Clinical Lecture

ON A CASE OF

EMBOLISM OF THE FEMORAL ARTERY FOLLOWED BY GANGRENE OF THE FOOT.

DELIVERED AT ST. GEORGE'S HOSPITAL.

BY

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On the 18th of December, 1861, I was asked by Dr. Pitman to see a patient of his who was suffering from incipient gangrene of the left foot; and the following is the history which was given to me.

The man, aged 56, had just recovered from a very severe attack of dropsy connected with heart-disease; and he was going about the ward the day before, when he was, without any apparent cause, suddenly seized with violent pain in the left groin, "exactly as if he had been shot". From that moment the limb had been numb, cold, and quite powerless; "it felt as if it was dead"; and he was obliged at once to take to his bed again. All that afternoon and night he suffered intensely; and, when I saw him, he was still complaining of great pain in the whole of the limb, but especially in the groin. As to the limb itself, it was evidently colder than the rest of the body; and there were blotches of discoloration spreading over the toes and back of the foot, with some slight œdema, and considerable redness extending half-way up the leg. A careful examination of the groin, at the exact spot where the pain had been so suddenly and so unaccountably felt the day before, showed that the femoral artery was plugged. Reduced as the man was from long continued suffering, the size and exact limits of the plug could be distinctly made out; it began at about a couple of inches below Poupert's ligament, and thence stretched about three-quarters of an inch down the course of the artery; at this spot, the vessel was quite hard, round, and rolled under the finger; pulsation was evident immediately above the plug, but not below it; and no pulsation could be detected in any of the arteries of the leg or foot. The general aspect of the man was of the most unhealthy character; the conjunctive and the skin were of a yellowish tinge; the countenance sunken, very anxious, and worn; the tongue loaded, and inclined to be dry and brown; the pulse at the wrist intermittent, and exceedingly feeble. The stethoscopic examination of the heart gave irregular and very feeble action of this organ (dilated cavities with thin walls), but no valvular disease.

The diagnosis you will recollect. I told you "that the gangrene of the foot was, I thought, dependent upon sudden blocking up of the femoral artery by a fibrinous plug, which had been washed from the heart."

The limb was ordered to be wrapped up in cotton-wool; some compound soap liniment to be rubbed into the groin to ease the pain; morphine to allay the irritation of the nervous system; and stimulants to keep up the strength as much as possible.

From this time the symptoms were much the same for the next few days. The gangrene continued to advance slowly but surely about the foot, the toes of which became shrivelled, black, dry, and mummified; and the œdema and redness of the leg increased also. Then the man became weaker and weaker, notwithstanding large quantities of stimulants; and the whole skin and con-

junctivæ assumed a deep yellow colour. The pulse could at times hardly be felt; the lips were covered with sordes; and the tongue dry and brown. In the midst of all this, however, the gangrene, after involving two-thirds of the foot, stopped, and left a line of demarcation exactly corresponding to the incisions for Syme's amputation. At this period, a consultation of the surgeons was held; but such was the man's general state, that it was decided not to undertake any operation. Subsequently, he lay in a semi-comatose state, but taking all that was given him; and after lingering, with scarcely a sign of life, for a few days, he died on the 23rd of January, 1862.

The body was examined on the following day. All the soft parts of the foot, as far as the line of demarcation, were involved in the gangrene; but the tissues around the heel and ankle-joint were, with the exception of some œdema, healthy. The plug in the artery, measuring about three-quarters of an inch in length, was situated in the upper part of the superficial femoral, just at the giving off of the deep femoral; and exactly corresponding to the seat of the obstruction, the parts around were thickened, and the vessel was firmly adherent to its sheath and to the vein. The plug itself, firmly wedged, was throughout adherent to the artery; it was hard to the touch, of a rusty colour on its surface, but deeper it was of a fawn colour, and like the fibrinous layers of an old aneurism. Above and below the plug, the vessel was empty; and so too were the trunk and

different branches of the deep femoral. The heart was large and flaccid; its cavities were dilated, and its muscular structure was thin. There was no disease of the valves, and no endocarditis; but entangled among the fleshy columns of the left ventricle, and filling up and projecting beyond the interspaces, were several large fibrinous masses, for the most part of a fawn colour, re-

markedly firm in structure, and evidently of long standing; and a similar mass, of large size, was also found blocking up the left auricular appendix, and projecting into the cavity of the auricle itself, where it was pendulous. Besides these fibrinous masses, there were also, and especially in the right ventricle, some loose coagula of recent formation. The large vessels were healthy. The lungs presented, at their lower and back part, several patches of inflammation. The spleen was large; and at its upper and lower parts were two very large so-called fibrinous concretions, of a deep yellow colour, and firm in texture; and the arteries leading to these parts were found blocked up with fibrine. The other abdominal viscera were healthy; and so, too, were the different parts of the brain and its membranes.

