

HISTORICAL NOTE

Death in Bristol

An exchange of views between Augustin Prichard and John Snow

R. M. WELLER

In 1858, Augustin Prichard, FRCS (1818-1898) (Fig. 1), Honorary Surgeon to the Bristol Royal Infirmary, reported a death in a record of the transactions of the Bath and Bristol branch of the British Medical Association dated 25 February 1858 which was published in the *British Medical Journal*.¹

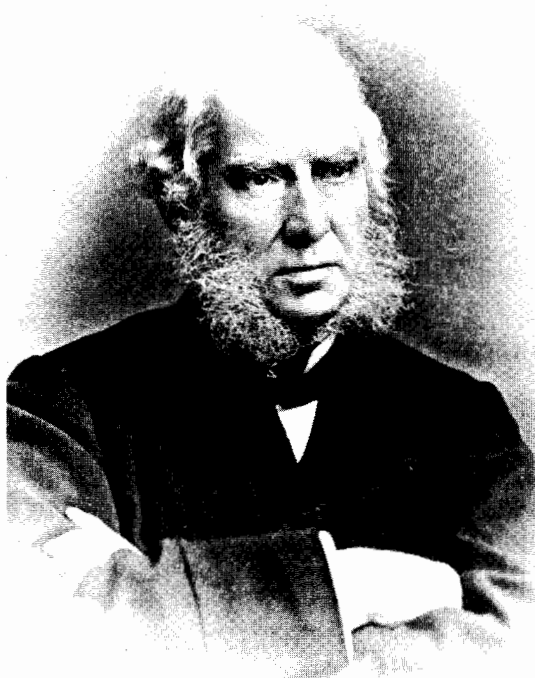


Fig. 1. Augustin Prichard, FRCS (1818-1898).

R. M. Weller, FFARCS, Consultant Anaesthetist, Frenchay Hospital, Bristol.

Case report

The patient, a man of 49 years, was admitted for 'excision of the elbow for long continued disease of the joint'. 'His health had suffered, inasmuch as he was greatly out of condition, from the discharge and constant pains; but he showed no sign of organic disease.'

On Friday, 12 February 'he walked into the operating room . . . and got up without much help and lay down upon the table. Mr Powell, the assistant house surgeon examined his chest as he invariably does before administering chloroform, but he detected nothing abnormal. The patient had taken no food since breakfast: this rule is always followed, when possible, to prevent the chance of vomiting, and the danger of solid food impeding respiration by obstructing the glottis when the patient is insensible from the effects of chloroform. A drachm* of chloroform (which had been obtained from Duncan and Flockhart of Edinburgh) was poured upon the centre of a hollow sponge, and held over the patient's nose and mouth. He asked whether he was to breathe it; and was, of course, told to do so. I then found that he still had his waistcoat on, and directed him to sit up and take it off, which he did, the sponge being removed for the purpose; and after he lay down, I again made him sit up and remove the shirt sleeve from the diseased arm, a process that took 2 or 3 minutes, in consequence of the pain produced by any sudden movements of the limb. He then lay down again, and continued to inhale a portion of the same drachm of chloroform which had been evaporating all this time. I turned round to speak to some of the surgeons of the Infirmary, who were standing near the fire, and in about 2 minutes, my attention was drawn to the patient by the assistant housesurgeon saying "this patient does not bear chloroform well". He was then gasping but not breathing; his limbs were moving slowly and irregularly in the convulsive motion of death; the eyes were fixed, with dilated pupils; and his pulse had stopped; and he was, in point of fact, dead, as surely as, and more rapidly than, if he had taken a large dose of prussic acid.'

'We tried every means of restoration. A powerful battery was at hand, and going, and was applied at once. I opened his trachea; and we kept up artificial respiration for half an hour, by blowing into the tube and pressing the abdomen alternately. The battery was applied with sufficient strength to contract forcibly the muscles of the face, neck and trunk, and to produce the movements of respiration, but without affecting the heart in the slightest degree; and at the suggestion of one present, I injected a warm saline solution into the cephalic vein, to try to stimulate the heart; but all our efforts were in vain, for the man was dead.'

