

CASE OF A YOUNG WOMAN

IN WHOM

THE MAIN ARTERIES

OF BOTH

UPPER EXTREMITIES AND OF THE LEFT SIDE OF THE NECK

WERE THROUGHOUT

COMPLETELY OBLITERATED.

BY

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Received Feb. 20th.—Read March 25th, 1856.

ANNA MARIA W—, æt. 22, was admitted into St. Bartholomew's Hospital, under the care of Dr. Burrows, on November 27th, 1854. She complains of general debility and obscure pains in various parts of the body, particularly of severe pain on the left side of the head, which from time to time becomes considerably aggravated. She often feels very giddy; the vision of the left eye is indistinct. There is a sense of constriction and uneasiness in the left region of the chest, with occasional palpitation. The slightest exertion

causes great dyspnoea ; at the same time, the limbs of the right side become agitated and powerless.

She is a very delicate-looking young woman ; countenance flushed ; lips dusky ; remains of herpes about nostrils ; skin moderately warm, soft, and moist ; tongue nearly clean and red ; bowels constipated ; urine natural ; no appetite ; catamenia scanty and irregular ; she sleeps very well.

No pulse can be detected in any part of either arm. There is a feeble pulsation in right carotid ; it is doubtful whether it can be felt in the left ; both femoral arteries pulsate feebly ; the heart beats 96 times in the minute. The temperature is not unnaturally low in any part of the body.

The formation and movements of the chest are healthy. There is no abnormal dulness in either the pulmonary or cardiac regions ; heart's impulse increased ; no murmur audible at its apex ; there is a loud, harsh, systolic bruit over the top of the sternum, which gradually disappears as it is traced downwards along the aorta to the heart ; there is a soft bruit in the course of the right common carotid.

At this time she gave a very obscure and imperfect account of her history. Much of the following information I have lately obtained from her mother, and other sources.

Until five or six years of age, she was a healthy child. Since that time she has been delicate, constantly requiring medical care. She has been a patient in various hospitals. During the last nine years, the catamenia have been frequently irregular. Her strength has rapidly declined, and for the last five years she has repeatedly experienced temporary loss of power of the left side. I can obtain no certain evidence of the precise period when the pulse first ceased at the wrist. Her mother, who is a very intelligent woman, says she is certain it has not been felt for the last five years, and the girl herself confirms this statement. In 1853, from May 18th to August 9th, she was a patient in Guy's Hospital, under the care of Dr. Barlow. Dr. Wilks has most kindly furnished me with the following information

concerning her condition at that time. She was admitted for chlorosis and deranged menstruation. She then stated that the catamenia had first appeared six years ago, and that they had not been regular since. At that time, no pulsation could be distinguished in either brachial artery, or in any of the branches below. She was aware that no pulse could be felt at the wrists, and stated that it had ceased to beat for some years.

Since that time she has suffered from pain in the right arm, which was supposed to be rheumatic. Eighteen months ago, she was seized with involuntary, and occasionally violent, shaking of the right arm. Shortly afterwards, the corresponding leg became similarly affected; both extremities of that side subsequently became very weak; then followed pain in the head. Three months ago, she became an out-patient at St. Bartholomew's Hospital. At that time no pulse could be distinguished in any of the vessels of the head, neck, or upper extremities; the femorals and the vessels of the lower extremities pulsated, but not strongly; a bruit could be detected in the right common carotid. A shrill bruit, almost amounting to a soft whistle, could be heard at the top of the sternum. Beyond this no morbid sound was detected. Lately, during her attendance, the left eye became weak, and its vision imperfect.

On November 27th she was admitted into the hospital as before mentioned.

She was ordered milk diet, with beef tea, wine, and quinine.

On the 29th and 30th, she complained of severe pain in the lumbar region. There is evidently a great tendency to hysteria; she is so weak that she sits up with great difficulty. The vision of both eyes is very weak and imperfect, but it is decidedly much better when she lies down; in this position she can see the length of the ward, but when sitting up she can scarcely see at all. The sclerotic coat of the left eye is congested.

December 1st.—A slight squamous eruption has appeared on the head, and she says her hair is falling off rapidly.

16th.—No particular change has occurred since the preceding report. During the last few days she has complained of severe pain in the left parietal region, more especially in a small spot to which the squamous eruption is limited; this pain is now increasing. She complains that her legs feel very cold; pulse at heart, 110; thirst intense.

She was ordered—

Hydrargyri Chloridi, gr. ij;

Opii, gr. ss; omni nocte.

