

human nature and psychology, makes our examinations more exhaustive, sharpens our observation, broadens our vision, enhances our power of concentration, and intensifies our interest. The result is better diagnoses, prognoses and treatment.

I hope by the foregoing to have aroused in your subliminal consciousness what you have already known a long time, but some of you, I am afraid, have regarded as cold storage.

If this paper elicits a liberal discussion and emphasizes two points its object will be realized:

(1) The need of thorough psychological preparation for the medical school; (2) the danger of bad suggestive therapeutics.

A CASE OF RAYNAUD'S DISEASE.¹

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Mrs. M., 45 years of age, born in Ireland, came under my care April 1, 1900, complaining of intense burning pain in both feet.

The family history is excellent, the patient being one of 16 children, of whom 9 are living and well. There is no history of diabetes, tuberculosis or any other chronic disease. She has always enjoyed good health, save for pneumonia 10 years ago. There have been 13 children and 3 miscarriages. In June, 1896, 4 years ago, owing to an accident, she miscarried at 3 months. At this time she was confined to her bed 11 weeks because of sepsis. Two months later, at St. Elizabeth's Hospital, the cervix and perineum were repaired and the fundus sewed to the anterior abdominal wall. The records give no information about either the general physical condition or the urine. Six months after the operation she felt as well and strong as ever. Her catamenia returned and occurred regularly until July, 1900, when it ceased abruptly.

Present illness.—The patient considered herself well in February, 1899, when severe burning pains came on suddenly in both feet, extending from about 1 inch above the ankles to the tips of the toes. In a few days the toes became dark red but not swollen. This condition prevailed with varying intensity and without other symptoms for about 2 months, when a similar pain was felt in the middle finger of the left hand. This was followed by 3 red spots just above the nail. A few weeks later the left forefinger turned dark red, purple and then black. Gradually the last phalanx became wholly gangrenous and very slowly dropped off.

In December, 1899, a few months after the onset of the gangrene, she noticed marked increase of urine accompanied by a great thirst. A few weeks after this she went to the Boston City Hospital, where she was told she had diabetes.

¹ Read before the Clinical Section of the Suffolk District Medical Society, Nov. 20, 1901.

There is no record of a physical examination. Instruction about diet was given and followed, with the result that the polyuria and thirst subsided. There was some complaint of failing vision, but it was not enough to prevent the daily use of the eyes. Her weight, which before the accident had been 145 lbs., was now 96 lbs.

In March, 1900, some 6 weeks before I first saw her and shortly after her visit to the City Hospital, there was a return of the pain in the feet followed soon by a dark color of the toes. A few days later she noticed a sore under the ball of the right great toe, which became black, dry and hard. In about 2 weeks this dropped off, leaving a small scar.

This brings her history to the time when I first saw her, April 1, 1900, suffering again from pain in the feet.

Physical examination showed the patient to be a thin, tired-out, nervous little woman, with pupils equal and reacting equally to light and distance. The knee jerks were normal. The radial arteries were straight but in the condition of marked arteriosclerosis. The pulse was regular and of good strength and volume. The heart was apparently normal.

A few scattered râles were heard in the lungs. The abdomen presented nothing abnormal save the scar of the laparotomy.

Extremities: Hands.—The last phalanx of the left forefinger was absent. The rest of that finger and the middle finger were very cold, slightly tender, and much darker than the other fingers. They were stiff and clumsy, as if benumbed with cold. There was diminution of sensation. The radial artery pulsated in normal manner. There was no pain or tenderness of the nerves of the forearm; no atrophy or paralysis of the muscles.

The feet.—Both great toes and the 2 adjoining toes of the left foot were cold, glossy, and of a dark color, which faded away towards the tarsal bones to the normal color. There was no tenderness or redness along the nerves, no atrophy or paralysis of the muscles. They were the seat of intense pain.

Urine.—The 24-hour amount was not known. It was pale in color, acid, specific gravity 1.020; albumin a very slight trace; sugar 1.4%; no acetone or diacetic acid. Sediment; a few hyaline and granular casts, urates and some squamous cells; no blood.

She was placed on a diabetic diet, given tonics, and the extremities were massaged with chloroform liniment and bound in thick cotton dressings.

Within a week after this examination a superficial gangrene attacked the under side of the ball of the left great toe and of the 2 adjoining toes. These gangrenous areas appeared first as blebs, about the size of a ten-cent piece. These slowly dried with a resulting black eschar, which in the course of 2 weeks dropped off, leaving a small conical cicatrix.