Autopsy

The post-mortem examination showed nothing abnormal, except a heart much covered with fat, with the muscular structure generally pale, containing fat disposed in rows among the fibrillae.

Prichard's comments

Prichard's report continues with some remarks on the case which emphasised his lack of faith in anaesthesia.

* One drachm = 3.4 ml.

'I need hardly say that to witness a scene of the kind which I have described impresses most forcibly upon us the grave responsibility we incur when we use chloroform for any but the most severe operation, and makes us realise the dangers which we have, up to this period, escaped.'

'I may, perhaps, be allowed to record my present opinion respecting chloroform, and to repeat what I said when I had the honour of reading the annual address before the members of the Branch last summer. I then said, and still think, that "if we are in the constant habit of using any agent which destroys life once in the course of some thousand cases, it is a very grave matter", and that "we are not justified in using it in all trivial operations"; It should never be administered when the stomach is full; and it should be given, as has been recommended by others, diluted with alcohol or ether and, of the two, the former is to be preferred. The horizontal position should always be maintained; and I believe that the danger would be lessened were the patient to take, immediately before the inhalation of the chloroform, a glass of wine or brandy and water, or some other effective stimulus.'

Local discussion

Various suggestions were made to improve the safety of chloroform in a discussion that followed Prichard's report. While we might agree that patients with fatty degeneration of the heart need less chloroform, and that it should be given slowly and well diluted with atmospheric air, the suggestion of a Dr Davey would perhaps no longer find favour. He, 'considered that, in cases having such a fatal tendency, a stimulant applied over the solar plexus was the most effective remedy. A piece of tow or rag, dipped in brandy, placed on the epigastrium, and then set fire to, was a most effective stimulant of the solar plexus. Chloroform should be administered so gradually as to effect only the cerebro-spinal system. As fatal cases would occasionally occur, we must, beforehand, be prepared with remedies to relieve the otherwise fatal syncope. The more effective were stimulating enemata, cold affusion, and rapid vesication of the skin.'

The case was summed up by Dr Richard Budd, Physician to the North Devon Infirmary. He observed 'that every member of the profession must keenly feel the importance of such cases . . .'. The patient 'died from the primary action of the chloroform on the cardiac ganglia, whereby the action of that single muscle, on which all the functions of life depend, was instantaneously stopped. The fatal cases by use of chloroform must be divided into two groups: in one, death arose from prolonged use of the remedy, the whole tissues of the body being permeated by the poison; in the other group, it was fatal by the impression on the nerves of the heart.'

John Snow's criticisms

John Snow (1813–1858), only 1 week later, replied in an original communication, entitled *The Recent Death from Chloroform at Bristol*.² He agreed with Dr Budd's summary and went on to say that 'in six of the recorded cases, the paralysis of the heart took place, as in the recent case at Bristol, without insensibility having been previously induced. In the remaining cases, however, the patients were rendered more or less insensible before the fatal accident occurred; and in four cases there was an evident over action of chloroform on the brain, in addition to its fatal action on the heart.'

He went on to refer to another death that had occurred in Bristol on 21 January 1854, reported as the first to occur there.³ This patient was a woman of 59 years, with an old dislocation of the humerus. 'She commenced the inhalation of one drachm of chloroform at 2.00 p.m. in bed in her ward. Nothing unusual occurring in the patient's general condition during inhalation, a second drachm, in about 5 minutes from the commencement of the first, was poured upon the sponge and the inhalation was continued. Almost immediately after the addition of the second drachm, the chloroform was withdrawn as the patient's breathing became stertorous; and immediately after her pulse, which had hitherto continued pretty firm, was suddenly imperceptible, the respiration ceasing at the same time.'

Resuscitation, consisting of tracheostomy, artificial respiration, galvanic stimulation, water splashed on the face, and the opening of a window close to the patient, although carried on for an hour, was unsuccessful. The post mortem findings showed coronary atheroma and 'incipient fatty degeneration' of the heart.

Snow, in his paper, goes on to give a brief résumé of how chloroform should be given safely. He recommends 4 or 5% chloroform in 95 or 96% air and states that sudden death occurs, without insensibility, when vapour double this concentration was inhaled. He then criticised most strongly the use of a sponge or handkerchief, instead of a calibrated vapouriser. To refute the suggestion that death was the result of some abnormality of the patient, and not iatrogenic, he quoted eleven out of fifty deaths where the patients had survived a previous chloroform anaesthetic.

