

On the muscular contractions which are occasionally to be observed after death from cholera. Read before the Westminster Medical Society, October 20th, 1849 / by Wm. Frederick Barlow.

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ON THE
MUSCULAR CONTRACTIONS
WHICH ARE OCCASIONALLY TO BE OBSERVED AFTER
DEATH FROM CHOLERA,

Read before the Westminster Medical Society, October 20th, 1849,

By WM. FREDERICK BARLOW,
RESIDENT MEDICAL OFFICER TO THE WESTMINSTER HOSPITAL.

(From the London Medical Gazette.)



VERY remarkable contractions of the voluntary muscles are sometimes noticed after death in cholera. They are thus referred to by Dr. Watson in a lecture containing a graphic description of this dreadful pestilence:—"Another most singular phenomenon was occasionally remarked in the dead body. A quarter, or half an hour, or even longer after the breathing had ceased, and all other signs of animation had departed, slight tremulous spasmodic twitchings and quiverings, and vermicular motions of the muscles would take place; and even distinct movements of the limbs in consequence of these spasms."*

A case of cholera which was admitted into the Westminster Hospital (under the care of Dr. Basham) some weeks ago, first gave me the opportunity of observing this curious affection. A tall, well-made, powerful young man, in good health (apparently), was overtaken by cholera, and speedily succumbed to the disease. He was literally death-stricken; and when first seen it was but too evident that he would die quickly. A strong subject, his vigour nothing availed him; he

sunk more rapidly than many weak ones; suffering, be it noted, most cruelly from cramps, which have but slightly afflicted many patients.

I was by his bed-side just after he expired, and took occasion to observe movements similar to those which have been long ago noticed in the cholera of India.

Within two minutes of his ceasing to breathe, muscular contractions began, becoming more and more numerous. The lower extremities were first affected. Not only were the sartorius, rectus, vasti, and other muscles thrown into violent spasmodic movements, which made their outline palpable, but the limbs were rotated forcibly, and the toes were frequently bent. The motions ceased and returned: they varied also; now one muscle was moved; now many. Quite as remarkable were the movements of the arm: the deltoid and biceps muscles were peculiarly influenced; occasionally the forearm was flexed upon the arm, flexed completely, and when I straightened it, which I did several times, its position was recovered instantly. The fingers and thumbs were now and then contracted, and at times the thumbs were separately moved.

* Lectures, vol. ii. p. 487.

The fibres of the pectoral muscles were often in full action; distinct bundles of them were seen at intervals beneath the skin. But it is vain to attempt a description of the many various and shifting movements which were seen.

After watching these contractions for a long time (together with my friends Mr. Payne, Mr. Turner, and others, whom I had called to see this curious spectacle), I left the body, thinking there would be nothing further to witness, first observing that it was singular that the muscles of the face should remain unaffected; but this remark was made without due regard to the order of occurrence (how it can be explained I know not) which such movements are wont to observe. They occur, not simultaneously, but some succeed to others very slowly; they have been noticed in many cases to begin in the muscles of the lower extremities, and, advancing upwards by degrees, to end in those of the face. After I had taken leave of the body, the nurse was horrified by a movement of the lower jaw, which was followed by others; and thought for a moment that the man was yet alive. The facial muscles became generally affected, and at length all was still.

Let it be observed of *some* of these movements, that they assumed the *shape* of voluntary actions; others had not the most distant similarity thereto. Ridges and knots would rise from the surface, showing the violence of the contractions, just as they are seen to do in life-time. Sometimes only slight tremulous movements, such as gentle galvanism produces, could be noted in some muscles; then the more powerful actions were renewed. Be it remarked that when the spasmodic contractions of the legs and arms were persisting with so great an intensity that they must have terribly tortured a sentient body, and led, without fail, to the expression of agony, the countenance had the usual stillness of death, the lips were as those of a statue.

The next case which I shall detail has many features similar to the foregoing. I may call attention, in particular, to the locality of the beginning and termination of the movements.

T. W., æt. 35, an in-patient of the Westminster Hospital (under the care of Dr. H. Roe), all but convalescent from an attack of acute rheumatism,

died of an attack of cholera of about fourteen hours' duration. The cramps were dreadful; the hands and feet were much distorted, and the voluntary muscles of all the limbs were occasionally very hard and rigid; the collapse came not on step by step, but almost suddenly; never were the coldness, the oppressed breathing, the pulselessness, and other symptoms which tell of sinking, more marked. There was a most rapid and profuse discharge of serum.

