

Case of poisoning by hemlock, (conium maculatum) / by John Hughes Bennett.

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CASE
OF
POISONING BY HEMLOCK,
(CONIUM MACULATUM.)

By JOHN HUGHES BENNETT, M.D.,

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Infirmary, &c.

(*From the Edin. Med. and Surg. Journal, No. 164.*)

ON Monday, April 21st, about seven o'clock in the evening, a man called Duncan Gow was brought into the Infirmary by two policemen. It was stated that he had been found lying in the street apparently in a state of intoxication or in a fit. On being taken into the waiting-room, he was found to be dead. On the 24th I examined his body, and the following is an account of the appearances observed.

The body was well-formed and muscular. There were no external marks of violence. The back and depending portions were livid from sugillation.

Head.—An unusual quantity of fluid blood flowed from the scalp and longitudinal sinus when divided. There was slight serous effusion below the arachnoid membrane, and about two drachms of clear serum in the lateral ventricles. The substance of the brain was soft throughout; on section presented numerous bloody points, but was otherwise healthy. No fracture could be discovered in any part of the cranium.

Chest.—There were slight adhesions between the pleuræ on both sides superiorly. The apices of both lungs were strongly puckered. On the right side below the puckering were two cretaceous con-

cretions the size of peas, surrounded by chronic pneumonia and pigmentary deposit. On the left side only induration, with hard, black, gritty particles existed below the puckering. The structure of the lungs otherwise was healthy, although they were throughout intensely engorged with dark-red fluid blood. The heart was healthy in structure, but soft and flabby. The blood in the cavities was mostly fluid, presenting only here and there a few small grumous clots.

Abdomen.—The liver was healthy. The spleen soft, readily breaking down under the fingers. The kidneys were of a brownish-red colour throughout, owing to venous congestion, but healthy in structure. The stomach contained a pultaceous mass formed of some raw green vegetable resembling parsley. Its contents weighed eleven ounces, and had an acid and slight spirituous odour. The mucous coat was much congested, especially at its cardiac extremity. Here there were numerous extravasations of dark-red blood, below the epithelium, over a space about the size of the hand. The intestines were healthy, here and there presenting patches of congestion in the mucous coat. The bladder was healthy, its inner surface much congested from venous obstruction.

The blood throughout the body was of a dark colour and fluid, even in the heart and large vessels.

From the absence of structural lesion, and the general fluidity of the blood, I was induced to suspect that the vegetable matter found in the stomach was of a poisonous nature. On examining this more minutely it was seen to be composed chiefly of fragments of green leaves and leaf-stalks. Although much was reduced to a pulp, a considerable quantity of both had escaped the action of the teeth. The same afternoon I carried as perfect a specimen of the fragments as could be found to Dr Christison, who pointed out that they could scarcely be anything else than the *laciniae* of the *Conium maculatum* or common hemlock. Next day I bruised some of the leaves in a mortar, with a solution of potash, when the peculiar mousy odour of Conia was evolved so strongly, that Dr Douglas Maclagan and others, although previously unacquainted with its nature, at once pronounced it to be hemlock. Dr Christison also procured a recent specimen of the *Conium maculatum* from Salisbury Crags, the botanical characters of which, on being compared with the fragments found in the stomach, were proved to be identical. No doubt could exist, therefore, that the man died from having eaten hemlock.

Few cases of poisoning with this plant have hitherto been published, and none have been minutely detailed. The effects imputed to it in the notices given of prior cases are very contradictory. In some it is said to have caused death like opium, by stupor and coma. In others, convulsions or delirium of the frantic kind are symptoms stated to have been present. But the effects observed by Dr Christison in the lower animals, in his experiments with extract of hemlock and its alkaloid conia, are totally different, viz.

"palsy, first of the voluntary muscles, next of the chest, lastly of the diaphragm; asphyxia, in short, from paralysis without insensibility, and with slight occasional twitches only of the limbs."* On this account, as well as from the circumstance that considerable interest is connected with the question, as to whether the hemlock of modern times be the *Kovveiov*, or state poison of the Athenians, great pains have been taken to obtain a perfect history of the case. In preparing it I have endeavoured to insure accuracy, by carefully interrogating all who saw him from the time of his eating the hemlock until the period when he was brought into the Infirmary. Fortunately he was seen by many persons, and their several accounts are on the whole consistent, and render the case tolerably perfect.

I learnt from his wife that the man, forty-three years of age, a tailor by trade, was in such reduced circumstances that he had not eaten anything on Monday, until he took the substance which caused his death. About the middle of the day, however, he and two others shared half-a-mutchkin of whisky between them. Two of his children, a boy and girl, aged respectively ten and six years of age, found what they took for parsley, growing on the bank under Sir Walter Scott's Monument, and knowing that their father was very fond of this as well as other green vegetables, they gathered some to take to him. On visiting the place with the boy, four days afterwards, I found that the spot from whence the plants were gathered had been covered over with fresh rubbish. But on the uncovered part of the bank, eighty yards westward, the *Conium maculatum* may still be seen growing in considerable quantity. The children returned home between three and four o'clock P. M. The father, who had fasted the whole day, greedily eat the vegetables, together with a piece of bread, and said more than once how good they were. The quantity consumed could not be ascertained, for he eat nearly all that was brought. On finishing his meal, he rose, saying he would endeavour to get some money in order to procure food for his children. At this time he was in perfect health.