Snow then, referring to the death of 1854, stated that diseased coronary arteries and fatty degeneration 'is not at all uncommon in patients who inhale chloroform'. With a touch of the Nelson, he declares that 'the only patient I have lost while inhaling chloroform had, indeed, an advanced fatty degeneration of the heart, of which we were aware during his life. But it is my opinion that he died of his heart disease, and not of the chloroform.'

Later, he states that 'I cannot agree with Mr Prichard and others who propose to diminish the number of accidents from chloroform by restraining its use to a few great operations, as I consider that accidents are more likely to be avoided by a constant familiarity with the agent. The medical officers of Guy's and St Thomas's Hospitals had a strong objection to narcotism by inhalation for the first 2 or 3 years after the practice was introduced, and chloroform was used much less frequently in these institutions than in the rest of the hospitals in London; yet it was in those two hospitals that two deaths from chloroform occurred before any such accident had happened in any other hospital in this metropolis.'

Snow finished his article by extolling the virtues of ether.

'It should be recollected that the prevention of the pain of operations did not commence with chloroform. It was as thoroughly and completely established with sulphuric ether as ever it can be.' 'Sulphuric ether is apparently altogether incapable of causing sudden accidents like those which have occurred with chloroform. It is still very extensively used in America and some parts of the continent of Europe, and I believe that no accident has ever occurred from its use, unless it be one in France, which is, however, doubtful. It is a matter both for surprise and regret that those surgeons in England who do not feel they can use chloroform with safety, do not again resort to the use of sulphuric ether.*'

* This advocacy of ether by Snow pre-dates the re-introduction of ether at St George's Hospital, London, by J. W. Haward by 13 years.⁴

Prichard's response

Snow's article obviously wounded Prichard to the quick. With a postal system and a speed of publication that we would envy today, he replied in a letter the very next week, the complete text of which was as follows.⁵

'Sir, the communication of Dr Snow requires a reply. The subject is of a gravity amounting almost to solemnity and our sole object should be to hit upon what is right in the matter. I think, however, that it was rather cruel in Dr Snow to bring so prominently forward as the text of his long paper, the two unfortunate cases which have occurred in Bristol, as if they had been the only fatal instances on record.'

'It is as yet quite undetermined what persons can take chloroform safely or otherwise, but, if one rule has been deduced more than another by common consent, it is that a fatty heart contradicts the use of anaesthetics and this is allowed by all, except Dr Snow, who even says that in a death that occurred while he was administering chloroform, the cause was the fatty heart and not the chloroform. Anyone else would come to the opposite conclusion; that this was a case, if ever there was one, which strongly supported the opinion that fatty degeneration of the heart was a reason against the use of anaesthetics if the disease is of an extent that may be discovered during life.'

'Dr Snow thinks that ether is safe because no one has recorded a death from its use; but, obviously, it is not the particular agent, it is the condition of insensibility, however produced, that puts the patient into such peril of his life. If one of us were to lose a brother or a son from chloroform, given to save the pain of a trivial operation, I think it would influence our practice of giving anaesthetics and, if so, we ought to deal in others in like manner.'

'Dr Snow, with the rest of the profession, seems to allow that we cannot tell beforehand in what cases chloroform is likely to be dangerous; and while admitting this, he again comes to an inference directly opposite to that which others would arrive at from the same premises. My conclusion would be that I ought to give the dangerous agent as seldom as possible and thus I should run fewer risks. He says that accidents are more likely to be avoided by a constant familiarity with it. Dr Snow has written more about chloroform than anyone else and thus is looked upon, to a certain extent, as an authority upon the subject, especially by those who are restricted to private practice, and thus see less of the effects of the drug; but to speak plainly, and at the same time without meaning to say anything that may, in any light, be considered offensive to him, I think that the constant changes in the particular form of anaesthetic which he advises, or the proportion of alcohol to be used, or the employment or otherwise of the instrument which he recommends, occurring in his different papers, one after another, not only shake one's confidence in him as a safe guide, but prove, which is much more to the purpose, that he has himself very little confidence in the safety of these agents. I venture to prophesy that anaesthetics will more and more fall into disuse and will ultimately be had recourse to only for the most severe or protracted operations. I am, etc. Augustin Prichard. Clifton, Bristol.'