Such was the history, and such the after-death examination, of this case which offers for our consideration some important points in surgery. And, first, as to the diagnosis. By what were we led to conclude that the case was one of embolism? The gangrene of the foot and the condition of the leg evidently showed that there was obstruction of the arterial system in some part of the limb. Then came the question as to the precise locality of the obstruction. The man, you will remember, had "felt as if he had been shot in the groin." Well; that led at once to the examination of the femoral artery at this spot; and there the vessel was found blocked up. But what caused the obstruction? Was it an embolus? The sudden shooting pain in the groin, the immediate loss of the limb, the complete obstruction of the vessel, the limited extent of the plug, its precise locality—about the giving off of the deep femoral—all tended to prove that the plug had not originated in the artery itself; but had come from a distance. Whence came the plug? From the left cavities of the heart, in all probability. To this it was, however, objected, that there was nothing to prove the existence of anything like vegetations on the surface of the valves. True; but there may be some fibrinous coagula entangled in the meshes of the fleshy fibres of the heart, and one of these coagula may have been washed from its locality, and swept along the arterial current until it was suddenly stopped by getting into a vessel through which it was too large to pass. And, moreover, supposing even that vegetations had existed on the valves, a vessel of the size of the femoral could hardly have been blocked up by one of these vegetations set loose. The portions of such vegetations when washed off from the endocardium are generally of too small a size to plug the main artery of a limb; but they pass into the lesser branches, and, for the most part, lead to mischief about the brain, the spleen, the kidneys, or the liver.

This was the reasoning upon which the diagnosis was founded. And the after-death examination proved that there were no vegetations on the surface of the endocardium, and that several large fibrinous masses were entangled among the fleshy fibres of the heart.

In M. Nélaton's case of embolism of the right common and external iliac arteries, it was from a fibrinous clot, and not from vegetations, that the plug had proceeded; and the same was the case in an instance of embolism of the left common iliac artery mentioned by Mr. Sibley.

As to the plug in the femoral artery, the appearances observed about the sheath of the vessel, and the vessel itself, might, at first sight, give some

colour to the supposition that it was with arteritis, and not with embolism, that we had to deal in this case. But we must bear in mind that an embolus wedged into an artery will, after a time, usually lead to more or less inflammation in its immediate neighbourhood. The man lived for thirty-seven days after the commencement of the attack. Hence the adhesion of the plug to the artery; hence the thickening of the vessel itself, and its adhesion to the sheath and to the vein; hence, too, the thickening of the cellular tissue around the sheath. The inflammation, then, did not precede, but followed, the plugging of the artery; and had the man died shortly after the vessel was plugged, we should, doubtless, have found the embolus loose in the cavity of the artery. And, as if still further to prove that the case was one of embolism, the spleen presented two of those large yellow patches frequently met with in this form of disease, and which are commonly called fibrinous concretions; and corresponding to these yellow patches, the lesser branches of the splenic artery were found plugged with fibrine.

The question of amputation in gangrene connected with embolism is an important one. In the case at present under consideration, this question was set aside by the patient's general condition, which was so thoroughly hopeless that all thought of operating was abandoned, even from the beginning. But had the man's general state been more promising, had he had more power, there is no doubt that, in this case, we might have amputated, and with good prospect of success. The gangrene was slow in its progress, and a few days sufficed to prove that it would not extend beyond, even if it involved the whole of the foot. Ultimately, the line of demarcation was set up below the ankle-joint, along the course of the incisions usually made in Syme's amputation. The collateral circulation had then been quite sufficient for the supply of the thigh and leg, but the man himself was moribund.

In M. Nélaton's case, to which I have already referred, and which, by the bye, was in many points singularly like our own, there was a sudden stoppage of the arterial circulation in the right thigh and leg. No mention is made of any line of demarcation; but amputation of the leg was performed on the forty-fifth day, and this notwithstanding that no pulsation could, from the onset, be felt even in the external iliac artery. The patient died eight days after the operation, and the right common and external iliac arteries were found blocked up throughout their whole course by a fibrinous clot of some standing.

In a case of embolism, and especially where the obstruction is high up in the limb, amputation is, I think, quite useless until after the setting up of the line of demarcation, without which it is impossible to say what parts may or may not become involved in the gangrene. But in a case of rapidly advancing gangrene, in which the patient has but too evidently only a few hours to live unless something is done, and that without delay, it would be right to amputate at once, provided the plug in the artery is at a sufficient distance from the trunk to admit of removing the limb above the seat of obstruction. Some years back, I was asked to see a lad who, the evening before, had received two or three small shot in the ham. There was no other injury, but mortification had already spread high up in the thigh,

and the boy was evidently sinking very rapidly. The limb was at once amputated close to the hip-joint; and, on dissection, the shot were found lodged in the popliteal artery and vein, the cavities of which were completely blocked up. The lad was in a desperate condition for some time, but he ultimately got quite well. This may be said to have been a case of artificial embolism; the artery was here blocked up by a shot, but a fibrinous plug might be suddenly driven into an artery, and give rise, as the shot did, to rapidly spreading gangrene. And under such circumstances, the right practice would be to amputate, at once, the limb above the point at which the vessel is obstructed.