Potassii Iodidi, gr. iij, e Decoct. Sarzæ, ter die.

Unguent. Hydrarg. Nitratis Capiti.

23d.—The pain over the left parietal eminence still continues to be very severe, and it extends down towards the ear; the sclerotica of the left eye, which, during the last few days, has been less vascular, is now inflamed, and there is a small ulcer at the lower border of the cornea.

She was ordered meat diet; the wine and mixture were continued. A solution of nitrate of silver was applied to the eye.

30th.—In many respects she feels better. The left eye is nearly well, but the pain in the left side of the head has rather increased, and now there is great tenderness in the region of the left parietal eminence. She complains also of pain at the top of the sternum, and is harassed by a troublesome cough, accompanied by very scanty mucous expectoration. The systolic murmur at the top of the sternum is becoming softer.

The same treatment was continued.

January 6th.—She has been more cheerful since the last report, and has tried to sit up, but was soon compelled to lie down again, feeling giddy and weak; vision still continues to be very imperfect, and there is great intolerance of light. The murmur is louder in the region of the arteria innominata, and perhaps a faint bruit is audible in the course of the left carotid. The murmur in the right carotid still continues.

13th.—She has been up for a short time since the last report, but complained of distressing vertigo; she declares that she completely loses her sight when she attempts to stand. The pain and tenderness of the scalp still continue; there is a slight, puffy swelling of the integuments. She is extremely languid and exhausted; there is a dark areola around each eye; she is gradually becoming weaker.

February 3d.—She has complained during the last few days of loss of power on the right side; the sight of the left eye appears to be almost gone; the catamenia have occurred this week. Ordered—

Essen. Sarzæ, ℥ss, e Lactis cyatho, ter die.

The Iodide of Potassium to be discontinued.

10th.—The pain in the head continues unabated; she has lately passed such bad nights that she has been ordered to take morphia in the evening, which has lessened the pain and given rest; the skin over the left parietal eminence has yielded, and a scab has formed, attended with a slight sanious discharge. Ordered—

Olei Morrhuæ, ℥ss, bis die.

17th.—Nothing worth recording has occurred since the last report. There is, perhaps, less pain and tenderness in the scalp; the scab remains, from beneath which a brown, half-purulent discharge exudes; the integuments around are inflamed; there has been for the last few days slight ulceration about the septum nasi; the catamenia are present. Poultices were ordered to the scalp.

21st.—The left side of the head is painful and extremely tender; the discharge from the scalp has increased, and become more purulent; the ulceration about the septum nasi has extended.

24th.—The pain in the head increases; there is superficial ulceration over the left parietal eminence, which discharges pus; the action of the bowels has been lately

irregular, and their contents unhealthy; she sleeps very badly.

The same treatment to be continued.

Pil. Hydr. Chlor.  $\bar{s}$ . Colocynth., alter. nocte.

March 3d.—Since the last report the pain in the head has been exceedingly severe; she usually leans forward in bed, supporting the head with both hands; there is a circular ulcer in the scalp about the size of a shilling, with a clean surface, discharging freely; the ulceration about the nose has improved. Lately, she has been attacked by severe shaking fits, which involve the whole body, and which are succeeded by impaired and disordered sensation.

6th.—The ulceration of the scalp has extended, and exposed the bone; it is less tender; the application of poultices gives relief.

13th.—Since the last report she has grown weaker, and suffered severely from pain in the region of the ulcer; the surface is covered with pale, flabby granulations, and the exposed bone at the bottom is stained of a brown colour; the discharge is about the same in character and quantity; the left eye is still inflamed, and vision is very imperfect, with intolerance of light. The shaking fits recur every day.

15th.—In the evening she was suddenly seized with loss of power and sensation on the right side. It remained for about an hour, and then passed away.

April 9th.—Nothing particular has occurred since the last date. She grows weaker, otherwise her condition is in most respects the same; her eyesight, particularly the left, has almost gone; temporary suspension of power and sensation still occurs, and it is preceded by confusion of thought and memory; the ulcer on the head extends, and looks unhealthy; more bone is exposed.

She was ordered a liberal supply of nourishment and wine.

June 4th.—Since the last report she has had more

nourishment, and porter, and has felt somewhat better; but the ulcer on the head has slowly extended and denuded more bone; the exposed portion is exfoliating.

10th.—A portion of dead bone, somewhat larger than a shilling, is slowly separating.

29th.—To-day a few drachms of blood escaped from the ulcer.

