoming yellowish, and may be retarded in growth, or, for a short time, cease to grow. In two of the cases I report, the nails were very much changed.

The hair may fall off and cease to grow, or be very much dwarfed in its growth, as is seen in the cases of "glossy skin." Or it may be much more luxuriant. A remarkable case of the latter appearance is reported by Dr. Jelly, in the *British Medical Journal* for 1873. A boy, 18 years old, had complete paraplegia from a fall. His hair had grown to an extraordinary length over the whole body, back and front, below the last dorsal vertebra; but was longest from the nates to the middle of the thigh, being so long there that it could be easily curled.

The hair may change color. Dr. Victor Urbantschitsch reports a case* where the hair turned white over the region supplied by the auriculo-temporal branch of the fifth nerve, after an abscess in the ear. An abscess on the other side followed with alopecia.

Again, the hair may only become coarser, and hard and harsh. Anstie mentions these changes of the hair following neuralgia.

The subcutaneous cellular tissue may become œdematous, may be thickened and hardened by interstitial deposits, or abscesses may form and cause much trouble, or there may be atrophy. Œdema is frequently seen in paralyzed limbs, whether the paralysis is central or peripheral. Romberg refers to a case of sciatica, reported by Cotugno, where there was œdema of both legs; the patient died of typhus fever.† Several authors report swellings which resembled abscesses, but which disappeared and returned much too rapidly to be inflammatory. In one case, an incision was made without finding pus. I have seen a patient who reported that he had such swellings, which would appear and attain a large size in a few hours, and would disappear as quickly. I never saw one of them.

In one of the cases to be reported, felons were found on each finger, except the little finger. Fischer‡ mentions such. "Without general disturbance, and without severe pain, the last phalanges of the fingers are swollen like a knob. The swelling remains firm for a while, then softens. Deep abscesses are opened, which penetrate to the bone, and this may be carious or necrosed. These abscesses heal slowly, or not at all, and always cause deformity. On the feet, they sometimes resemble *mal perforant*." Duplay and Morat§ give an account of the *mal perforant du pied* as a neurosis.

Atrophy of the subcutaneous tissue, in cases of nerve lesion, will account for some cases of atrophy, as, perhaps, in two cases of facial atrophy already referred to, and in other cases, especially some reported by Lande. The diminution in the size of the fingers in one

* Wiener Med. Presse, 1874, page 765.

† Sydenham Society Translation, Vol. I. page 66.

‡ Centralblatt, 1871.

§ Archives Générales, 1873.

case to be reported was probably due chiefly to the atrophy of the subcutaneous tissue.

Nicati refers to atrophy of the capillary network as preceding the atrophy of the connective tissue.

Mitchell reports one case of hypertrophy of connective tissue after wound of nerve.

The secretions of the skin may be altered. The perspiration may almost cease, so that the skin is dry and harsh, or it may be in excess of that on the healthy side, or it may be altered in quality. I have seen one case in which the affected side was bathed in profuse perspiration, large drops standing upon the skin, while the healthy side was comparatively dry. In one of the cases to be reported, the patient mentioned the excess of this secretion on the side which showed the most marked nutritive changes in the skin. Mitchell, Morehouse and Keen mention one case where the sweat was intensely acid, so that an odor of vinegar could be smelt at all times in the neighborhood of the man. In one case, they state the odor of the sweat was disgustingly heavy, and resembled the smells from a bad drain.

The sebaceous secretions are generally not mentioned. Where the skin is very dry, and the hair feels harsh, it may be supposed to be diminished. Lande says it is diminished in cases of facial atrophy.

This is a very brief sketch of the changes in the skin and its appendages following nerve lesion. These changes may result from irritation or from paralysis. From paralysis may follow oedema, with infiltration and induration, perhaps pigmentation, atrophy, and, possibly, simple erythema, though the erythema in the cases which I noticed could not be certainly referred to paralysis. Most of the changes, however, must be considered as arising from irritative lesions. This is the case with "glossy skin," with the vesicular eruptions, and, probably, with the lesions of nails and hairs. Bed sores and other ulcerations must also be referred to irritation. A dry, harsh skin, with absence of sweat and of the sebaceous secretions, is referred, by Mitchell, to paralysis; where the secretions are excessive, to irritation.