After he had been dead *ten* minutes, I examined the body to see if there were any muscular contractions; none were visible. *Five* minutes afterwards I again made search; the extensors of the *right* leg were beginning to be contracted; soon they became extremely so. The vasti and rectus muscles, and the tibialis anticus, were those which seemed most powerfully affected; sometimes the muscles of the thigh would start into the boldest outline, such as that beheld in the exaggerated representations of certain sculptors. The extremity was occasionally turned inwards and outwards, and there were extension and flexion of the toes.

Six minutes after the commencement of these movements some similar contractions took place in its fellow, but they were not so violent.

In a *quarter of an hour* from the first occurrence of the latter there were remarkable motions of the right arm; pronation and supination of it, and flexion and extension of the fingers, being observed: sometimes the thumb would be moved alone; sometimes the fore-finger; sometimes a particular muscle of the arm or fore-arm, or a portion of that muscle, would separately act.

In *half an hour* from the observation of the very first contractions, the pectoralis major of the right side was in action, shortly after which the left arm was influenced; the fingers were extended and flexed alternately, and when a watch was placed in the hand during the former state, it appeared as though "grasped" so soon as the flexor muscles acted again.

I watched these movements for an hour and a quarter, others observing them too: they had not ceased altogether at the expiration of that time. The deltoid, and other muscles than

those I have mentioned, shared in these phenomena. Mr. Hunt, who has been most zealous and indefatigable in his attendance on very numerous patients at a cholera-sick-house in Westminster, informs me of a case in which like movements were observed. In this, as in those I have related, the disease progressed swiftly, and there was great suffering from cramps. "After death," says Mr. Hunt, "contraction of the muscles of the arms and legs took place, there being flexion, extension, pronation, and supination; the muscles of the face were also thrown into action, producing such changes of countenance that a convalescent patient in the same ward became terribly alarmed, and begged to be removed, saying that 'he could not bear to see a dead man move.'"

Several patients have, at my request, been watched subsequently to death, and no such movements seen; but in other instances they have been searched for successfully. In one case I observed only a slight and partial muscular quivering; this, probably, is the more common form of the affection. In what proportion of cases such motions happen I am entirely ignorant, and, so far as I know, there exists at present no means of ascertaining it. I am acquainted with many who have seen much of cholera, but nothing of these movements; and with others who have observed them, though but little familiar with the disease. Doubtless they would have been oftener met with had they been oftener sought for: it is all but certain that very numerous instances have escaped notice. Mr. Paget informed me that many cases of the kind have been observed attentively in St. Bartholomew's Hospital. They have been seen, too, as I learn from Dr. Baly, in the Millbank Penitentiary.

Other examples than those I have narrated have occurred in the Westminster Hospital. In two there were movements confined to the legs; in a third the legs were so forcibly retracted that they could with difficulty be straightened again. I have been told of more such observations. Occasionally the contractions are entirely confined to the face. In one case I noted a curious spasmodic action of the lower jaw, which occurred during the last moments of the patient.

A rare form of the affection has been

mentioned to me by Dr. Gull, who observed it himself. Ten minutes after death there was a divergent motion of the eyeballs.

In 1832, post-mortem contractions were frequently observed; but long before that time they had been remarked in India.

Mr. Mather relates that in 1819 he witnessed a very singular occurrence. He had left the body of a person whom he had himself seen die of cholera. In half an hour he was summoned by a messenger, who reported that the foot of the deceased was moving. He thought there was an "illusion," but returned to the corpse, and witnessed contractions of the foot and hand.*

Dr. Johnson remarks, in his work on Tropical Climates, that spasmodic twitchings of the muscles occasionally took place after death, and continued a considerable time, and refers to an interesting case in which limbs, lost both to sensation and motion, became affected with spasms, and were rendered painful during an attack of cholera.†

Two of the most marked and carefully observed cases which I have read of, occurred in India, and have been referred to by Dr. Elliotson in his Lectures. I think I shall need no apology for extracting the account. "Another very remarkable circumstance is mentioned, the occurrence of a twitching of the different muscles of the body after the person was completely dead. The fingers, the toes, and every part of the face, were seen to move. Observations of this description were made on two subjects; the one a Caffre, and the other a Malay. The former died twenty hours after the first seizure, the complaint baffling the most powerful remedies. In fifteen minutes after he expired the fingers of the left hand were observed to move; then the muscles of the inside of the left arm were contracted in a convulsive manner; and the like motions were slowly propagated upwards to the pectoral muscles. The muscles of the calves of the legs were contracted in like manner,—bundles of their fibres being drawn together in a tremulous knot. The muscles of the inside of the leg and thigh were forcibly contracted in a vermicu-

* See Kennedy's History of the Contagious Cholera, p. 116.