Wishing to have her under better observation and control, she was admitted to the Baptist Hos-

pital May 15, 1900. With a more careful diet, and the use of stimulating tonics, there was a general improvement with a slight gain of weight. The urine was secreted in normal quantity and free from both albumin and sugar. The extremities became natural in appearance, save on one morning, when, after washing her hands in cold water, the fingers previously affected became pale and cold. This local syncope lasted about two hours. At the end of a week she returned home apparently in good condition, remaining so all summer.

In November, 1900, with the beginning of cold weather, the pains in the feet returned. Living in a cold, draughty tenement house and compelled to do her own work, the conditions were most favorable for a recurrence of the disagreeable phenomena. The middle of November I saw her again, and the left hand presented about the same appearance as previously described. The fingers were cold and glossy, the middle finger very pale, the index finger purple. The corresponding fingers of the right hand were pale and cold. The great and two adjoining toes of both feet showed an intense asphyxia and were very painful. Physical examination presented nothing new; the urine contained neither albumin nor sugar. Exposure to cold was guarded against as much as possible, the feet were massaged with chloroform liniment and kept well covered with cotton dressings. Some slight improvement followed, but as she was compelled to use her hands, without protection, they were always cold and pale whenever I saw her.

In January, 1901, a cough developed, which rapidly grew worse. Examination at this time showed a general bronchitis, with signs of consolidation at the right apex, the sputum containing many tubercle bacilli. Again the extremities presented the remarkable vasomotor phenomena already described, with the areas of superficial gangrene under the toes. After these gangrenous patches had fallen off, there was an evident loss of substance with small cicatrices remaining. The urine, at this time, examined by the pathologist of the Boston Dispensary, was pale, acid, with a specific gravity of 1,010, albumin and sugar absent. Interesting cerebral phenomena now appeared. On two or three occasions she was found lying on the floor apparently having fainted. On another occasion, having started for the grocer's only a block away, she lost all idea of where she was and of where she was going. After a long aimless walk, a man, noticing her evident distress, explained to her that she was down town and sent her home in a cab.

During February she lost ground rapidly, and in March was confined to her bed. The extremities no longer troubled her, and during the remainder of her life the clinical picture was that of pulmonary tuberculosis. In May, 1901, she died. No autopsy was obtained.

This case certainly presented the phenomena of Raynaud's disease. The title of his original article, as translated by Thomas Barlow, is "Lo-

cal Asphyxia and Symmetrical Gangrene of the Extremities." He claimed that the condition was due to a spasmodic contraction of the arterioles from a vasomotor excitation; presuming that there was no change in the circulatory apparatus adequate to explain the results.

In the case reported tonight there were two conditions present with which gangrene is frequently associated—glycosuria and arteriosclerosis. It seems possible, however, to eliminate these as the causes of the phenomena. Gangrene associated with glycosuria occurs almost always in those patients showing arteriosclerosis. It usually follows some slight injury, and if limited to one digit or extremity affects the whole part, and produces a rapid necrosis. It is usually attended with considerable inflammatory reaction at the line of demarkation, and is rarely symmetrical or recurrent. In this case, it will be remembered, the symptoms of diabetes came on some months after the beginning of the local gangrene. The glycosuria was easily controlled by a proper diet, and yet the local symmetrical gangrene returned in the toes, and the loss of the terminal phalanx of the finger followed evidences of vasomotor disturbance in other parts.

In only 6 of the 31 cases reported by Raynaud is mention made of the urine, and in none of these was sugar reported present. One case reported by him was later reported by Fox as dying of diabetes, albuminuria and general atheroma of the arteries.

It is more difficult to eliminate the arterial changes as the cause of the phenomena. There was decided arteriosclerosis, yet without any recognizable cardiac or grave renal disturbance. Senile gangrene is typically unilateral, or if symmetrical not synchronously so. It affects by preference the lower extremities, and involves the whole digit or extremity. It is progressive and serious. In the case reported, with the exception of the finger, the gangrene was symmetrical and limited to the skin of the toes, and was not progressive or serious.

It may be that in my case there was an arterio capillary fibrosis, involving especially the extremities. G. W. Jacoby² reports a case of numbness and coldness of the fingers followed by asphyxia and gangrene of the entire phalanx of the left middle finger. Later, interstitial nephritis with cardiac hypertrophy developed, followed by apoplexy and death. He thought the primary lesion was an arterio capillary fibrosis, extending later to the renal vessels and producing the nephritis. Such a condition could not be diagnosed with certainty during life, and cannot, therefore, be ruled out in the present case. There were no evidences of capillary fibrosis other than in the extremities. There were no signs of thrombosis or of embolism.

The absence of pain along the nerves, of anesthesia and of paralysis, seem sufficient to rule out a neuritis grave enough to produce such severe symptoms.

