CLINICAL LECTURE

ON A

CASE OF DEATH IN COMA AFTER THE USE OF
ETHER: WITH REMARKS ON THE
CHOICE OF ANÆSTHETICS.

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YOU are aware, Gentlemen, that, during the last four months, we have been giving ether instead of chloroform. Last week, I explained to you our reasons for the change. I now have to state those which have induced me in the case just operated upon to revert to our old favourite. The patient, who has just left the theatre, is an *old* man; and I have recently had in private practice a case which leads me to suspect that, after all, chloroform for the aged may, perhaps, be the safer anæsthetic. The facts as to the case alluded to are these. I had to operate upon an old gentleman from Leighton Buzzard, in whom a gland under the jaw had become cancerous after the successful removal of the primary disease from his cheek. He was 84 years of age, and in feeble health. We employed ether as the anæsthetic, and it seemed at the time to act very satisfactorily. He was kept thoroughly under its influence, but with repeated stages of partial waking, for about twenty minutes. We had to tie the facial artery, but the operation did not involve any unusual loss of blood, and his pulse never flagged in the least. I ought to say that during part of the operation we had compressed the carotid (the left side); indeed, we began with this, for it was essential to save bleeding as much as possible. I do not think that this compression of the carotid had anything to do with the fatal result, but, as it is just possible that it had, it is right to mention it. When the operation was over and the wound closed, I was in every respect well satisfied with the state of things. Our patient had a good pulse at about 80; his face looked well, though perhaps a little dusky. I was obliged to leave him, on account of another engagement, directly after the operation, and before he had recovered enough to speak or to take any notice of what I said to him, but there was nothing in his condition then which caused me the slightest anxiety. Mr. Nettleship, who stayed with him half-an-hour longer, did not observe anything unusual in his condition, but he had not spoken. The operation was at two o'clock, and I saw him again at five. His daughters then told me that he had got out of bed several times since the operation to pass urine, but had seemed confused and stupid and had not spoken to them. He seemed inclined to sleep, and I could not get him to speak to me. At ten o'clock I saw him again, and now became alarmed to find that his unconsciousness was deepening. His cheeks puffed in breathing, and we could not induce any evidence of consciousness. He would occasionally move his left arm, but his right seemed powerless. He had occasional twitching of the right cheek. We had mustard plasters applied to the calves of his legs, and gave him an enema of turpentine. On the following morning his symptoms remained much the same, but he had had several convulsive seizures in which the spasms affected chiefly the muscles of the right side of the face. It should be observed that his left cheek was distorted and puckered by the scar of a former operation. We noticed that he kept his eyes constantly directed to the left side. He had passed urine in the bed. As he could not be got to swallow any food, we now began feeding him regularly by means of a stomach-tube. Although I much feared that hæmorrhagic apoplexy had taken place, I was not without hope that the symptoms were merely due to prolonged action of the anæsthetic, and that he might yet rally. In the evening he seemed rather better, but was still absolutely unconscious, and was still liable to occasional attacks of spasmodic twitching of the right cheek, affecting also, though to a less extent, his right arm. These attacks would last from five to ten minutes, and when they ceased he would appear much exhausted. During the following night several more severe attacks occurred, and he died at six o'clock the next morning. Thus he had lived about forty hours after the operation, and during the whole of this time he had never spoken intelligibly with the exception of having said "no" once or twice during the first few hours. We must bear in mind that he had been at first able to stand, to get out of bed and to pass his urine; that he had subsequently had indications of incomplete hemiplegia of the right side, with spasmodic twitching of the same and turning of the eyes to the left. I confidently expected that

we should find at the autopsy a cerebral hæmorrhage on the left side near the fissure of Sylvius.

Dr. Hughlings Jackson was kindly present with us at the *post mortem* examination, and dissected the brain and its arteries most carefully, but with the result that nothing whatever was found bearing upon the cause of death. On the *right* side of the brain there was a cyst which had evidently resulted from an old hæmorrhagic clot, and which was probably connected with the history of a sort of seizure nine or ten years ago, from which he had perfectly recovered. With the exception of this and of the results of general senile atrophy, his brain appeared quite healthy. We dissected his left carotid artery, and found that it was quite pervious and not in the least injured by the compression. It is possible that his kidneys had some share in producing the cerebral symptoms; the right one was small, contracted, and very decidedly granular, whilst in its pelvis was a calculus which had a moulded conical projection on one side, looking as if it had fitted into the commencement of the ureter; the other kidney was also somewhat granular, but not so far advanced. The chest was not examined, but he had shown no symptoms pointing either to heart or lungs. The wonder to us all was that no local cerebral lesion could be found.