† Influence of Tropical Climates, Lond. 1841, p. 324.

lar manner. The muscles of the face and lower jaw were similarly affected; and, finally, those of the right arm and right pectoral muscle. These motions increased in extent and activity for ten minutes, after which they gradually declined, and ceased twenty minutes after they began. With regard to the Malay, about fifteen minutes after he expired the toes began to move in various directions; and the feet were made to approach each other. Muscular contractions were speedily propagated upwards along the inside of the legs and thighs. The thighs were turned slowly inwards so as to approach each other, and again outwards; the whole of the lower extremities moving on the heels as on pivots. These motions proceeded upwards, producing a quivering in the muscles. In five minutes the upper extremities began to be similarly affected. The fingers were extended and often rigidly bent inwards, and pronation and supination of the hand were steadily though slowly performed. The same quiverings were observable in the lower extremities, and extended to the pectoralis major muscles, and the superior margin of the latissimus dorsi. The muscles of the face moved, and the head was observed to shake. The total duration of these appearances was half an hour. By moving or pricking the arms or limb, these contractions were rendered stronger, and were again renewed when they had ceased."*

With respect to what is affirmed in the latter part of this extract, of these motions being increased and provoked by pricking, I have but little to remark. In one case very favourable to the making of the experiment, I endeavoured to repeat the observation. I cannot say that I was successful. At first I thought that pricking with a pin did excite contraction; but after careful and repeated experiment I was driven to the conclusion that no result could be fairly assigned it. Sometimes, indeed, motion followed a puncture, but by no means invariably; and where it did ensue it was extremely doubtful whether the muscle would not have contracted independently of the experiment. I pricked muscles which were quiescent to see if motion could

be provoked, and such as were slightly contracting to discover if it could be increased. I used punctures, both superficial and deep, and with every attention to time, place, and circumstance, but there was not that *uniformity* of result, or that approach to it, which would alone have justified me in the inference that the muscles were really excited by the experiment. I applied water to the skin of the temperature of 150°, and afterwards water with heat raised nearly to the boiling point, but it had no effect. The case, I repeat, was well adapted for making the investigation, the motions enduring for nearly an hour, and affecting almost every part of the body; but after all I speak of a *single* instance, and let it only be rated at its worth.

I hope that some of the fellows of the Society will state their experience of these curious movements. Doubtless many of them have observed them either during the present or former epidemic. They vary in degree exceedingly, and in duration also: ranging between a few slight or hardly visible quivers (which are somewhat comparable to gentle undulations on calm water), and the most decided and energetic contractions, they may either entirely elude the attention, or at once seize it as a marvel. Sometimes they restrict themselves to certain muscles, those of the legs most commonly, or are confined to the muscles of the face, or, it may be, a particular muscle of it. Dr. Sibson has related to me a case in which the pectoral muscle, together with its fellow, was exclusively affected; and I have already referred to an example in which motion was confined to the eyes. There seems as little limit to the narrowness of the operation of these movements in some cases as to the wide sphere of their display in others. A matter most curious to note upon occasions is their strange progression from part to part: they proceed for a while, in some examples, with great regularity from below upwards, but in others they travel about waywardly, and fitfully appear and vanish time after time. Commonly they occur within a quarter or half an hour of death, but they may be delayed much longer. We know not yet the remotest interval which may pass between death and them; but this is one of the most important as well as in-

* Lectures on the Principles and Practice of Medicine, London, 1842, p. 1076.

teresting points to ascertain. Let me mention a circumstance which bears upon this subject. A woman who was watching the body of her husband six hours after death, saw movements of his leg, and the hand drawn across the chest. Fancying he was coming anew to life, she sent in great trouble for a medical opinion. Mr. Ball informed me that he went immediately, and found that the position of the limbs had been altered. I have questioned this poor woman, and she plainly describes motions like those which I have myself witnessed: and as we know not yet how long such movements may commence after the cessation of the breathing, and as nothing could be more absurd than to assign limits by the arbitrary rule of our own minds, which know not what is possible and what not, I have thought right, without comment, to make record of her narration.

In describing the examples of these strange phenomena, which I have seen myself, I have refrained from an unnecessary detail of the symptoms during lifetime. They would have been those of cholera in general; and too fresh in our memories are that cadaverous aspect which no pencil can pourtray, that ineffable prostration which nothing can rally, that ominous restlessness death only can calm.* But it should always be stated in narrating such appearances, whether the disease ran its career more rapidly than usual, or was accompanied by cramps of more than common violence.

Intense has been the horror which the contractions have excited amongst ignorant people, who have fancied not only that the living have been called dead in a mistake, but that they have even been buried in a like error. Miserable delusion! and yet it is anything but surprising that it should have gained more or less prevalence. Nor are some easy to argue with on such a question. People reason less conclusively when overwhelmed with affliction than at any time besides. Never is the voice of demonstration or philosophy so little welcome.