² New York Medical Journal, Feb. 7, 1891.

Raynaud's phenomena may appear during the course of many diseases; it has been noticed particularly in asylum cases, as a manifestation of hysteria, and as a complication occurring in the course of many organic nervous affections. It may appear, too, as an independent disease. It is not always symmetrical or limited to the extremities. Raynaud himself, and others since him, have observed with the ophthalmoscope the contraction of the central artery of the retina. Paroxysmal hemaglobinuria has been frequently observed during local manifestations of the disease. C. C. Aitken,³ an English observer, reports an interesting case with Bright's disease, in which during the spasm of the arterioles in the extremities, and in the central artery of the retina, there was a marked decrease in the elimination of urea, accompanied by convulsions. The author thought the decrease of urea was due to a spasm of the renal vessels.

Severe cerebral complications are reported as convulsions, loss of consciousness and aphasia. William Osler⁴ reports a case in which epilepsy occurred only during the local symptoms; and another case in which transient aphasia with loss of power in the right hand and paresis of the right foot occurred, with rapid recovery. This condition recurred, and always with local symptoms, in the hands.

Thus we see the diversity of the symptoms of Raynaud's disease, and it does not seem unreasonable to group under this name the many symptoms recorded in this case.

VACCINATION AND SMALLPOX.¹

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An audience of this character does not need to be argued with as to the need of vaccination to prevent smallpox. It seems to me that the question of its need has been settled in every civilized country. I think the data already sufficient to warrant the expression that vaccination is a necessity if we would avoid smallpox. There is one thing, however, which ought to be impressed upon the medical profession, and that is that we do not vaccinate enough. We are having too many cases of smallpox among those who are supposed to be sufficiently vaccinated. Of this there is no sort of doubt, and this fact is helping those who are trying to prejudice the public mind against vaccination. They point out the fact that many people who have been vaccinated have smallpox, and some of them die. This is true, though it need not be so. I am fully persuaded that full vaccination will prevent smallpox. To secure this I believe that a child should not only be vaccinated when very young, but that the physician should

³ *Lancet*, 1896, p. 875.

⁴ *American Journal Medical Science*, 1896.

¹ Remarks made before the Boston Society for Medical Improvement.

feel called upon to exhaust all susceptibility to smallpox by repeating the operation until it will no longer take effect. I think at the age of 10 or 12 years this process should be repeated to the same extent. Later in life, on exposure, I think vaccination should be repeated. The data in our own city is evidence to us that, as a rule, the unvaccinated die and the vaccinated get well. Some serious cases of smallpox are found among adults who were vaccinated in infancy, but have since neglected it.

In regard to the difference between humanized and bovine lymph, I would like to say, as a matter of interest, that in the Republic of Mexico for 97 years they have used almost nothing but humanized lymph. This lymph was brought from Europe in 1800, and since that time it has been produced and handled by only four persons selected by the government. The children from whom the lymph is taken are well selected, the lymph is well cared for, and furnished free of expense, as it should be here. They never revaccinate, neither do they have smallpox among the vaccinated. My authority for this statement is Dr. Eduardo Licéaga, the president of the Supreme Board of Health of the Republic, a man of long public experience and unimpeachable character. This experience in Mexico has impressed me so strongly that I have asked that there be a committee appointed, and it was appointed in September, at the last meeting of the American Public Health Association in Buffalo, to investigate and report upon the respective immunizing power of human and bovine lymph.

I have been unable to satisfy myself whether the occurrence of smallpox among those who have been vaccinated depends upon our carelessness in vaccination or upon any possible deterioration in the bovine lymph which has been in almost exclusive use for the last 30 years. At all events, I think the question should be carefully studied. The many questions which are being asked concerning the technique of vaccination suggests the desirability of a more uniform and careful method. Aseptic conditions are as necessary in this little operation as in any other operation in minor surgery. A scarification $\frac{1}{8}$ to $\frac{1}{4}$ of an inch in diameter is ample, and it seems to me should never be exceeded. The drawing of blood to any extent is worse than useless. Scraping off the outer skin and bringing a redness is sufficient. The care in rubbing on and drying in the lymph are important. The shield, I think, on the whole, is a nuisance. It may be useful for an hour while the lymph is drying and for the early readjustment of clothing when time is valuable, but continued use of the shield is liable to be troublesome. The subsequent treatment should be conducted precisely like any other surgical operation. Many people believe if they get a big arm the vaccination is correspondingly good. This should be regarded as an error. The breaking of the vesicle gives an open wound, which should always be regarded as a misfortune. I believe the physician should always see the patient at the end of a week or ten days and tell him