Now, in looking back upon this case, I cannot help suspecting that the anæsthetic was largely to blame for the patient's death. The two other elements which we must keep in view are the general senile degeneration of tissues, and the disordered blood consequent on renal disease. Perhaps you will ask why I ventured to do an operation or to give an anæsthetic to so old a man; and in reply to this I must allege that it was done in order to save him from one of the most horrible forms of death, viz., from cancerous ulceration under the jaw. The gland mass, although quite movable, had already softened in the middle, and would soon have given way. Both he and his relatives were made thoroughly aware of the danger which attended the operation, and they elected, and I think wisely, to encounter it. It was out of the question to do it without an anæsthetic. Then we had the fact that only four months before he had borne a much more prolonged operation with impunity, and had recovered from it perfectly well; on that occasion I gave chloroform, and kept him under its influence at least half an hour, for we removed a large part of his cheek by means of the wire heated by galvanism. The wire broke twice, and our operation was protracted. On this occasion our patient was for several days after the operation sullen and taciturn in manner, but he had no tendency to coma. I am not certain that I have ever given chloroform or performed an operation upon an older patient, but I have operated many times for cataract and other maladies on patients nearly as old. I believe that it is a general remark that the aged bear chloroform very well, and I have never felt the least compunction about giving it to them when necessary. There can, I think, be no doubt that ether, as a rule, causes more cerebral excitement than does chloroform; patients are more apt to struggle violently during its use, and they are sometimes very unmanageable, as if drunk, when its effects are passing off. During its exhibition also it is necessary to interfere much more with the access of air, and thus to cause more venous congestion. Now, in all these features we may suspect some degree of risk to a senile and degenerate brain. The anæsthesia of ether more nearly approaches the state of alcoholic intoxication than does that of chloroform. Profound intoxication would be, I should suppose, attended with more risk in an old than in a young person, and the risk would, of course, be increased if the kidneys were unsound. I may, perhaps, be somewhat hasty in forming a conclusion from a single case, but I may own that in future I shall not feel inclined to give ether to aged people, and I come to this conclusion the more easily because in them chloroform appears to be attended by little or no risk.

In reference to the general question as to the choice of anæsthetics, I may say that I am strongly of opinion that we ought, with the exception of a few cases, to allow ether to supersede chloroform. I have now employed ether in so many cases, both at this hospital, at Moorfields, and in private practice, that I am justified in forming an opinion as to its general applicability. It appears to me that you can do anything with it that you can do with chloroform. It is not quite so rapid in its action, and, on the whole, not quite so convenient to use. Patients complain also more of its disagreeable consequences in the way of headache, etc., but these are matters really of comparatively little importance in the majority of operation cases. Now and then it happens that a patient after ether struggles and becomes violent in the stage preceding the full return of consciousness, and in fear of this result I have never yet given it for extraction of cataract; nor do I ever intend to do so, for, as our patients in these operations are always elderly, they are those who bear chloroform well and ether ill. I do not think that at Moorfields we have ever lost by chloroform a patient in whom it was given for the extraction of cataract. Those who have died, and

there have been several (none under my own care), have almost always been young patients, and generally, I think, for strabismus operations. Then, again, for young infants, in whom chloroform seems to be exceptionally safe, I think I shall still continue to prefer it. For such operations as hare-lip, for instance, chloroform is more convenient.

At Moorfields we have for long been in the habit of using methylene. It is certainly more rapid in its action than chloroform, but I have never been sufficiently impressed, either with its superior convenience or its additional safety, to be induced to employ it either in private practice or here. I have seen several cases in which alarming symptoms occurred during its use, but never an actual death.

Our one reason for abandoning chloroform is its danger. If we could get rid of this, it would certainly stand without rival. My own experience of chloroform has been very considerable, and for a great variety of cases. I have had but a single death in my own practice, but I have been the witness of several in the practice of others. I have also had amongst my own patients several very alarming occurrences, in which it was with the greatest difficulty that death was prevented. In the case of a girl at Reigate, in whom apparent death occurred during excision of the knee, we had to perform artificial respiration for at least ten minutes before any signs of reanimation occurred. In another case at the London Hospital, in an amputation of the thigh, the period during which I thought the patient dead was almost as long. In both these instances, death-like pallor of face and absence of pulse (cardiac syncope) were the alarming symptoms; and in both artificial respiration, irritation of the surface, and the use of brandy enemata, were the means resorted to. In addition to them, I have had many cases in which the pulse failed temporarily, and in which we had to begin artificial respiration in order to ward off the more dangerous condition. During the last four or five years, I think I have had fewer alarming cases of this kind than formerly; and I attribute this in part to the skill and care of those who have given chloroform for me, and in part to the fact that I have been very particular as to the administration of stimulants (brandy) before using the anæsthetic. I have never of late used chloroform without knowing that my patient had fasted for some hours, and had taken a dose of brandy within the last half-hour. These seem to me the two principal points; but, if you insist upon the one (the fasting), it is additionally important that you attend to the other. In a fasting and exhausted state of the system, we have the condition in which cardiac syncope is the most likely to occur.