And now, whilst considering embolism from a surgical point of view, let me, in conclusion, say a few words about a subject closely connected with this form of disease. I allude to the treatment of aneurism by breaking up the coagula which has been proposed by Mr. Fergusson. Such treatment is, in fact, embolism artificially produced; and, if resorted to in aneurisms connected with the current of blood proceeding to the head, it may, there is no doubt, lead to disastrous results—results the very same as those described in Dr. Kirkes' paper. Hemiplegia, doubtless due to embolism, followed the breaking up of the coagula in an aneurism of the subclavian artery in one of Mr. Fergusson's cases. And last year, another case was mentioned by Mr. Teale, of Leeds, in which an aged female was suddenly attacked with hemiplegia after the handling by several surgeons of a carotid aneurism. *Post mortem* evidence is, it is true, wanting in both these cases; but the exact condition of the parts was accurately ascertained in a precisely similar case; for the reference to which, I am indebted to my friend Mr. Ernest Hart.

The patient, aged 37, died under the care of Professor Esmarch, of Vienna; and the head-symptoms had suddenly made their appearance whilst a surgeon was pressing upon an aneurism of the left carotid artery. The after-death examination showed that the cavity of the aneurismal sac was full of broken-down coagula. The internal carotid was plugged from a point close to the aneurism, and so too were the middle cerebral and ophthalmic arteries. The left hemisphere of the brain was extensively softened, and small spots of extravasated blood were found in the pons Varolii, and in its neighbourhood.

STATUE TO WILSON THE ORNITHOLOGIST. The other day, the proposed erection of a statue to Sir H. Davy at Penzance, was recorded. Now we find Paisley proposing to perpetuate the memory of her townsman, Wilson, the ornithologist, in a similar way. The statue is to be in bronze, a little larger than life, and will represent him examining a bird which he has just shot.

A FAIR RETORT. "THE BRITISH MEDICAL JOURNAL" professes great surprise that the American medical journals contain no opinions in reference to the war now going on in the 'Disunited States', and concludes, therefore, that the war must be a matter of complete indifference to the medical profession, except so far as they may be professionally engaged in it. We have, on our part, examined the British medical journals in vain to find an opinion in reference to the 'Trent Affair'. Does the medical profession of England take no interest in a prospective war with the 'Disunited States'? We should be surprised, if not pained, to find the columns of the BRITISH MEDICAL JOURNAL filled with political discussions." (*Amer. Med. Times.*)

Original Communications.

MEDICAL PSYCHOLOGY.

By ROBERT DUNN, F.R.C.S.E.

III. On the Psychological Phenomena or Symptoms of Disease.

[Continued from page 334.]

Delirium and Coma. Of all the psychological phenomena of disease, delirium and coma preeminently claim our attention; for, as Dr. Todd, in his valuable *Lumleian Lectures* for 1850, has justly observed, "the mental states of delirium and of coma involve so complete a departure from the normal condition of the intellect and of consciousness, and, as experience teaches us, are so apt, one or the other, to accompany diseases of organs other than those which form part of the nervous system, that surely nothing can be of higher practical moment than that our views of the pathology of these states—of the precise nature of the derangement of the physiological action of the body which is capable of producing them in their various degrees—should be *definite* and *settled*, lying, as they must do, at the very foundation of our knowledge of the derangements or diseases of the nervous system." He reasonably asks: "Can it be expected that we shall be able to form any correct idea of the effects which inflammation or other disease of the brain is capable of producing, if we know nothing of the intrinsic nature of the conditions which give rise to delirium and coma?"

Now in coma, indeed, when profound, there is a *complete abolition of consciousness*, and the phenomena of life are reduced to a mere series of automatic movements. The patient, for the time being, neither feels, nor wills, nor thinks; and he awakes from this state as from a deep sleep. He knows not where he has been, and he feels as if, during a certain interval, he had ceased to exist. "Delirium", to use the words of Dr. Todd, "exhibits great variety as to the extent to which the perturbation of the intellectual powers has taken place, in some instances amounting to a simple wandering of the thoughts, and an inability to fix the attention and to maintain a continuous train of thought; in others consisting, as it were, in an extraordinary exaltation of the thinking faculty, with an extreme excitement of feeling and temper, leading in many instances to violent maniacal paroxysms, under the influence of which the patient exhibits a degree of muscular power which is very apt to deceive the practitioner as to the extent of intrinsic strength which he possesses. Great, indeed, is the difference of degree between the highest and the lowest forms of delirium—between the slight wandering, or, as the nurses and patients are apt to call it, *light-headedness*, and delirium *ferox* or acute mania, in which the patient threatens with destruction himself and all around him. The state of delirium, indeed, in its highest degree, is a complete disturbance of the intellectual actions. The thoughts are not inactive, but rather far more active than in health: they are uncontrolled, and wander from one subject to another with extraordinary rapidity; or, taking up some single subject, they twist and turn it in every way and shape with endless and innumerable repetitions. The thinking faculty seems to have escaped from all control and restraint, and thought after thought is engendered without any power of the patient to direct or regulate them. Sometimes they succeed each other with such velocity that all power of perception is destroyed, and the mind,