We may be able to judge in part from the nature of the nutritive change as to the seat of the nervous lesion. I am not aware that "glossy skin" has been found, except in connection with peripheral lesions. Judging from the few autopsies, it may be safe to say that vesicular eruptions are dependent upon lesion of the spinal ganglia or nerve roots. Charcot, indeed, refers to cases where such eruptions were found in cases of central lesion, but he says those observations are reported in a very summary manner, and he refrains from drawing any deductions from them. On the contrary, he reports such a case, zona on the paralyzed leg in a case of hemiplegia from cerebral softening, occurring at the same time with the hemiplegia. At the autopsy, besides the softening, a branch of a spinal artery, plugged by a clot, was found attached to one of the posterior roots of the chorda equina.

The cases of erythema reported by Couyba, and those which I have seen, followed spinal lesions. Ulcerations, especially bed-sores, are found in central lesions, spinal or cerebral. In spinal lesion, the bed-sore is usually over the sacrum, near the median line. In cerebral lesion, it is more likely to be on the side over the gluteal region.

Attempts have been made to refer these changes, some to the influence of the vaso-motor nerves, some to that of special trophic nerves.

It does not seem at all likely that they all can be dependent upon vasomotor changes alone. I will not, however, attempt to make any definite division.

The following cases will illustrate some of the cases above described. The second case also presented changes in the muscular and osseous systems.

CASE I.—Fall; Injury to Wrist; Deformity of Hand; Nutritive Changes in Skin and Nails.

Mr. B. H., seen in June, fell on the ice in the January previous, striking the right hand. There was not much pain from the fall. The hand, so he said, was of the same shape immediately after the fall as now. It was put up in splints, and taken out about four weeks after the accident, and has been stiff since. Now, the metacarpal bones seem to be dislocated to the radial side, the radius and ulnar seem to be unaffected, the carpus is in some way displaced, and the back of the hand is strongly arched. Exactly where and what the injury was, I will not undertake to decide.

The thumb is curved into the palm, the fingers and wrist are much restricted in their motions. The fingers are glossy, the nails narrower, sensation is unimpaired, the hand is somewhat œdematous.

Oct. 15th.—The right hand is less œdematous, the knuckles of the fingers apparently are more swollen; first phalanx of the middle, ring and index, each measure one-eighth of an inch less in circumference than the corresponding parts on the right. The little fingers are equal in size, as are, also, the thumbs. The joints are equal in size on the two hands, except the last phalangeal joints. The skin is whitish, shiny and dry, that on the fingers being more so than that on the hand. The nails are curved laterally, are very narrow, and of different color from the other hand. There is pain nearly all the time in the hand, but not severe. The motions of the wrist are rather freer, of the fingers about the same as in the early summer. Supination causes pain, pronation is less painful. All the fingers, except the thumb and perhaps the index-finger, are numb, both on palmar and dorsal aspect.

CASE II.—Progressive Muscular Atrophy on the Left; Changes of Nutrition in Skin, Cellular Tissue and Bone on the Right.

Jane McG., aged 27, seen May 4, 1872. Family history shows no special nervous taint. The patient was healthy till she was 17 years old, except relapsing fever when about 11 years old. For the last six years, she has had "inflammatory rheumatism," not a month passing when it did not "pain her," in the right arm, back of the neck, left side, down the back; never in the legs. In the right side of the head, behind the ear, shooting pain and cold chills for about five years. When the "rheumatic" attack in the right arm first appeared, she had been working at her trade as seamstress rather more steadily than usual, and had been at work pretty steadily for five years previously. The pain was at first burning in character, with heat in the arm, without swelling; the pain was very severe in the wrist. She continued to sew, but could not do her work well, and had to give up sometimes on account of pain and weakness. Sometimes, when holding a needle, her fingers became cramped. At the beginning, the thumb and forefinger pained her; once in a while, there were cramps before the pain. In about three weeks, the pain extended from the hand to the elbow, and in about three months, to the shoulders and neck. Pain has con-

tinued since, but the cramps in the fingers have been present only once in a while.

About seven years ago, she began to have trouble in the left arm. Gradually, a weakness came in the fingers, and they drew up. She could not hold her work; there was pain and heat in the fingers, beginning first in the little finger, then spreading to the other fingers and thumb, then to elbow and shoulders in about nine months. The pain was not severe, but tiresome. About six years ago, she could not raise her hand to her head, and it has been growing worse since. No cramps in left arm. Has had headaches at times, since arms have troubled her; also, has been dizzy, sometimes eyesight dim.