Shortly after this time the portion of dead bone came away. The ulceration had extended beneath it into the substance of the cerebral hemisphere. The whole surface had a pale, flabby aspect. Shortly after this a portion of bone, extending towards the right side across the vertex, became loose, but resisted gentle attempts at extraction.

She lingered on with but little variation in her symptoms for some months. Latterly she was removed to one of the surgical wards, under the care of Mr. Stanley. Towards the last the sensibility of the right side seemed occasionally to be unduly exalted. Her strength slowly passed away, and at last she sank on the 24th of December, 1855, having been a patient in the hospital for thirteen months.

NOTE.—For many of the foregoing details I am indebted to Dr. Trollope and Mr. Green, who were the clinical clerks at the time, and also to Mr. Dalley, Mr. Stanley's house-surgeon, who watched the case with much care.

December 26th.—*Post-mortem, forty hours after death.*—The body was only slightly emaciated. The limbs were thin; but they had a healthy and natural aspect.

On the left side of the head, over the parietal eminence, was the large circular ulcer, between one and two inches in diameter, which evidently had passed to some considerable extent into the cerebral substance. The surface presented the appearance of a slough. When the scull-cap was removed the inner table of the parietal bone was found to be extensively necrosed. The dead portion extended for some distance beyond the right margin of the aperture, and across the sagittal suture for half an inch or more into the right

parietal bone. The dead portion was separated by a well-defined margin from the living, and was loose, though sufficiently adherent at some points to prevent its ready removal. The dura mater was extensively destroyed. A circular portion, exceeding two inches in diameter, had disappeared. The edges of the aperture were sharp, and terminated abruptly. A vertical section through the corresponding portion of the left cerebral hemisphere showed the substance of the brain to be disorganized around the ulceration to the depth of an inch or more. The veins upon the surface of the hemispheres were turgid with blood. The sinuses contained not more than the usual amount of clot. The vessels of the cerebral substance were congested, and this increased vascularity was especially apparent in the neighbourhood of the ulcer. The ventricles contained very little fluid. No deviation from the healthy condition could be detected in the vessels at the base of the brain. The membranes, except at the part indicated, appeared healthy.

The heart, its muscular tissue, its investing and lining membranes, the cardiac and arterial valves, were healthy. The aorta, at its commencement, presented no appearance of disease. In the arch several small portions of the lining membrane were dull and opaque; and numerous, small, irregular, opaque, yellowish deposits existed in this part of the vessel. From this point downwards through the thoracic aorta the natural aspect of the internal coat of the vessel was destroyed. The lining membrane was uniformly dull and opaque. The coat itself separated from the middle tunic with morbid facility, and when carefully examined it was found to be decidedly thickened. It had lost its peculiar brittleness, and was tougher than natural. There was wanting that peculiar disposition to curl, which belongs to its healthy condition. No sensible change could be detected in the two outer coats, and the areolar tissue around the artery appeared unaltered. The morbid condition of the vessel gradually subsided as it passed through the abdomen, until at its bifurcation there was very little perceptible thickening of the inner coat. From this point downwards



into the femorals, although the arteries could not be pronounced absolutely healthy, yet there was less certain and obvious evidence of disease.

But in the *arteria innominata* the changes just described, and others too, were most strikingly shown. The whole vessel was very much thickened, and it required considerable pressure to approximate its walls. It was quite empty. The lining membrane was pale and smooth, but dull and opaque. The internal coat separated with the slightest force from the middle, and was almost as thick as the other two coats together. The middle and external coats were denser than natural, and slightly thickened. Owing to this morbid state of its tunics, a section of the artery presented a remarkable appearance. The distinction between the coats was strikingly obvious. When the internal coat was stripped off from the middle, in a great portion of the vessel irregular patches of an opaque yellowish deposit, in considerable quantity, were found between the two. The greater part of this deposit came off upon the outer surface of the inner coat, but some remained upon the inner surface of the middle. The deposit, to microscopical examination, presented all the characters of consolidated lymph, intimately blended with the arterial tissues. It was probably in process of degeneration, for here and there many small globules of an oily nature could be detected.

This morbid change extended into the right carotid, and the commencement of the subclavian artery. In the whole of the right common carotid the same change, although to a less extent, was apparent. The vessel was contracted and much thickened. There was no clot in its interior. The inner surface was not reddened. There was scarcely any perceptible change in the internal and external carotids. They were perhaps somewhat thickened and contracted.

