

Snow (N. L.)

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DEGENERATION OF ARTERIES

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CAUSE OF ANEURISM,
WITH A REPORT OF TWO CASES,

BY

NORMAN L. SNOW, A. M., M. D.,
ALBANY, N. Y.



[REPRINTED FROM THE MEDICAL RECORD, AUGUST 28, 1880.]

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SYPHILITIC DEGENERATION OF ARTERIES

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These specimens are presented with a view of showing the deleterious effects of the specific disease "syphilis" on the arterial system in its last stage. It is acknowledged that syphilis is one of the most predisposing causes of aneurismal dilatation of the arterial vessels. The length of time, however, that the disease will remain dormant before affecting any degenerative change in the vessels is variable; also the period to which life may be prolonged after the formation of an aneurism, by nature strengthening the diseased artery—by throwing up new tissue or by filling the sacculated portions with fibrin or coagulum—cannot be definitely given. The important feature of the two following cases is the difference of time from the reception of the disease to death. In the first case it will be seen that death resulted within two years after the contraction of the disease, while in the latter sixteen years had elapsed.

CASE I.—Miss Nellie B., aged twenty-two, of medium size and good proportion, called at my office on March 5, 1880. She was at the time very weak, and appeared somewhat debilitated from the effects of the difficulty for which she sought advice. On questioning her she responded, giving the following history: Three years previous she had contracted syphilis, which was recognized as such by the appearance of a chancre. A few months later she gave evidence of having the secondary

* Read before the Medical Society of the County of Albany.

stage, which was manifested by the characteristic eruption, and a difficulty with the throat. The disease was seemingly controlled, and she began to improve, and enjoyed moderately good health until about the first of January last, when she experienced some pain in the praecordial region. This pain gradually increased in severity and duration, coming on in paroxysms, and her general health by degrees became reduced. The pain was so severe at times, when she exerted herself either in walking or otherwise, that she was compelled to support herself from falling. She described the pain during a paroxysm as being agonizing and lancinating; together with suppressed breathing, or, probably better described, as if the chest-walls were constricted. She at times, during the interval between January 1 and March, felt moderately well, and at other times was compelled to take to her bed for a few hours or more. Such was her condition, which she described as varying from no particular uneasiness to extreme paroxysmal pains.

No evidence of previously existing disease was perceptible on the surface of her body or in the fauces. On percussion and auscultation, the lungs were found to be in good condition. In the praecordial region, however, I detected a faint, or rather almost imperceptible bruit at the base of the heart. A few days later, the 8th instant, on examining a specimen of her urine, I found albumen, although no casts were detected. She did not call again until the 11th inst. Her condition was about the same, but her urine showed some improvement with her kidneys. I attended her at different times until the 20th, when I was summoned to see her in haste. I found her suffering with intense pain in the region of the heart, which extended to her left shoulder and arm. The pain was intensified during the paroxysms, which were of varying duration, and recurring at longer or shorter intervals. While laboring in one of these paroxysms, her body became livid, her face bore an expression of extreme anguish and fear, the pulse full and varying from eighty-five to one hundred, copious diaphoresis was notable, and respiration was greatly impeded and very irregular. The heart's impulse was almost imperceptible, and the pulsation of the right radial artery could be only slightly felt, while in the left it was entirely lost. On recovering from one of these par-

