CLINICAL LECTURE

ON
A CASE OF HEMIPLEGIA OF THE RIGHT SIDE,
ANÆSTHESIA OF THE LEFT, AND UNILATERAL
SWEATING OF THAT SIDE OF THE FACE.

Delivered in the Western Infirmary of Glasgow.

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GENTLEMEN,—The case of James K. (from bed 14, of ward 11), who lies before you, is one of great interest, whether regard be had to the unusual combination of symptoms which he presents, or to the question of diagnosis and treatment. He is forty-nine years of age, and was admitted on January 11th, 1882, suffering from paralysis and from pains in the joints.

He seems to have enjoyed good health until December 1867, when he had a severe attack of rheumatic fever, which lasted for seven weeks, but from which he made a good recovery.

He remained well for about eight years, and then (1875) he began to suffer from giddiness, with a sense of fulness in the neck, which was accompanied by "twitching and a clicking sound" at the nape—especially on stooping, raising heavy weights, or otherwise exerting himself. This continued until the middle of the following year (1876), when one evening, when returning from work, and ascending a stair, he suddenly experienced a "feeling of weakness"; and, supposing that it would soon pass off, he sat down, but, upon attempting to rise again, he was unable to do so. He thinks he was unconscious for a little, or nearly so; he was carried into his house, and then it was found that he had paralysis of both arms and legs, more particularly of the right arm and leg. The right side of the face, too, was paralysed, though not completely. For a very short time after this, he sometimes saw things double. He soon (in some weeks) recovered the loss of power of the left arm and leg, while the paralysis on the right side of the body became gradually less and less pronounced, but never disappeared.

In the winter of 1880, he had a suppurative inflammation, with ulceration of the skin on the inner side of the left knee, the scars of which still remain.

About the beginning of last December (1881), after a wetting, and while straining at stool, he experienced a chilly feeling all over the body, which was immediately followed by an increase of the paralysis of the right arm and leg, and by a recurrence of the rheumatic pains in the shoulder and knee-joints.

For a long time, and gradually supervening upon the first attack of paralysis, he has had well-marked rigidity in the right arm and leg, and, to a slight extent, in the left knee, which was slowly improving until the second attack of paralysis, since which time it has been more marked; and ever since the first attack, he has experienced some numbness and defect of sensation on the left side of the body, which also was improving slowly until the second attack, when it became more pronounced. For a considerable time, too (he cannot say how long, but three years at all events), he has had a tendency to sweating on the left side of the face, which is sometimes very marked, and accompanied by flushing and venous distension. The family history is in every way satisfactory.

On examining this patient, we find that the right side is partially paralysed; the paralysis of the face is very partial, as is shown by the fact that, although he cannot close the eye firmly when the left is kept open, he can do so quite well when they are closed simultaneously. The weakness in the arm and leg is more pronounced, as you see; and the dynamometer with the right hand only registers 35 kilogrammes, while the left indicates 140. In addition to the paralysis, it is to be remarked that there is well-marked rigidity both of the arm and of the leg; and, as you see, when we make him cross his legs and strike the patellar tendon, the leg is jerked up in an exaggerated way, while there is a total absence of the rhythmical pendulum-movement observed in health. On suddenly flexing the foot, however, or on striking the tendo Achillis, we fail to elicit the ankle-clonus. On the left side, there is slight rigidity of the knee, and also exaggeration of the patellar tendon-reflex, though to a less degree; but here is hardly any trace of paralysis left. On testing the sensation on this side, you see that it is very defective as regards touch, pain, and temperature; and that the anæsthesia diminishes from below upwards, although it is quite distinct on the face. The anæsthesia does

not involve the side of the tongue; nor is the eye, as we sometimes find, especially in hysterical cases, affected with colour-blindness.

The only other feature worthy of note is the unilateral sweating of the left side of the face. This is not constant, but is only observed when he exerts himself much, or when, as at present, he is excited; and at these times the face is a good deal congested, and the veins are prominent.

Such being the result of our examination, we have now to endeavour to make out the seat and nature of the lesion.

