

Case of inflammation of the cephalic vein, which terminated fatally : with the appearances on dissection / by Andrew Duncan.

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CASE
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WITH THE
APPEARANCES ON DISSECTION.

ON the evening of Wednesday the 19th March 1823, I was called to visit Mr A. a professional gentleman, twenty-eight years of age, and of a sanguine temperament. I found him in bed, with his left hand very much swollen, red and painful, as if affected with *Erysipelas phlegmonodes*. On the knuckle of the fore-finger there was a sore, resembling the remains of a blister or opened phlegmon. There was also some swelling, though incon-

siderable, of the wrist and fore-arm, but no redness. His pulse was 120, and full, his countenance appeared livid, and his respiration was short, frequent, and interrupted; his tongue furred, and he had considerable thirst. He made, however, little complaint, except of flatulence; said that the affection of his hand, which he had been treating with poultices, was declining; denied having any pain in his breast, and, although on being desired to take a full breath, he did not make a deep inspiration, he alleged that this mode of respiration was natural to him. On questioning him as to the history of his affection, I could learn little from him at that time; but on my suggesting, that, from the appearance of his hand, I was afraid he had hurt himself in dissection, he assured me that it was not the case, and that he had not been exposed to such a cause of disease for a long time. He even said he had no recollection of any injury done to his knuckle, unless he had hurt it when walking in the country on the Saturday preceding. He appeared very much distressed and agitated, but in no way alarmed about himself; and as I knew that he had been lately much harassed, I ascribed great part of his present state to moral causes, and did not at this time push my inquiries to the utmost.

I afterwards learned, partly from himself and partly from his landlady, the following circumstances:—On the Saturday preceding, Mr A. had dined abroad in perfect health. On Sunday morning, he ordered the servant to grind some coffee for

his breakfast, which he was in the habit of preparing himself, and as a reason mentioned that his hand was sore. In the evening, he made some complaint of being cold, and bathed his feet in hot water before going to bed. On Monday evening, his landlady saw his hand for the first time, and observed a small boil on the knuckle, which she described as having a considerable hard inflamed base, with a little suppuration in the centre. She advised him, as the usual method of getting rid of such boils, to squeeze out the matter strongly; but it would appear that he opened it with a lancet, which he afterwards confessed he had employed four weeks before in laying open a carbuncle. Mr A. had for some time past been much occupied in making preparations for a large musical party on Tuesday evening. He was now advised to postpone it, but would not consent at this time, as he said his hand would be well enough to enable him to receive his friends. When the Tuesday came, however, he at last became sensible that all idea of his party must be relinquished, and he exerted himself to the last moment in writing and dispatching cards of apology to those friends whom he expected. This was a severe mortification to him; and it should be mentioned, that, for a week or more before his illness commenced, he had undergone great fatigue, and had experienced considerable mental anxiety, and not a little disappointment. During the winter he had studied very hard, both sitting up late and rising early.

At this first visit, he was only advised to continue the poultices, and take a solution of sulphate of magnesia, with tartar emetic.

On Thursday morning, I found him apparently much better, his breathing free, and his countenance more natural; his pulse down to 80, and without any febrile irritation. He seemed also more composed, and the affection of his hand was subsiding.

During this day, his arm was kept constantly wet with a cold lotion, containing acetate of ammonia, and he drank freely of orange juice and water, which brought on frequent watery purging, for which he had taken some laudanum, with the effect of moderating it.

In the evening, I found him with a considerable exacerbation: his pulse was again 120, febrile, but not full; and the swelling, though with little redness and no pain, was extending slowly up the forearm.

On Friday morning, instead of the remission which I hoped would have taken place, as on the preceding day, I found the fever in no degree decreased: he had passed a restless night, although he had taken some more laudanum of his own accord. The swelling was still making slow progress up the arm, but was not attended with redness or pain. In the evening of Friday, I got a hurried message before the usual hour of visiting, and found Dr Kenney with him, to whom he had also sent, complaining that he had not visited him during his illness. He had also sent for his friend Dr R. Ha-

milton to bleed him, having had some hæmoptysis in the course of the day. He was now looking extremely ill,—the sore seeming irritated,—the hand and fore-arm much swollen, and one or two red streaks running up from the elbow to the shoulder in the course of the cephalic vein,—respiration again much affected,—breathing quick and short, but he denied having any pain in the chest. He was frequently troubled with cough, but did not expectorate much, and his sputum was tinged with blood. Countenance anxious, depressed, and of a leaden-hue; features sharpened, and the eyes sunk and dull; skin not very hot. Tongue foul; thirst inconsiderable. Pulse 110, neither strong nor sharp. A vein was opened in the right arm, and ℥xvi. or ℥xviii. of blood taken, which proved to be cupped and buffy; the pulse fell to 96, but no other salutary change was perceptible, except that a slight headache, of which he complained, was relieved. Dr H., who remained with him, learning that he had taken scarcely any nourishment since the commencement of his attack, gave him some light supper, which he took with apparent relish. In the night, Dr H. was again sent for, on account of wandering pains in the stomach, evidently the effect of the flatulence of which he had all along complained.