oxysms, she would sink into a state of complete exhaustion, pulse would become rapid, respiration slow, shallow and irregular, and diaphoresis markedly increased. She restricted her breathing somewhat, evidently apprehending that the pain would be intensified if a full movement of the chest was established. Any exciting cause, such as the barking of a dog, the unexpected movement of a door or window blind, or any exertion, as in turning or getting out of her bed, would tend to bring on a paroxysm. To avoid any exertion, she remained perfectly quiet in one position, usually on her back. Pressure applied to the praecordial region seemed to relieve her of pain very considerably. Her general health during the interval between the 20th of March and the 4th of April became very much reduced. Her urine was very scanty and high-colored, giving evidence of kidney difficulty. She experienced great thirst, and would drink any fluid given her. The remedies employed were anæsthetics, anodynes and tonics, but these were only palliative in effect, if effectual at all, as they were (owing to a sensitive condition of the stomach) immediately rejected. Her condition remained about the same, and she continued to present the distinctive paroxysmal features each day until the 3d inst., when she stated that the pain was more especially beneath the sternum. This was excited by deglutition, and caused, as she described, a feeling of oppression in the cesophagus, and it was only with extreme care that she was enabled to receive any fluid into the stomach. Toward evening she appeared very much weakened, and remained in a fixed position on her back, until about five o'clock on the following morning, when she arose from her bed and crossed the room for some purpose and then returned. She requested a drink of water, which was given her, and in a few minutes later she died.

Post-mortem.—Stomach normal in appearance, with the exception of a slight congestion of the mucous membrane in the greater curvature. Liver very large, with rounded edges; ecchymotic spots were present; very firm to touch and amyloid in character. Kidneys: left capsule adherent, irregular in shape, with slight depressions on surface; length 5 inches, width 2 inches, thickness 2 inches; very much congested, firm

and hard; cortical portion very thin; medullary portion very distinct; right: this was the same as the left in every respect, save that it was granular. Spleen normal. Ovaries enlarged and considerably congested. Omentum normal in proportion and apparently in a healthy condition. Bladder firmly contracted and in good condition. Uterus considerably congested; the round ligament and ovary on left side were firmly bound down to the posterior surface of the uterus; two small cysts were found on posterior surface of fundus. Lungs: the substance of each was apparently in a healthy condition; a few adhesions of pleura, no effusion. Heart notably larger than normal; the pericardium very much thickened and congested; no effusion in pericardial sac; the surface of the heart presented a few ecchymotic spots at its apex, with a fatty deposit at the base; the substance was soft, infiltrated with a fatty element, very flabby, and of a pale tawny structure; the walls of the left ventricle were thickened, while the reverse was the case with the right; the endocardium was somewhat hypertrophied, and the larger portion of it was of a pale color and flabby, while immediately beneath the semilunar valves it was of a yellowish white color and presented numerous atheromatous patches of recent origin; the semilunar valves were thicker than normal, and about the corpora arantii were found firm points or spots; a firm clot was found in both ventricles, the one in the right extended into the pulmonary artery, and the one in the left into the aorta. Aorta: this artery was dilated from its union with the left ventricle to the descending portion, thus involving the entire arch; it was fully twice as large as normal in diameter, and of varied thickness; at its junction with the left ventricle it formed a constricted ring, which produced a sac at the beginning of the arch; a ring of a similar description was also formed at its union with the descending portion; the arch, which formed the sac, was composed of coats of varied thicknesses; atheromatous patches were perceived in the inner surface of the arch, which was more or less nodulated; the coronary arteries were also dilated and their coats thickened and hard, so that they formed ridges over the surface of the heart.

The most striking feature of the changes in the aorta was

the complete occlusion of the left subclavian artery by a small portion of the degenerative tissue which was firmly grafted to the inner coat. It can be readily seen why pulsation of the left radial artery could not be felt.

CASE II.—I was called to see Mr. R. W—, aged 39, of medium size, on the 28th of August, 1878. I found the patient, who appeared very much reduced, lying on an old dilapidated bed in a small, dark, filthy, and ill-ventilated room. He lay in a bending posture, with his legs flexed upon his body, as if endeavoring to alleviate the pain in his abdomen, which he described as exeruciating and agonizing. I endeavored to get the history of his case, but owing to some impairment of his mind, which evidently resulted from his low physical condition, failed to gather from him any thing of importance regarding his condition in general. The parties who were in attendance, however, furnished me with the following history: They stated that a few months previous, he, while in company with some men in a boat on the river, was thrown overboard, evidently for their own amusement, and was considerably chilled. The following morning he complained of pain and some soreness in the lower right portion of his abdomen. In a few days this portion commenced swelling, together with increased pain, and gradually assumed its present proportion. For a number of weeks he was only able to move about on crutches, and in consequence of the severe pain was finally compelled to take to his bed. It was questionable whether his trouble was the sequel of the strain and cold he received at the time of his river experience or not, as there was no evidence that would elicit any information. He had been very much reduced by riotous living and had suffered in many ways from exposure.