Both pupils acted well; the right was slightly enlarged. The external rectus on the right did not act quite so quickly as the internal; there was no strabismus. The right eye moved less steadily, in following a moving object, than the left. There was no facial paralysis, or numbness of the face. When there is pain in the neck, the head and face flush, and then she cannot see well. Sometimes, however, the face is pale when the pain is present in the neck. The flushing is most marked on the right side of the face, and she sweats more on that side.

The left fingers and hand were much wasted, and the fingers were contracted; the skin over the two distal phalanges was shining and whitish, less so over the first. The contraction of the fingers was gradual during five or six years. Three years ago, there was a swelling in the palm, which was opened, and pus evacuated. The motions of the left arm were much interfered with. She can pronate and supinate the hand; can shut the fingers, if they move together; can only half extend them; cannot spread fingers apart. Motions of thumb are restricted. Motions of wrist are nearly normal, except as to flexion. She can flex the elbow only slightly when the upper arm is abducted. Cannot raise her arm to the horizontal; can abduct and adduct arm, and move it forward and backward.

The supra- and infra-spinatus were much wasted, as were, also, the posterior portion of the deltoid, the pectoralis, biceps, thenar and hypothenar eminences. These, and the flexors of the fingers and interossei, acted poorly to the induced current, better to the galvanic. Snapping the muscles, deltoid, triceps and others, caused fibrillary contractions on the left. The motions of the right hand and arm were good, and about normal in extent; snapping some of the muscles on the right, caused slight fibrillary contractions.

About three years ago, she began to have felons on the right hand, first the middle finger, then the ring, then the index, then the thumb. The little finger was not thus affected, but it was contracted. The fingers were much deformed, the joints being enlarged, the nails misshapen, and the last phalanx of the middle finger was gone. The skin was shining. The sensation was much diminished in the right arm, and on the right side of the neck behind the ear. With the ophthalmoscope, the papillæ were very red, the vessels on entering became fainter, as if covered by a thin film.

It will be noticed that the muscles and motor nerves were chiefly affected on the left; the sensation and skin, with its cellular tissue, and hence the sensitive nerves, mostly on the right.

CASE III.—*Neuralgia, accompanied with Scaly Eruption.*

Miss A. B., aged 42, was first seen about three years ago, and again two years ago, and frequently since. She has been troubled much with neuralgia, dating from unusual excitement and over-exertion, when young. The neuralgic pain has affected different parts of the body, first in the epigastric region, then in the arms, and has been frequently in the head, in the form of hemicrania. Sometimes, the pain extended from the head down the back, and also into the chest. The headaches come on with flashes before the eyes. A small, stationary, black spot was perceived in the right eye, sometimes in the left. This is not seen, except during an attack of headache, or when over-tired. The pain begins just behind the left ear, then goes over the left eye, down over the cheek and nose on the left side, and then becomes general. Then there is a twitching in the left arm and leg, and then on the right side; sometimes this twitching is very strong.

When the neuralgia attacks the arm, there is developed, in a short time, a condition such as I saw in the right arm. There were tender spots over the median and the musculo-spiral nerve above the elbow, also over the median at the bend of the elbow. When the neuralgia first appears, the hand on the affected side swells and is very sensitive, so that it is disagreeable to touch any object. Subsequently, the epidermis scales off, and when I saw her the palm of the right hand, mostly on the ulnar side, was covered with a thick, scaly eruption. This eruption followed the neuralgia, increased with the increase of pain, and diminished when the pain decreased. When the pain ceased, the eruption disappeared.

Progress in Medicine.

REPORT ON SURGERY.

By J. COLLINS WARREN, M.D.

ESMARCH'S "BLOODLESS SURGERY."

PROF. ESMARCH, whose paper on this subject has excited so much interest, finding, on a recent visit to England, that many surgeons were but imperfectly acquainted with his method, that others applied it, but not in the right manner, while others attached no importance to the avoidance of hæmorrhage during an operation, took occasion to read a paper on the value of this method before the Clinical Society of London. The paper was subsequently published in the *British Medical Journal* for Oct. 17, 1874. He finds the influence of this method on the mortality after the greater operations to be decided, especially after amputation of the limbs. He says:—"I lately compared the results obtained in my practice after operations performed bloodlessly, with the recently published results of operations performed by other surgeons, and I found that my results were much better than the best of these, including even those in which the antiseptic method had been strictly followed." Thinking, however, that a more just comparison would be that between cases occurring in his own practice and performed in the same hospital, previous to the application of the bloodless method and afterwards, he gives the statistics of the operations performed by him during the last six years. "Of 88