From his own house at the head of the Canongate, Gow walked about half a mile to the house of one Wright in the West Port, with a view of selling him some small matter. Wright, on his entering the room, thought at first that he was intoxicated, because he staggered in walking. On passing through the door also, which was narrow, he faltered in his gait, and afterwards sat down hastily. He staid ten minutes, during which time he conversed readily, drove a hard bargain, and obtained fourpence for what he sold. He did not complain of pain or uneasiness, was not excited in manner or speech, and his face was pale and wan. On rising from his chair he was observed by Wright's boy to fall back again, as if he had some difficulty in rising. On making a second effort he got up, and was seen by Wright's wife to stagger out of the house and down the steps. To some children who were sitting on the steps, he

* Treatise on Poisons, p. 855, 1845.

said "Get out of the way of the lame horse." This was a little after four o'clock.

On leaving Wright's house, he was next seen, standing with his back against the corner of the street, by Andrew M'All, a meal-dealer in the Grass Market, about 200 yards from Wright's house. M'All saw him leave the corner he was leaning against, and stagger to a lamp-post a few yards farther on. Here he again paused for a few minutes, and then again went forward in the same vacillating manner, passed M'All's shop, and sat down at the opening of the common stair next to it. M'All's words are, "He could not walk rightly, and was staggering as a man in liquor." His mode of progression attracted a number of boys and girls, who laughed at him, believing him to be intoxicated. He was heard to speak to them, but what he said is not known. He was also seen by two women, who told a policeman to take him away.

The policeman, James Mitchell, No. 161, told me that, on finding Gow sitting at the foot of the common stair, he thought he was drunk. He spoke to him, and in reply Gow desired to be taken to his own house at the top of the Canongate. He also said that he had completely lost his sight, and had not the perfect use of his limbs, but expressed his willingness to walk forwards, until the policeman could obtain the assistance of his comrade in the Cowgate. He was then raised up and supported by one arm, but, after moving with great difficulty past four or five shops, his legs bent under him, and he fell upon his knees. Mitchell then gave him some water to drink, which he was incapable of swallowing, and left him to get a barrow. On his return, he found him surrounded by women, who were pouring cold water on his head, and sprinkling his forehead. With the assistance of another policeman (James Hastie, No. 111), he was then placed on the barrow. One of the women, Mrs Anderson, on his being raised, saw that he made no attempt to walk, but that, as he was pulled away by the policemen, his legs were dragged or trailed after him.

The second policeman, Hastie, on first seeing him told Mitchell that it was not drink, but a fit, that was the matter with him. He lifted up his eye-lids and found the eyes dull. He seemed sensible and endeavoured to say something, but could not articulate. He was now slowly conveyed to the main police office in the High Street, where he arrived about six o'clock. Mitchell told the police lieutenant on duty, that, from the manner in which the man was lying, and from the loss of power in the legs, he now thought he was *not* intoxicated. At this period, it would seem that, although the limbs were completely paralysed, the intelligence was still perfect, for he told the turnkey his exact address in the Canongate, in reply to a question.

Dr Tait, surgeon to the police force, was now sent for, who, in reply to a note which I addressed to him on this subject, forwarded me the following answer.

Police Office, 26th April 1845.

MY DEAR SIR,—I first saw the man Gow, to whom your note

refers, about a quarter past six o'clock. The first impression produced on my mind from his appearance was, that he was in a state of intoxication. He was then lying on his back, with his head and shoulders elevated upon a board we have in the office for that purpose. He was sensible when I spoke to him, and tried to turn his face towards me, and slightly raised his eye-lids, but appeared unable to speak. His power of motion appeared completely prostrated, for when I lifted his arm, and laid it down, it lay where it was put; and when his arm pits were tickled he seemed to manifest a little sensibility, but could make no exertion to rid himself of the annoyance. There were occasional movements of the left leg, but they appeared rather to be spasmodic than voluntary. Several efforts were made to vomit, but these were ineffectual. His pulse and breathing were perfectly natural. I thought I perceived the odour of spirits about him, but the policeman who brought him to the office thought otherwise. He had spoken to the turnkey a few minutes before I arrived. Heat of skin natural. I visited him again about ten minutes before seven o'clock, at which time all motion of the chest appeared to have ceased; the action of the heart was very feeble, and the countenance had a cadaveric expression; pupils fixed. He was then sent to the Infirmary, where I think he would arrive about five minutes past seven.—I am, &c.

WILLIAM TAIT.

He was conveyed to the Infirmary by Hastie and another policeman, M'Pherson. After being put on the stretcher, Hastie saw him draw the legs gently upwards, as if to prevent their hanging over the iron at its extremity. This was the last movement he was seen to make. On being carried into the waiting-room of the Infirmary, he was visited by the house clerk on duty, who found him pulseless, and declared him to be dead. This was shortly after seven o'clock P. M.