On Saturday morning, we found that he had had a restless, sleepless night; all the symptoms aggravated; pulse 120; the swelling extending up the arm, of an uniform appearance, with a defined margin, but still without much redness, heat, or pain,

unless in a point at the bend of the arm, on considerable pressure, and on the outside of the elbow. No swelling of the glands of the axilla could be perceived, nor any tumefaction of the pectoral muscles. In consultation, we agreed that twelve leeches should be applied to the diseased arm; that an emollient enema should be given, as he had had no stool since the purging had ceased, and that he should get light nourishing diet. The enema brought away some formed, but sufficiently healthy, fæces, and the leeches were applied about noon.

In the evening he was decidedly worse. The bleeding from the leech-bites had not stopped, and some slight means, but at the time deemed sufficient, were used to suppress it. Pulse 120, of tolerable strength,—some *subsultus tendinum*,—transient delirium,—swelling extending up the arm, though not considerable, and without that boggy feeling characteristic of cellular inflammation,—but still he made no complaint of pain, nor expressed any apprehension for the result; and as he had had no sleep for several nights, we agreed to give him a full dose of laudanum, hoping that this would produce a decided effect.

In this, however, we were disappointed. The early part of the night was restless and agitated, and about two in the morning, this gave place to a heavy wandering and sinking state. This occasioned alarm to the attendants, and at 4 A. M. Dr H. was sent for, who found him apparently dying,—the blood to a considerable extent still oozing from

the leech-bites, even from those that had been quite staunched before. Pulse 140, and very feeble. Dr H. immediately proceeded to stop the hæmorrhage, which he quickly effected, but not until the pulse had become nearly imperceptible at the wrist.

He remained still sensible, though drowsy. A cup of arrow root, with Madeira wine, was given,—hot bottles were put to his feet, and friction applied to his limbs. This was followed up in quick succession with wine, glass after glass, but without any rallying,—the breathing became more sonorous, oppressed, and tardy,—the aspect more cadaverous, the extremities more cold, and the intellect more clouded,—till at length, just before death, its aberration was decided. Conceiving himself well, he wished to get out of bed, to transport himself to his own home, and, after a short and a feeble effort, he lay down exhausted, and soon expired, about eight on Sunday morning, without a struggle or a groan.

The body was examined twenty-four hours after death by Dr Molison, in the presence of Dr R. Hamilton, Dr Kenney, and myself.

The chest was first opened; the skin and muscles covering it were perfectly healthy. The cartilages of the ribs on one side were more ossified than is natural in so young a man. General adhesion of the lungs to the costal pleura, pericardium, and diaphragm, and among the lobes, above and behind by old adhesions, but in every other part by a recent effusion of coagulated lymph, which fringed the edges of the lobes. The lymph was observed in

greatest quantity round several spots of condensed livid lung; and on one part on the right side, where inflammation seemed to be most intense, it communicated to the opposite costal pleura, and in appearance exactly resembled ecchymosis. In the centre of this part, upon the *pleura pulmonalis*, there was a small quantity of thick fluid, of a pink colour, about the size of a sixpence: the coagulated lymph appeared in the state of torn shreds immediately around this spot, but at a little distance it became united, and formed a dense coating, easily separated into layers. The substance of the lungs beneath this part was of a dark vinous colour, and did not at all crepitate when cut. But within this hardened mass there were two portions contiguous to the pleura, each nearly as large as the point of the thumb, which had become soft, and had lost all elasticity, so that when gently pressed by the finger their fibres were easily torn. In short, they greatly resembled a part affected with gangrene, but they had no smell. Several smaller portions on the surface of the lungs were observed to be of the same colour, and were in a semi-hepatised state, but none of them contained any softened part. In the left side of the chest, there were six or eight ounces of a brown-coloured fluid, contained in a circumscribed cavity formed by the adhesion of the pleura. When freed from their adhesions, the lungs generally did not collapse, but remained full and tumid. When the substance of the left lung was cut into, it was crepitous, but contained a large quantity of