On making an examination, a large tumor was found which occupied a position to the right of the medial line, the upper portion of which involved the lower part of the right hypochondrium and the whole of the right iliac region. The mass extended down the thigh beneath Poupart's ligament, as was seen by the somewhat constricted appearance of the tumor at the ligament. The walls of the abdomen were swollen and

elevated, but not particularly prominent in any one portion, as is characteristic of different tumors. The skin was tense and presented a mottled appearance, and on placing my hand on the mass, it was found hard and resisting. The circulation was impeded by the pressure of the mass upon the veins, consequently there was great œdema of the thigh, leg, and foot. No movement or pulsation could be received from the tumor. Subsequently I learned, on completing the examination, that he contracted syphilis while in the army during the Rebellion, and that he had complained at various times of a stiffness, pain, and swelling in the region mentioned. He gave very little evidence of any constitutional disturbance, and his only complaint at this time was the severe pain, which he located immediately below Poupart's ligament and to the inner side of the thigh.

He was given anodynes, and warm fomenting dressings were applied, but he did not obtain any relief. He was admitted to the Albany City Hospital September 10, 1878. Dr. John Swinburne visited him in consultation with me, and he regarded the swelling as external to the pelvis or peritoneal cavity. He expressed his opinion that suppuration would take place below Poupart's ligament, from the appearance of the tumor, and advised that warm applications with oiled silk covering be extended well down on the thigh, to aid, if possible, an opening in this vicinity. On the 18th of October the patient's symptoms gave evidence of an unfavorable termination. Drs. Albert Van Derveer and Samuel B. Ward saw him in consultation with me, and the prominent symptoms presented were as follows: He lay in a semicomatose condition, unable to assume a sitting posture or turn to either side in bed; responded incoherently to questions; sensibility greatly impaired in lower right extremity; obstinate constipation, pallor, and general emaciation, with atrophy of the muscles. This last condition effected a marked prominence to the tumor, which enabled us to see the exact extent of the growth. It appeared to involve nearly the whole of the pelvic cavity and the right half of the abdomen. There were no indications of the tumor opening externally, and fearing that it might rupture into the abdominal cavity, we decided to aspirate, knowing that he

would die unless relieved. On the following day, in presence of Drs. Albert Van Derveer and S. H. Russell (resident surgeon), I introduced a small exploring-needle into the most prominent portion, and gradually pressed it well into the body of the tumor, a distance of three inches. The appearance of the fluid and the peculiarity of the flow convinced us in a very few seconds that it was best to withdraw the instrument. The needle had entered an "aneurism." No harm resulted apparently from the operation, as there was no decided change during the following month. His temperature continued varying from 99° to 106°, from 100 to 120. His bowels remained constipated, and his right leg became more and more oedematous from day to day, and his strength very much reduced; and finally, on the 9th of December, death relieved him of his suffering.

Post-mortem.—Examination was made thirty-six hours after death. Body extremely emaciated; rigor mortis well marked. I will not give in detail the condition of the different organs, as they were about normal, save kidneys, which were granular, with adherent capsules, and enlarged pelvis, and liver enlarged and amyloid in character.