About an inch or less from their origin the right subclavian, the left carotid, and the left subclavian arteries became suddenly contracted to one fourth or one fifth of their natural size. This change extended throughout these vessels, through the axillary, brachial, radial, and ulnar

arteries on both sides, and the left external carotid artery. The contracted canal in their interior was completely blocked up and obliterated by a fibrous cord, which extended with scarcely any interruption throughout their entire length. The left internal carotid artery was pervious; and, beyond being somewhat contracted and thickened, was not perceptibly changed.

Thus all the main arteries of both upper extremities and of the left side of the neck were reduced to solid cords, and presented the exact condition of vessels through which the flow of blood had been for some time mechanically arrested. The brachial artery was smaller than the median nerve. The areolar tissue around was not unnaturally dense: it appeared healthy. In a transverse section of one of the obliterated vessels the distinction between its contracted coats and the cord filling up the canal was obvious. The opaque yellowish-white coat contrasted strongly with the greyish cord within. A longitudinal section of the vessel displayed the connection between the coats and the cord. In many parts the adhesion was firm and resisting. In some parts it seemed impossible to separate the cord from the inner coat, which, upon the application of much force, came away with it, while in other parts no adhesion whatever was apparent; when the cord was removed the internal coat remained undisturbed. It was generally slightly wrinkled. There was no actual deposit upon its surface; but here and there it was perhaps roughened. The connection between the cord and the coats was firmest and most universal in the brachial arteries, and least so in the left carotid. Almost throughout, the inner coat of this vessel presented numerous longitudinal wrinkles.

The cord which filled up the canal commenced abruptly in each vessel by a blunt extremity, around which the coats became suddenly contracted.

When examined, it presented all the characters of simple delicate fibrous tissue, such as would result from lymph or fibrine.

Generally, at the origin of a branch, the cord was more

or less deficient, and the canal pervious for a few lines. In these situations what substance there was in the interior was confined to the opposite side of the vessel to that whence the branch arose.

The secondary branches of the subclavian, axillary, and brachial arteries, beyond being thickened and contracted for some distance from their origin, presented, so far as they were examined, no unusual appearance.

No morbid change could be detected in any of the veins. They appeared to be in all respects healthy and natural. The pulmonary vessels, the lungs, liver, spleen, kidneys, and the viscera generally, were remarkably free from disease. The spinal cord was, perhaps, somewhat more vascular than usual; otherwise there was no sign of disease. The muscles and the other tissues gave no indication of a deficient supply of blood. The upper extremities were as well nourished as any other portion of the body. The examination of the collateral channels, in those parts whose main arteries were occluded, was necessarily only imperfectly conducted; but those vessels which were traced were not visibly enlarged.

After the simple narration of this case, I think no further explanation of the reasons which have induced me to bring it before this society will be required. It is certainly one of the most remarkable on record, and is, I believe, in some respects, unique. The condition in which the arteries were found after death—the morbid changes which they had undergone—will generally, I imagine, be regarded as the result of inflammation of their walls. Under what circumstances this inflammation occurred—the nature of its symptoms, and the phenomena of its progress—concerning these points the history of the case is, unfortunately, somewhat obscure. But from all that could be ascertained, it appears to be tolerably certain that the disease, in no portion of its history, was ever accompanied by any well-marked or characteristic symptoms. The most careful cross-examination failed to elicit any account of such active and violent symp-

toms as are said to distinguish acute and general arteritis.<sup>1</sup> The condition of the arteries which was disclosed after death, had most probably been very gradually effected. The morbid changes in their progress must have occupied a considerable period: for there is satisfactory evidence, that during the last five years no pulse could be detected at the wrists. It is certain that in 1853, more than two years and a-half ago, when a patient in Guy's Hospital, no pulse could be detected in any of the arteries of either arm;<sup>2</sup> whereas, at the time of her death, in some vessels the morbid changes had not far advanced. The condition of the brachial arteries contrasted strongly in this respect with the two carotids.

The symptoms observed during the time she was actually under observation in St. Bartholomew's Hospital, may fairly be regarded rather as the result of the changes which the arteries had undergone, than as due to the progress of the disease itself. And these symptoms, when compared with the condition of the arteries which was disclosed after death, are most interesting and instructive.

They may almost all be referred to a deficient supply of blood to those parts of the body to which the arteries, which had become obliterated, were distributed.

The obliteration of the left carotid offers a satisfactory explanation of the destructive ulceration on the corresponding

<sup>1</sup> See 'F. Tiedemann von der Verengung und Schliessung der Pulsadern in Krankheiten,' 1843. Also the case described by Dr. Thompson in the appendix of Mr. Hodgson's work on the 'Diseases of Arteries and Veins,' 1815.