The case which I have alluded to as the only one in which I have had death actually occur, was that of a man much exhausted by a month's suppuration from a compound fracture with his elbow-joint. I saw that he was very nervous when he was put on the operating-table, and I ought to have given him brandy before proceeding. His heart failed within five minutes of the commencement of the inhalation, and before I had begun the operation.* If your patient is unusually feeble, I do not think it well to do an operation early in the morning—i.e., before the first meal. Indeed, in all cases in which an early appointment is made, it is best to tell the patient to take some fluid food, coffee, beef-tea, or milk, about two hours before the time fixed. Under most other circumstances I should insist upon a four hours' fast, with the double object of preventing the danger which attends vomiting during the anæsthesia, and the inconvenience and suffering which it sometimes produces afterwards. As regards the quantity of brandy to be given, that should be in proportion to the patient's age and habits, bearing in mind that it is better to give too much than too little. It is given in order to act as what is called "a diffusible stimulant;" which, I suppose, means that it is to keep the blood-vessels well open, and thus facilitate and sustain the circulation. Ether is an agent of a similar class, and hence its freedom from risk as compared with chloroform. Opium also acts in the same way, and I have no doubt that the administration of a good dose of opium, or the inhalation of ether for a few minutes before using chloroform would, either of them, make the latter much more safe.

There is just one other little matter to which I wish to advert. You may have observed that in cases in which the anæsthetic is used in order that the actual cautery may be applied to some part of the face, as we not unfrequently do for lupus and rodent carcinoma, I always give chloroform. Sometimes we give ether for a few minutes first, but we always take care that the vapour has had time to pass away before the cautery is brought near to the face. The reason for this is obvious; the vapour of ether is very inflammable, and a little thoughtlessness might easily lead to a terrible accident. It may be well also, for the same reason, to avoid employing ether by candle-light.

* This case occurred about ten years ago, and was published at the time.

CLINICAL LECTURE ON CASES OF PARALYSIS AGITANS.

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THE first point for our consideration is, to what recognised place in a nosology the foregoing cases are to be referred. The prominent symptom in all was tremor, persistent and continuous. Paralysis could hardly be said to be present in any, except perhaps the last. The question then arises, Does such tremor as existed in these cases sufficiently characterise them as instances of paralysis agitans? Eulenberg, one of the best recent authorities, would, I suppose, say no; for in some passages he questions the reality of recorded instances where there was no evident paralysis, not even excepting Dr. Reynolds's case of paralytic tremor. In others, however, he speaks of tremor as the initial and essential symptom of the disease, and of paralysis as a secondary one, which ensues after a longer or shorter time. Thus he appears to consider that the diagnosis of paralysis agitans cannot be made in the absence of some amount of paralysis; and that, therefore, in the early period of the disease, we are for the most part unable to recognise it. He regards, if I understand him aright, simple though continuous tremor as a distinct disease. This, I think, is over-refining. Dr. Sanders, in his excellent article in Reynolds's *System of Medicine*, vol. ii, p. 198, takes a sounder position. He distinguishes *simple* or *passive* tremor, occurring only during a voluntary action, from *spasmodic* or *active* tremor, taking place even during rest and when the parts are supported. All tremors he admits to be signs of weakness in the nerve-centres; but the *passive* tremor he regards as evidently due to want of power only, while the *active* implies some irritation in the motor nerve-centres. The latter is characteristic of paralysis agitans, and furnishes the ground of diagnosis. This seems to me, under the circumstance, the best rule to follow. If, indeed, we knew anything positive respecting the pathological change which accompanies the malady, if the results of necropsies had not been so frequently negative, it would be better to be guided by the *post mortem* than by the *ante mortem* phenomena; but, as we are quite in the dark respecting the pathology, we must rely on the symptoms for the present; and, though it may be true that in typical cases there exists evident impairment of motor power, yet the absence of this does not constitute sufficient ground for denying the genuineness of cases and excluding them from this group, which possess its most characteristic features. We might as well refuse to admit a case, otherwise well characterised, to be pneumonia, because of the absence of rusty sputa. The essence of the disorder is clearly not paralysis, but clonic spasm, as we must conclude from this symptom being persistent from the commencement to the close, and giving its special features to the disease. Muscular debility in the later stages undoubtedly becomes, or may become, very great; but even then it is rather the debility of exhaustion and decay, than true paralysis. It is in elderly persons that we find the best marked examples of paralysis agitans; and in them, as Dr. Sanders says, the effects of senile decay (among which muscular weakness figures conspicuously) are necessarily mixed up with the other symptoms. Besides, in bad cases, the continued unrest must tell heavily on the nervous system in the way of exhaustion. It is further to be considered that, when we observe no evident sign of paralysis in a patient, we are scarcely entitled to conclude certainly that nothing of the kind exists. A man may be able to grasp pretty forcibly and walk fairly well; but, unless we had tested by some method the amount and endurance of his muscular power previously to his illness, we cannot positively affirm that they are undiminished. My third case has some bearing on this point. The spasmodic movements in this patient were extremely forcible—more than I could control; yet his force for a continued effort was notably less than mine. His right upper limb was more severely affected than his left. When recovering, he could hold out a weight with the latter steadily for several seconds; but, when he attempted to do the same with the right, tremor came on immediately, and the arm dropped. It was quite clear that tremor coincided with failure of contractile power—that the right arm was, not only less steady, but less strong, than the left. As improvement went on, ability for sustained muscular effort was regained. I think we do not sufficiently estimate the value of endurance—of staying power—as a test of the efficiency of a nervo-muscular apparatus. It is this quality, especially when well developed in the heart, which enables a man to