On making an incision over the body of the tumor the abdominal walls were found to be very thin, and firmly adhered to the growth. Dissecting the abdominal walls from the tumor, we found a small portion of the intestines lying upon the upper third of the mass, while the free portions were crowded into the epigastric region, displacing the stomach to the left. The right external iliac artery passed over the tumor, and was partially imbedded in it, and changed from its normal course downward. Owing to the immensity of the aneurism, and wishing to procure it without injury, we removed the entire mass by dividing the spine between the tenth and eleventh dorsal vertebrae, the pelvis at the symphysis pubis, and the left sacro-iliac synchondrosis and the femur about six inches below the greater trochanter. The entire mass was then arranged so as to enable us to get the proportions of the aneurism and to study more exactly the character of the tumor. The proportions of the tumor I present you are as follows: Length, 10 inches; diameter above Poupart's ligament, 7 inches; beneath

the ligament, $3\frac{1}{2}$ inches; below the ligament, $4\frac{1}{2}$ inches. The aneurismal sac extended from the upper edge of the last dorsal vertebra to four inches below Poupart's ligament.

The coats of the internal iliac artery had evidently given away by the pressure near its origin, and as it increased in size burrowed its way beneath Poupart's ligament down on the thigh. The pouches which are found in different places are filled with fibrin and coagulated blood, and wall after wall of connective tissue has been thrown up; thus each pouch was prevented by the efforts of nature from rupturing until this large hardened mass was formed, presenting more the appearance of a solid growth than aneurism.

In the etiology of disease, probably no one cause commands a greater area for consideration than syphilis. The changes it effects on the human system present many very interesting features, one of which I here disclose in reviewing the foregoing cases. I do not intend, however, to discuss the constitutional peculiarities of syphilis further than its effects on the arterial system, as it does not appropriately become a part of the subject now before you. The arterial lesions of syphilis have been of late the object of much study and investigation; yet, the remarks which have appeared in print are somewhat brief and inexplicit, which leads one to infer that those who are interested in the subject question whether aneurisms are the result of this disease or not. The evidences clinically collected, however, furnish sufficient proof of the peculiar effects of syphilis. One author remarks: "Those arteries which are most prone to atheromatous and earthy degeneration are those which are most prone to aneurismal dilatation." The diseased or atheromatous condition of the artery by fatty degeneration into oil particles arises from an internal cause. Syphilis is evidently the most predisposing cause of this irretrievable condition of the artery. The middle or muscular coat of the vessel is mainly the seat in which the crystals of cholesterol and subsequently calcareous degeneration occur. The tissues in which these particles accumulate are gradually disintegrated with a deposition of a fatty or calcareous element. They are also subject to gummy infiltrations diffused between the coats

of the artery for some length, thus thickening the same or developing in a distinct tumor. Gelatinous nodules may develop from the middle coat, and by their presence upon the internal coat decrease the calibre of the vessel. The inner aspect of the artery presents slightly elevated patches, yellowish and opaque, in the atheromatous stage of degeneration. They are seemingly covered with a thin membranous coat, which, as the degeneration advances, partially or completely gives way or disappears entirely. In the calcareous stage a destructive condition is effected as the artery become inelastic and brittle, and the patches assume the character of bony plates, but these have little or no osseous structure. The artery is disposed to yield to the pulsating action of the arterial wave-current, and develop into an aneurismal sac at the portion of the artery which has undergone a degenerative change, thus destroying its elasticity and contractility. Such was the condition of internal iliac artery mentioned in the second case. Its entire continuity was destroyed and at different portions was developed into pouches, evidently owing to it not being able to resist the current pressure. The vessel may assume a calcareous character and remain rigid, and the particles of degenerated tissue progressively develop in size and subsequently occlude the blood-current. This condition was noticed in the left subclavian artery at its origin with the aorto, in the first case reported. The mass or patch was firmly adherent to the inner surface of the vessels and presented somewhat the appearance of a valve.

Aneurisms terminate fatally, either by rupture of the dilated portions, gangrene of the vessel, or constitutional irritation. In the two cases reported, death evidently resulted from the constitutional effects of the diseased condition of the arteries.