frothy serum, which could be expressed. The right lung was also crepitous, and greatly gorged with serum, with a very slight intermixture of spumous matter, which flowed freely from incisions made into it. The third lobe was filled with blood apparently from congestion after death. No part of the lungs was found to sink in water, but some small portions descended further than healthy lung does. Some old adhesions were observed, particularly at the top of both lungs, which gave these parts a puckered appearance. Within were found several tubercles, and on the left side one as large as a nut, containing in a sac a yellowish purulent looking fluid. On the right side, also, contained in dense cartilaginous sacs, there were two tubercles of a curdy appearance, with calcareous particles in each, and in the left lung there were *calculi*, not connected with tubercles. The other viscera, so far as they were examined, appeared healthy.

Many livid spots were observed externally on the left arm; and on the back of the hand of the same side, between the heads of the metacarpal bones of the first and second fingers there was an ulcer, around which there was an evident swelling of the cellular substance, extending more or less up the whole arm. On making a long incision from this ulcer to the top of the shoulder, a small abscess seemed to be laid open at the bend of the arm, but it proved to be the cephalic vein which had been divided, and was full of purulent matter. The vein was now traced with more care, which, from its increased size and

solidity, was easily done, and we found that the veins coming from the back of the fore-finger, middle and ring fingers, were all diseased; but that from the little finger was healthy. The morbid state of the vein extended upwards along the whole course of the cephalic to its termination in the left sub-clavian, which remained perfectly healthy. The disease of the vein consisted in external redness, arising from the increased size of the *vasa vasorum*; thickening of all its coats, so that it remained like an artery, round without collapsing; increased size, especially in the fore-arm; its containing no blood in any part of its course, and being generally filled with purulent matter, except in a few places, where it seemed empty; and in the inner coat being every where red and thickened. On the back of the hand, it appeared as if matter had been formed in the cellular texture itself; but upon more minute examination, it was quite evident that it existed solely within the veins. Throughout, the cellular and muscular texture of the arm were almost healthy and natural, even in the immediate vicinity of the diseased parts of the vein; but towards the end of the dissection, a considerable quantity of serous fluid was observed to have escaped from the divided tissues.

I think we are entitled to consider this as a pure example of death solely from inflammation of the vein, although there were peculiarities observed which ought not to be altogether overlooked.

The state of the lungs showed considerable pulmonary affection, both recent and of some standing, and we may infer that Mr A. could not have survived many years, from the progress which tuberculous consumption had already made. It may be a question whether this diseased state of the lungs contributed in any way to the fatal event, or at least to accelerate it. Even at my first visit, I was struck with the livor of his countenance, and the diseased mode of his respiration; and although both became less evident during the following day, yet, on the aggravation of his complaint during the Friday, they returned, and were particularly noted by Dr Hamilton, who then first saw him, and to whom I am indebted for many of the particulars of the history of the last hours of Mr A.'s life, as he attended him with the most unremitting kindness till he expired. Immediately before death, the respiration was also much affected. Still, however, I am not of opinion that the affection of the lungs was the immediate cause of death, or that it even contributed much to aggravate his complaints. The effusion into the air-cells, which alone I think could have had that effect, I consider to have taken place chiefly after he was moribund; because, although he might not at last have strength enough to expectorate, yet, in the first days of his illness, and when he could get out of bed without assistance, he had not much cough, and did not feel any call to expectorate. The slight hæmoptysis on Thursday was evidently connected with the broken down

spot in the right lung ; but this, also, was not considerable enough to cause death ; and, lastly, the general inflammation of the surface of the lungs, we may conjecture, was not very acute, as at no period did he complain of pain, even when urged upon the point. The pulmonic inflammation may have been present in some degree before the disease of the vein, as he was much exposed to causes likely to induce it. In this point of view, it may have operated as a cause predisposing the other organs or structures of the body, and of course the vein, to inflammation, when an exciting cause should be applied.

On the other hand, it is probable, that the recent pulmonic affection, if previously present, was aggravated, and if not, was excited by the diseased state of the vein ; for, in numberless instances in our late epidemic fever, we have had occasion to observe, that, when a general disease was excited, those organs in which there existed any predisposition to disease suffered the most ; and we may therefore suppose in this case, that when the general typhoid fever was excited by the inflammation of the vein, the lungs were disposed to feel its influence ; hence the pleuritis affecting the whole surface of the lungs, —the *apoplexia pulmonalis* of some parts,—and, lastly, the effusion shortly before death.

Again, it is not necessary to resort to the pulmonic disease, to account for the speedy termination in death ; for experience has shewn but too certainly, that inflammation of a vein, when considerable, often cuts off the affected person in eight days.