What a memorable quotation with which to finish his letter!

John Snow continues the correspondence.

John Snow, of course, did not let matters rest there. With the same remarkable speed his reply appeared as another letter the next week.⁶

‘Sir, I am surprised to find that Mr Prichard has taken offence at my late communication on chloroform, and for a reason that is purely imaginary. He says that I referred to the two unfortunate cases that occurred in Bristol as if they were the only fatal instances on record. On the contrary, I referred to them only in comparison with all the other cases . . . I cannot perceive that there was any cruelty in referring to two cases which had been published in the Journal in which I was writing; but there would have been a cruelty in my neglecting to speak, on any suitable opportunity, of the advantages and perfect safety of chloroform, when properly and safely managed, which I have witnessed almost daily for more than ten years. The proposal of Mr Prichard to use anaesthetics in a few great operations would almost abolish the greatest improvement ever made in surgery; for the fact of their application being so limited would make them a terror to the few patients who were allowed to inhale them.’

Snow then reiterated the relative safety of ether, suggesting that if the ‘Anaesthetist’ was not satisfied that he could give chloroform he should give ether instead. He restated the importance of the amount of air, diluting the vapour and pointed out that the state of insensibility was not dangerous *per se*.

‘I thought I had made my opinion sufficiently clear in my paper, that chloroform may be given with safety to every patient requiring a surgical operation; and that danger does not depend on the kind of patient, but on the way the agent is given. I am not aware of ever having written opinions which are inconsistent with each other. I have used the same kind of chloroform inhaler for upwards of 10 years, with very slight alteration; and during the progress of operations on the face, when I cannot use the inhaler, I employ the mixture of equal parts by measure of chloroform and spirit, which I have thought it right to recommend to those who do not wish to study and adopt an inhaler. I use chloroform generally in preference to sulphuric ether, because it is more convenient and can be made equally safe.’

‘I admit that most persons who have written on chloroform are opposed to its use in cases of fatty degeneration of the heart; but they write without experience. I am opposed to the pain of the knife being inflicted on such patients; and I write from the experience of the favourable action of chloroform on a great number of patients having the symptoms of fatty degeneration well marked. In several cases, the disease was verified in patients who died a few days after great operations.’

‘Mr Prichard is welcome to his own opinion as to the cause of the death of the patient with fatty heart to whom I was administering chloroform; but he is wrong when he says that anyone else than myself would come to an opposite conclusion from my own. The only medical man present besides Mr Hawkins and myself when the patient died, was Mr George Pollack. He had great experience of the action of chloroform, and was well acquainted with the patient. He gave me his opinion, without being asked for it, that the patient died of his heart disease and not of the chloroform. That patient was benefited very much by previous inhalations of chloroform, and probably had his life prolonged by them. He was relieved of a stone in his bladder the year before his death, by lithotomy, under chloroform, when Mr Hawkins was of the opinion that he could not have borne the operation without being put in a state of anaesthesia. I am, etc. John Snow, 19 Sackville Street.’

There this exchange stopped. John Snow died soon after, on 17 June. Prichard retired in 1870, and died in 1898. From his Reminiscences, written in the year of his death, it is obvious that he remained almost entirely unconverted to the advantages of general anaesthesia.

Summary

An exchange of views is presented that took place in the *British Medical Journal* of 1858, between Augustin Prichard,* a Bristol Surgeon, and John Snow, relating to an anaesthetic death that occurred in Bristol that year.

Acknowledgments

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5. PRICHARD, A. (1858) Death from chloroform. *British Medical Journal*, 252.
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* *Biographical note*

Augustin Prichard entered St Bartholomew's Hospital, London, in 1837 'going up by the night coach and being deposited at the Swan with Two Necks, Lad Lane, Cheapside, at seven o'clock in the morning'. He took the diploma of a Licentiate of the Society of Apothecaries (LSA) and the Membership of the Royal College of Surgeons of England (MRCS) before going to Berlin to further his studies.