1. *The Seat of the Lesion.*—When we find defective power on one side of the body and defective sensation upon the other, we generally conclude that the lesion is seated in the spinal cord; but in this case it is evident that we have to deal with a cerebral affection, as the paralysis and anæsthesia affect the face as well as the extremities, and as the first symptoms noted in the report are distinctly head-symptoms. A careful consideration of the case in all its surroundings has led me to suspect that there is double cerebral lesion; that on the right side especially involving the sensory tract (thalamus opticus, peduncular tract in its ascent through the internal capsule, and the optic radiations of Gratiolet); that on the left specially implicating the motor tract (corpus striatum, etc.).*

The rigidity and exaggeration of the patellar tendon-reflexes are doubtless due to secondary degeneration, starting from the seat of the lesions and descending into the lateral columns of the spinal cord: a feature which I need not dwell upon this morning, having recently discussed it fully with you; while the sweating of the left side of the face must be dependent upon a lesion of the cervical sympathetic itself, or, what is more probable, upon the lesions in the brain with which the former is connected.

2. *The Nature of the Lesion.*—Here we enter upon a point of much greater practical importance for the patient, and one with regard to which I am able to speak with greater confidence.

a. The most common cause of cerebral paralysis is, as you know, hæmorrhage—an accident which is most apt to occur in persons who are well advanced in years, and whose vessels are atheromatous and brittle. We cannot, of course, say with certainty that the cerebral vessels are in such a condition; but we have good ground for suspecting it if the superficial vessels which we can examine be diseased. They are, then, tortuous, pulsate visibly, and feel like firm, sometimes beaded cords; but, as you see, our patient's blood-vessels are in a perfectly healthy state, and he has not arrived at that time of life when cerebral hæmorrhage is most common. It is quite true that it is a common lesion at his age (49), as the indirect result of chronic disease of the kidneys; but in his case there is not the slightest suspicion of kidney-disease; and I think, therefore, that we may reasonably exclude cerebral hæmorrhage as the cause of his symptoms, especially if we can find something to account for them more satisfactorily.

b. The attack of rheumatic fever many years ago, of which we have an account in the history, naturally leads us to suspect that embolism of the brain might have occurred, the result of rheumatic endocarditis; but an examination of the heart shows that it is perfectly healthy, and there is no evidence of embolism of the spleen, kidneys, or other organs; so that the embolic theory must be abandoned.

c. A careful examination of the patient has led to the discovery of certain very suspicious symptoms. As you see, the inguinal glands, as well as one of those on the inner side of the upper arm just above the elbow, are enlarged; the skin has a dirty, earthy, muddy tint; a good many scars are very visible on various parts of the trunk, and more particularly on the inner side of the left knee, which are more or less rounded, and in the latter situation their edges are dark in tint; and recently he has complained of pains in the joints, although it must be admitted that these have not been nocturnal in character. On inquiring further into the history of the case, I am informed that four-and-twenty years ago he had a single hard sore on the penis close to the frenum, the cicatrix of which, you observe, is still quite distinct, and which, he tells us, was followed by well-marked constitutional symptoms.

These facts give rise to a strong suspicion that his present symptoms

* This patient was shown at the Glasgow Pathological and Clinical Society, February 14th, 1882; and, in the discussion which followed, Dr. Alexander Robertson said that, with regard to the nature of the disease, the doubt had been removed by the results of the treatment; but, with regard to the situation of the lesion, he thought there was reason for difference of opinion. It was always undesirable to assume the existence of two lesions, if one would account for the symptoms, and he thought it remarkable that two cerebral lesions should occur simultaneously. If we passed to the base of the brain, we might find a part where a single lesion might account for the symptoms, and he thought it not unlikely that a lesion in the pons might cause them. With regard to the sweating, the pons Varolii, too, had a good deal to do in presiding over vaso-motor action, although, from the history of pain at the nape of the neck, there might quite well be some implication of the cervical sympathetic.

have a syphilitic basis; and, if I am correct in the view that the cerebral lesion is multiple, it is a further corroboration of the syphilitic theory, as we know that syphilitic lesions of the nervous system are often multiple. At all events, we shall put him fully under the influence of mercury by rubbing a drachm of strong mercurial ointment into some soft part of the skin daily; and we shall watch the effects with much interest. But, even should the result be negative, it will by no means prove that the lesion is not primarily syphilitic; for while, by means of mercury, we can dissipate existing syphilitic manifestations, we cannot expect to influence the secondary non-syphilitic changes which are apt to ensue in the surrounding tissues.