In regard to the nature of the affection of the arm, although at first, and when confined to the back of the hand, it had much resemblance to what is often called Erysipelas; yet its appearance in the more advanced stage, and still more the dissection, shewed that the cutaneous texture was not the seat of the principal disease. Even at the first, the swelling was much more considerable than in pure erysipelas; and except that it was diffused, it had more the appearance of phlegmon. In fact, it had most resemblance to an anasarcous hand, but I do not remember that it pitted. It differed also from erysipelas, in the absence of tenderness on being touched, which in general is exquisite, when the skin is the seat of active inflammation. Nor was the affection entitled to be considered as *Erysipelas phlegmonodes*, or inflammation of the cellular texture simply, although this was my opinion until dissection proved the contrary. But now upon reflection, and a comparison with undoubted cases of inflamed cellular substance, some diagnostic characters may be pointed out; especially the very remarkable absence of all pain, even upon pressure, unless over the course of the vein, and the patient's feeling no great inability to move the limb, and not being distressed when it was moved; and, lastly, in the apparent slightness of the symptoms. There was, however, it must be admitted, an increased action of the cellular substance of the whole limb, at least in that degree which causes an increased effusion, not of pus or coagulable lymph, as when decidedly

inflamed, but only of serum, such as accompanies all inflammation of a neighbouring texture; and hence that fulness and tension of the limb, which assisted in preventing us from discovering the real nature of the affection. During the life of the patient, and indeed previous to incision, there was little appearance of the vein being the chief seat of the disease, if we except the red streaks running up the arm, and the tenderness being confined to those places where the vein was most superficial; but although the arm was repeatedly and carefully examined by myself and my medical friends, no longitudinal ridge was observed, nor was any cord felt running under the skin.

Perhaps the most important point of inquiry is in regard to the actual exciting cause in this individual instance. That it was connected with the phlegmon upon the knuckle, there can, I think, be little doubt. The veins of that part, and those immediately anastomosing with them, were the most diseased. Indeed, every twig was there thickened and filled with pus, so that at first the pus seemed to be in the cellular substance; but on accurate examination, it was ascertained to be contained exclusively within venous branches. But venous inflammation is not a common attendant, or consequence of phlegmon, and some other cause must be looked for as contributing to the effect. The only circumstance of this kind known to me, was Mr A.'s having opened on the Monday evening, as far as we can make out, the boil on his knuckle with a lancet, and that

he had made use of this lancet about a month before in opening or dilating a sore upon the back of a patient. This individual is still alive, and upon examination I find that he had been affected with carbuncle, which healed slowly after being laid open. Mr A. assured me that he had cleaned the lancet after it was used; but added, that it might be the cause of the soreness of his hand, as he remembered that he had hurt his nose with it, which had in consequence been very sore; but when I saw him, there was no appearance of sore upon his nose remaining.

If the use of this lancet was the immediate exciting cause, this case furnishes an argument that the morbid secretions of an ulcer may act as a poison upon the system of another individual, when introduced by inoculation, although not fatal to the individual by whom it is secreted; and of this many other examples might be adduced. Under this supposition, it would also prove that such morbid secretions may act, although applied in a very minute quantity, since we may be assured that a lancet, which a gentleman would employ upon himself, would at least seem clean; and, lastly, it would prove that such a minute quantity of morbid poison retains its activity for about a month at least.

But even granting that the lancet was loaded with a morbid poison capable of inoculating the system, it appears to me highly improbable that opening with it the cavity of a small abscess would have this effect. In general, when a phlegmon points, and especially after it has burst, the outer parietes

are thin, and possessed of but little vital activity. Indeed, it seems to be the natural process, that the top of a phlegmon should die, and give way to the distending cause within. There also can be little doubt that phlegmons are not unfrequently opened by foul lancets, and yet such accidents as this have not been observed. In fact, the affection which most frequently arises from applying morbid animal matter to a broken surface, is not inflammation confined to the venous structure, but inflammation of the cellular tissue, as I shall endeavour to shew in a future communication.

Upon the whole, I am disposed to think, that Mr A., in opening the boil on his knuckle, had unfortunately penetrated a vein situated beneath it; and perhaps it is as probable that he had inoculated himself with matter from his own body, as that the lancet which he had wiped apparently clean, should have remained so long contaminated.

In another fatal case of inflamed vein, complicated with diffuse cellular inflammation, which was partly under my care, death did not take place until the thirtieth day, and then in consequence of sphacelus of the nates. Its history, with the appearances discovered on dissection, will be given in a subsequent communication.