So wont are we to connect absolute

stillness with perfect death, that these movements at first sight amaze ourselves. But the anxiety with which doubting friends have sometimes watched the bodies of the dead is really inconceivable. They are apt to misconstrue the least signs. The change of expression which now and then accompanies rigor mortis, knitting the placid brow, might have proved a source of misgiving, but actual motions of the countenance, such as are now and then beheld in the corpses of those perishing of cholera, may well strike them with dismay. All who attend upon the sick should be apprised by the physician that such movements may happen. Thus horror may be spared some minds at any rate. I have just said with what intentness bodies have been watched; not a few have dreaded to close the coffin after days have passed away since dissolution happened. A fortnight ago I went with Mr. Hunt to see a corpse which had been laid out two days or more. It appeared that a violent quivering of the lower lip had been remarked soon after dissolution. We found the body dead as one longentombed, but the friends would not be satisfied until Mr. Hunt opened a vein freely, to prove to them that no blood would flow.

I need hardly observe that, in a ward of patients lying sick with cholera, great care should be taken, so soon as life has left, to screen the dead from their survivors, lest some shock of mind may add, and needlessly, to that so dreadful one which the body has already borne. Imagine the unutterable horror of a man who sees movements in a corpse lying, perchance, on the bed nearest his own, which may be made all the more terrible and mysterious, either from their influencing the features or being obscurely visible beneath a sheet laid over or wrapped around the body of the dead. Remember we that the illiterate are apt to mistake any movement as a sign of life, no matter whether the heart contract or a distant muscle of a limb shall quiver; and that we are bound always to prevent an unpleasant feeling even, whenever we are able, much more a terror which it is difficult to calm.

So far as the observation of these movements is concerned, there can be

* With what rapidity do the signs of collapse succeed to the escape of the blood-serum—

“Unâ eâdemque viâ sanguisque animusque sequuntur.” *Æneid*, x. 487.

nothing easier; but when we come to their solution, or rather the *attempt* to solve them, we have a problem before us that we cannot master. But surely they should be more closely studied than they yet have been, and a good history of particulars obtained at any rate. The following are amongst the inquiries which might be made:—

Do they happen exclusively in those cases where patients expire in "*collapse*?"

Are those persons most prone to them who sink with unusual rapidity, and suffer to an uncommon degree from cramps?

Are strong and muscular persons especially subject to them?

Do they more particularly affect those muscles which were the chief seats of cramp in life-time?

What is the most usual time of their occurrence?

What is the longest period known to elapse between death and their commencement?

What is the greatest extent of their duration at present known?

Can they be readily excited and aggravated? and, if so, what stimulants are most efficacious?

In what proportion of instances do they occur?

Supposing them to affect many parts, in what locality do they, speaking generally, first appear?

Let me add a question of another order:—

Are they a renewal of those actions which during life occasion the cramps whereby so many are tormented? or are they to be considered as *peculiar* movements occurring in the dead alone?

I have already stated some facts which bear upon these questions to some extent, and will refrain from repetition. I wait to learn the experience of others.

No doubt these contractions happen through the operation of some fixed law, which is not the less a law because so obscure to us: and we may assume that there are unlike states after death in cholera, from the circumstance, taken by itself even, of their sometimes

occurring and oftentimes not. Nothing would be more gratuitous than to affirm that they do not take place always under the like circumstances; for we are ignorant of the conditions needed to originate them, and can only conclude that those conditions are present by the existence of the phenomena.

They must be distinguished from all actions artificially excited, for they are independent of external agencies of any kind; and, if it should be proved in some instances wherein they are observable, that certain artificial stimuli will excite or aggravate them, a distinction must be drawn between those which happen and those which are provoked.

I think there is every reason to infer that they are caused by a stimulus acting within the muscles, and are therefore very contrary to such motions as we can occasion by galvanism or any other excitant. Certainly they most resemble the spasmodic actions which are common during life in cholera, and are not comparable to movements dependent either upon direct or reflex excitement of the spinal cord, or to those caused by irritation of the trunk of a nerve. In one respect (if not in more than one) they may be likened to the effects of rigor mortis, which, as may sometimes be observed of these contractions, affects parts in *succession*.

Unusual when considered as to the sum of deaths composed of the issues of disease in general, they are not so when regarded in reference to cholera alone. Inexplicable they may be fairly called, but things more familiar are quite as much so. *Why* rigor mortis happens we know not: we know only that it *does* happen. At present we must be content to consider them as facts, and avoid all tempting hypotheses, and accurately observe them, as opportunities allow, with a painstaking regard to every circumstance. No advances in knowledge can ever be made by spinning one mystery around another; but by this means complexities are indefinitely multiplied, and superfluous impediments offered to inquiry.