[SEQUEL OF THE CASE.—The treatment was commenced upon January 29th, 1882, and was continued for ten days (one ounce and two drachms of mercurial ointment having been used in that time), when it was suspended, owing to the gums being slightly affected. On February 10th, three days after the mercurial treatment was stopped, an examination of the patient was made. He told us that the fullness and discomfort in the head, of which he complained, had entirely disappeared, and altogether he felt quite a different man. The unilateral sweating, though still present on excitement, was a good deal less pronounced; the anæsthesia, tested as before, was found to be entirely gone; and the paralysis was very greatly improved, as he had much more power in the leg, and could walk a great deal better; and the dynamometer with the right hand now registered seventy kilogrammes (instead of thirty-five before the treatment was commenced). And what is very remarkable—and the explanation of which is very difficult to understand—is, that there is a very considerable improvement in the rigidity, although the patellar tendon-reflexes are still exaggerated.] The treatment above mentioned was to be continued, but as the patient left the hospital the further progress of the case is unknown.

THERAPEUTIC EFFECTS OF HYOSCYAMINE.

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[Communicated by the Director-General of the Medical Department of the Navy.]

HYOSCYAMINE has been in use in this hospital for more than two years, and its effects have been the subject of careful observation on the part of Dr. Duncan Hilston, the principal medical officer, and myself, during that time. At his suggestion, I have drawn up the following account of its use, dose, and mode of administration. The views set forth are, therefore, the outcome of our combined observation, and of notes made from day to day in the hospital records. The report will summarise, as shortly as possible, the therapeutic experience of this alkaloid which has been gained, pointing out the dangers and difficulties met with in its use, as well as the good effects which have seemed to follow from its administration. A few typical cases will be selected to illustrate its suitability and action in certain excited conditions of insane patients.

The dose and mode of administration of such a powerful alkaloid first demanded most careful consideration. Numerous notices of the use of hyoscyamine have appeared, from time to time, in the current medical literature; but the dose given or suggested has varied in the most startling way, from one-hundredth to three-fourths of a grain, or even a grain; while important and equal results have been supposed to follow each of these extreme doses in the hands of different prescribers. Then, again, no solution of a recognised and accepted standard strength had been decided on. Every writer tried to find for himself what was most convenient.

The form of the alkaloid used here has been, invariably, Merck's crystalline hyoscyamine. In the earlier instances, it was used in a solution of one grain in two hundred, administered by the mouth, in gradually increasing doses, beginning with one-hundredth of a grain. No observable effect was produced until one-twentieth of a grain was given at a time, and no very marked effect followed such a dose. It was, therefore, determined to adopt a solution of more convenient strength, and one more in harmony with the common pharmacopœial alkaloids—namely, four grains to the ounce. The following formula for its preparation was brought into use, and has been found to meet every requirement as to strength, but lacks stability: Hyoscyamine (Merck's crystalline), four grains; glycerine, distilled water, of each half an ounce; carbolic acid, two minims; dissolve without heat. Dose, four to eight minims, given hypodermically.

It is very important to make the solution without heat, as heat renders the alkaloid nearly inert. Hyoscyamine is a most unstable alkaloid, and soon decomposes; so that the strength of any solution yet devised cannot be depended on for more than a month after its preparation. With this solution, some satisfactory results were obtained;

but, before giving one or two instances of this, it may be well to place on record the dangerous experience gained in cases where large doses were given by the mouth. The effects of the hyoscyamine, when so administered, varied much, both as to the time before it appeared, and also as to its intensity and duration. This uncertainty of action was found to depend on the state of the digestion: If the alkaloid were given shortly after a meal, the effect was slight and transitory. Not recognising this, at first, the dose had been gradually increased till half-a-grain was reached. As patients seemed to bear large doses well, an attempt was now made to prepare a special solution, for hypodermic use, of equal strength with the pharmacopœial hypodermic solution of morphia—namely, five grains to the drachm. A solution of this strength could only be made by the aid of heat; and, as this rendered the alkaloid nearly inert, the attempt was not repeated, especially as further experience showed such a solution to be unnecessary.