The account now given serves to trace the man's history with little interruption from the taking of the poison till his entrance into the Infirmary. It is important to remark, however, that the fourpence he received from Wright was not found upon his person. Whether it escaped from his pocket, or whether he obtained spirits after his leaving Wright's house, and before he was seen by M'All, cannot be ascertained. The faint odour of whisky found in the stomach, unless it arose from the portion taken earlier in the day, would countenance such a supposition, although its not being perceived by the policemen who took him in charge, notwithstanding their suspicions of drunkenness, is opposed to that opinion.

The time of day mentioned by the different narrators, shows that the poison, shortly after it was taken, produced want of power in the inferior extremities, without causing any pain. This is proved by what took place in Wright's house. His gait, which at that time was faltering, afterwards became vacillating, he staggered as one drunk—at length his limbs refused to support him, and he fell. On being raised, his legs dragged after him—and lastly, when

the arms were lifted, they fell like inert masses, and remained immoveable. Perfect paralysis of the inferior extremities was ascertained to exist one hour and a half after the poison was taken, and that of the arms half an hour later.

As regards the existence of sensibility, we have only the evidence afforded by tickling the arm-pits, which, according to Dr Tait, seemed to excite it a little. The amaurosis, however, is a proof that one nerve of sensibility at all events was paralyzed. This seems to have happened when perfect paralysis of the inferior extremities was manifested.

The excito-motory functions seemed also paralysed. Tickling the arm-pits failed in producing movements. He lost the power of deglutition. Dr Tait says his efforts to vomit were ineffectual. There were no convulsions, only slight occasional movements of the left leg—and lastly, both inferior extremities were slowly drawn upwards when placed over the iron of the stretcher. Three hours after taking the poison, the respiratory movements had ceased; the pupils were fixed. At this time the heart's action was felt very feeble. These also ceased about ten minutes afterwards.

The intelligence remained perfect up to a very late period. When his movements were vacillating he was seen to direct his steps from one fixed point to another. After paralysis of the inferior extremities was fully developed he gave accurate directions how he was to be taken home, and described his principal symptoms. Two hours after taking the hemlock, when brought into the police office, although he could not swallow, he gave his address; and a quarter of an hour afterwards, when seen by Dr Tait, though he could not speak, he appeared sensible, and tried to turn his face towards him.

Death took place about three hours and a quarter after eating the poison, and was evidently occasioned by gradual asphyxia from paralysis of the muscles of respiration. The appearances observed in the mucous membrane of the stomach were most probably caused by the unusual fluidity of the blood, and this in its turn by the gradual asphyxia.

The phenomena observed in Gow fully corroborate the physiological action of this substance as described by Dr Christison, from his experiments on animals.* Hemlock evidently acts upon the spinal chord, producing directly opposite effects to those occasioned by strychnia. Paralysis of the voluntary muscles, creeping from below upwards, is the characteristic symptom, unaccompanied by pains or derangement of the intellectual faculties. Some authors have described delirium and frenzy, and others giddiness and convulsions to have been occasioned. But such symptoms were not observed in the case of Gow, or in the experiments on the lower animals by Dr Christison. Indeed, the symptoms as they were described by Plato in the case of Socrates, resemble as nearly as possible those which appeared in Gow. We are told that Socrates was directed by the executioner to walk about after swallowing the poi-

* Transactions of the Royal Society of Edinburgh, vol. xiii.

son, until his limbs should grow heavy. He did so, and then lay down. On his feet and legs being squeezed, they were found insensible: they were also pointed out by the executioner to be cold and stiff. When paralysis had proceeded upwards to the abdomen, Socrates made a request to Crito, proving that his intellects were then unaffected. In a short time after, he became convulsed, his eyes were fixed, and he died. Whether stiffness was present in Gow's case, was not ascertained. The nature of the convulsions, whether violent or otherwise, is not stated in the account of Plato, but slight spasms were observed in Gow.

It will be observed that when Socrates felt paralysis coming on he lay down. Hence the staggering and falling in the street, observed in Gow, did not take place. The description of the effects of the *Kωυσιον*, given by Nicander, however, would in this case apply with great accuracy. He says, (I quote from Dr Christison's paper,) "This potion carries destruction to the powers of the mind, bringing shady darkness, and makes the eyes roll. But staggering on their footsteps and tripping on the streets, they creep on their hands. Mortal stifling seizes the upper part of the neck, and obstructs the narrow passage of the throat. The extremities grow cold, the strong vessels in the limbs contract, he ceases to draw in the thin air, like one fainting, and the soul visits Pluto." If we abstract the poetical parts of the description, and remember the loss of sight, staggering and tripping in the street, the difficulty of deglutition, and place the loss of the intellectual faculties last, this account of Nicander agrees very well with what was observed in Gow.

A difference of opinion exists as to whether the *Conium maculatum* of modern botanists be the *Kωυσιον* of the ancient Greeks. Into the botanical controversy I do not feel myself qualified to enter. But if the symptoms ascertained to have existed in the case I have related, be compared with the accounts of Plato and Nicander, I cannot help thinking that it will be found to favour the opinion of those who believe in their identity.

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