<sup>2</sup> Dr. Wilks was kind enough to point out to me the following notice of the case which he has published in 'Guy's Hospital Reports' for 1853:

"A girl, æt. 20, with chlorosis, had no artery to be felt in either arm below the subclavian. No brachial or radial could be felt. Whether this occurred from disease or was congenital could not be satisfactorily determined."

It is clear, from the last remark, that no history had at that time been elicited of any illness characterised by such symptoms as acute and general arteritis is usually supposed to exhibit.

The report above is from the pen of Dr. Wilks; therefore its accuracy will not be questioned.

side of the head, involving successively integuments, bone, and brain. It explains the congestion and inflammation of the left eye, and the ulceration of its cornea; and the destruction of parts about the septum nasi. No structures are so immediately dependent, for their healthy condition, upon a due and proper supply of blood, as the nervous centres. No organ is so readily affected by disorder of its circulation as the brain. A moment's reflection upon the effect which obliteration of a carotid must have upon the circulation in the corresponding cerebral hemisphere, will suffice to account for the vague and anomalous affections which distressed the poor girl while living; for the vertigo and impaired vision, especially of the left eye, which increased as she approached the erect position; and for the impaired motion and disordered sensation of the right side.

Perhaps, at first sight, it may appear remarkable that the upper extremities exhibited so little the effects of a deficient supply of blood. But besides being placed under more favorable circumstances in this respect, it is to be borne in mind that they were affected at an earlier period of the patient's history, while the bodily powers were much more vigorous, and more capable of sustaining, for a time, a diminished supply of blood to a part, until the circulation was restored by means of the collateral channels.

A similar explanation may be offered of a fact mentioned in the relation of the case. No diminution of temperature was observed in the upper extremities. If the obliteration of the arteries had been a gradual change, it may never have been perceptible. But, under any circumstances, the temperature of the part would have been subsequently restored with the collateral circulation.

This case certainly does not confirm the opinions which Rokitsky has advanced on the pathology of arteritis. It is difficult to reconcile the changes which were observed with the account of the disease which he gives in his '*Pathologische Anatomie.*'

In this case, in those arteries which exhibited most clearly the alterations produced by disease in their walls,

the inner coat had decidedly undergone the most extensive change, and the external coat was the least affected. This was especially evident in the *arteria innominata*, in which the internal coat was the most thickened and otherwise altered. Moreover, in this vessel there were deposits of lymph in considerable quantity between the inner and middle coats. It is indeed conceivable that these changes were secondary to, and produced by, inflammation of the cellular sheath of the vessel which Rokitansky says "is alone capable of inflammation;" but at the best, it would be but a very unsatisfactory explanation of the changes which were discovered. To admit this, we must assume that in that portion of the arterial wall, to which inflammation, when present, was limited, the slightest traces of it remained; while, on the other hand, on the remote side of the middle coat—which, says Rokitansky, "in the larger arteries, as, for instance, in the trunk of the aorta, exhibits so great a thickness, together with such density of texture, that we are unable to comprehend how it can be permeated by an exudation, unless by the agency of an acute process"—the changes produced by inflammation were most remarkably displayed.

At all events, we are not driven to admit that the exudation which was found, had permeated the entire substance of the middle tunic for the reasons assigned by Rokitansky. He declares that the middle coat is incapable of inflammation, because it possesses no vessels. He says "the absence of vessels in the (yellow) circular fibrous coat, and more especially in the inner coat of the vessels, forbids our assuming the possibility of inflammation in these layers."

Now, it is well known that some excellent anatomists have traced capillaries into the circular fibrous coat, and even through it; so, as Virchow<sup>1</sup> observes, the question does not turn upon the permeability of the middle coat.

There can be no doubt concerning the origin of the fibrous

<sup>1</sup> 'Archiv für Pathologische Anatomie und Physiologie und für Klinische Medicin,' Erster Band, 1847, p. 286.

cord which filled up the interior of the contracted vessels. It was evidently the remains of the blood which had coagulated in the canal,<sup>1</sup> and which had undergone changes similar to those that occur in the clot, which forms in an artery beyond the point where a ligature has been applied.

That this cord was formed solely from coagulated blood, which had undergone the usual changes, and that no portion of it was due to any exudation from the arterial walls, seems proved by the following facts :

Its adhesion to the internal surface of the vessel was only partial and imperfect, and such as it was, might be readily explained by the morbid condition of the arterial tunics. It was almost totally absent about the origin of secondary branches, and where not occupying the entire canal, it existed on one side of the vessel only.

<sup>1</sup> See 'Rokitansky,' *op. cit.*