CASE I.—An useful lesson was taught by the case of William S., aged 36, a bandsman, who had been an inmate of the asylum for the last eight years, suffering from chronic mania, with occasional outbursts of violence. On March 9th, 1881, he was very violent and destructive, and refused his breakfast. At 8 A.M., he was given one-fourth of a grain of hyoscyamine by the mouth. By midday, his pupils were widely dilated, and he had become quiet. This quiet gradually deepened, though he did not sleep; and by 6 P.M. he was almost powerless, unable to stand without assistance, hardly able to move his hands or to speak. His breathing was unaffected; but his pulse had fallen from its usual frequency of 75 to 50, and was, in addition, very weak; while the temperature in the axilla was only 96.2°, his ordinary range being 97.6° to 98.4°. His extremities were cold and clammy. His throat, so far as could be made out, was moist; at least, he could swallow with ease. This state of affairs was serious, and the cause of grave anxiety for a time. He was placed in bed, and hot-water bags applied to his feet, and an ounce of brandy with hot water and sugar was given. The extreme effects of the hyoscyamine gradually passed off, and by 10 P.M. his pulse and temperature had again become natural. He slept all night, and awoke in his usual state, except that his pupils remained dilated for forty-eight hours, and during that time he was disinclined for exertion. He has not been violent since, though his chronic mania continues.

In this case, the dose of hyoscyamine was, beyond doubt, too powerful, and was followed by dangerous symptoms of collapse, from which, fortunately, the patient recovered; but the experience gained acted as a grave warning, and called attention sharply to the risk incurred in using such large doses of this powerful alkaloid. As larger doses had been given with impunity, it was assumed that the unusually energetic action of the drug in this case depended on the state of the stomach, as regards digestion, when the medicine entered it. The stomach was empty, as the man had refused his breakfast. This experience, and another similar one, where the symptoms were nearly as alarming, decided the point in favour of smaller doses, given by the hypodermic method.

CASE II serves to illustrate some points in the use of this drug, and may be taken as a type of patient in whom the gain was marked and immediate. C. C., aged 40, stoker, was admitted on November 4th, 1881, for melancholia. From gloomy and silent depression, he gradually passed into a state of noisy and destructive mania, shouting incoherently, throwing himself off his bed, and dashing himself about, till he was much bruised, in spite of constant care on the part of the attendants. His restlessness was incessant, and he passed several days in succession without sleep. The use of hyoscyamine was begun in this case by the hypodermic injection of four minims (one-thirtieth of a grain) of the solution mentioned above. This was continued twice daily for several days, without any marked effect except that of moderately dilating the pupils. The drug was then omitted for twenty-four hours, at the end of which time his pupils had contracted to their usual size. As such a dose was not sufficient to control or moderate the restless violence of this patient, it was increased to eight minims (one-fifteenth of a grain), given hypodermically at 6 P.M. In fifteen minutes, his pupils began to dilate, and, becoming quieter, he lay down in bed. Just before this, he had been jumping about the ward, resenting and resisting all persuasion to remain quiet or lie down. At 10 P.M. he was sound asleep, his pupils widely dilated. He could, however, be easily roused, but went to sleep again on being let alone, and slept for seven hours, and when he awoke his pupils had begun to contract again. He remained during that day quieter and more easily managed than he had been for a long time. The effect of the drug passed off in about twenty-four hours. We had now got the measure of this patient's power of resistance to the drug, and were thus able to regulate the dose in accordance with his seeming requirements. Often, from a restless, noisy, and destructive condition, he passed, while under