

blood is diminished, and the vital energies consequently impaired; in such instances, digitalis must undoubtedly do more harm than good, by lowering the force of the heart, and still farther enfeebling the circulation. In such cases, it is better to rely upon those measures which are calculated to strengthen the system, and to stimulate the heart to propel the blood through its diminished channel; and I adopt a somewhat tonic system of treatment under such circumstances, as the best calculated to counteract the effects of the valvular obstruction.

8, Torrington Square, October 1850.

CASE OF SOFTENING OF THE CERVICAL PORTION OF THE SPINAL CORD.

By EDWARD C. SEATON, M.D.

[The substance of the following Communication was read before the Western Medical and Surgical Society of London, October 4, 1850.]

It is remarked by Dr. Graves, that "Inflammation of the Spinal Marrow is a disease so liable to be confounded with a great variety of painful affections, that every ascertained case of it ought to be recorded, for the purpose of rendering more perfect a department of pathology already diligently, but not completely, cultivated." Obeying the injunction laid down by this great authority, and believing that the following case is not without its points of special interest, I venture respectfully to submit it to the notice of the profession through the pages of the LONDON JOURNAL OF MEDICINE, in which so many valuable contributions to our knowledge of Diseases of the Nervous System have lately appeared.

Mr. H. W., æt. nearly 50, by trade a wholesale and retail cheese-monger, and a man whose circumstances enabled him to command every comfort of life, consulted me on the 29th of July 1848. He was a spare man and rather short, of very temperate habits, married, and the father of a large family. He had enjoyed good general health, though he came of a rheumatic stock, and had himself suffered occasionally from rheumatic pain. During the preceding year and a half or two years, he had noticed that his urine was frequently turbid, and he had had one or two attacks of gravel. The complaints for which he sought relief of me were stiffness in the arms and thighs, and excessive debility on undertaking any exertion, so that he was hardly capable of lifting anything, and could not work in his shop for half an hour without becoming tremulous and unable to continue his labour. He had frequent cramps in his legs, but no persistent pain anywhere. At all times irritable in temper, he had become latterly much more so. His appetite failed him of a morning, but not in the latter part of the day. He said that his digestion was good, his bowels regular, and his urine at present clear. His pulse was feeble.

At the end of a fortnight his condition was the same. I thought I

noticed one day a tendency to droop in the left eyelid ; but if this condition really existed, it must have been very transitory, for it was never afterwards observed. There was no difference as to sensation and power between the two sides of the body, and there were not then, as there were not indeed at any period throughout the case, any head symptoms.

He went into the country for a week, and his symptoms disappeared, but came back almost immediately on his return to town. The stiffness and debility, however, were now *confined* to the upper extremities (in which they had all along been most pronounced), and were felt chiefly of a morning when he *began* to work, or at any time when he *began* to take exertion : and he specially remarked to me that as soon as he got warm in walking, the stiffness went off, and he became comparatively strong, and that as soon as he got warm in his bed at night, there was absolutely nothing whatever the matter with him. A variety of treatment was tried with little or no impression ; and on the 11th of September he again went into the country.

I next saw him on the 27th of November, when the pain and stiffness were increased in the upper arms, and had once more attacked the thighs. They were still influenced in the same manner by temperature. I had had some doubts, when I first saw him in July, as to the nature of the case with which I had to deal ; but, after twice or thrice seeing him, I satisfied myself that the symptoms were more those of chronic rheumatism than of any other disease, and the treatment then had been adapted to this view of the case. Feeling now no reason for changing my diagnosis, I gave him again antirheumatic remedies, but of other kinds, which were continued till the 26th of December without any benefit, when he resorted, of his own accord, to cod-liver oil.

This was taken for two months, by which time (Feb. 26, 1849) his former symptoms were aggravated, and new ones superadded. The pain, stiffness, and powerlessness were greatly increased both in the upper and lower extremities, but were still confined nearly entirely to the *upper* arms and *thighs*. In these also, sensation was benumbed, and he said they felt to him as if stuffed out with straw. He had tripped many times of late, and fallen occasionally when walking, and he could not lift his feet far from the ground ; *warmth, however, still relieved his pain and gave him power*. The cramp, of which he had all along had more or less, had been excessively troublesome to him lately. My original doubts as to the real nature of the case now returned with increased force ; and I requested the opinion of Dr. Bright. We examined together with great care, as I had often done by myself before, the whole length of the spine, but found no tenderness whatsoever ; neither did he refer to it any sensation of pain. But he informed us of this important fact (which he had not hitherto remembered, or had not thought of in connexion with his disorder), that about a fortnight previously to his first consulting me he had fallen forwards on the deck of a steam-boat, alighting on the palms of his hands, the arms being stretched out, and that he had thus received a shake which he felt through his whole system. On a review of the entire case, Dr. Bright was inclined to regard it as probably one of chronic inflammation of the spinal cord, or its

membranes, and recommended a succession of blisters down the spine, and the administration of bichloride of mercury.

This plan was pursued for a fortnight with no amendment, but rather increase of the symptoms: and it may serve as an illustration of the great difficulty of arriving at a satisfactory diagnosis of the case, that on a second careful examination at the end of that period, Dr. Bright considered it one of chronic rheumatism, and he mentioned to me a case in which the stiffness and the pain, and the powerlessness had been more pronounced, but which had eventually entirely recovered after anti-rheumatic treatment. He therefore recommended a return to remedies of this kind, and they were pursued steadily from 16th March to 24th April.

On this latter day, as he had made no progress, and his general appearance was anæmic, Dr. Bright recommended a trial of iron, and the *mist. ferri comp.* was administered in doses of ζ vi. three times a day. He became more powerless and felt much worse after commencing this medicine; he suffered from a sensation of gnawing and sinking about the præcordia, and his hands became daily more useless and were invaded by cramp. His urine deposited lithate of ammonia in large quantity. The iron was therefore discontinued, and salines substituted.

During the next fortnight, though the urine became clear, and the sense of sinking disappeared, more and more ground was lost, and some symptoms appeared which left the seat of the disease no longer doubtful. A difficulty in getting out his words, and, on some occasions, a difficulty in masticating and swallowing, pointed to some affection of the upper portion of the Spinal Cord or of the roots of the nerves:—and this was the diagnosis given by Dr. Watson, who was now consulted. It seemed more difficult to state precisely what the nature of that affection was. There had never been, and was not, the smallest pain referable to the cord itself, nor tenderness of any portion of the spine. His leading symptoms had been all along those of diminished and not of increased action; his pulse was always very feeble, and his appearance throughout pale and anæmic. Dr. Watson thought that a tonic regimen was indicated, and gave him first nitro-muriatic acid with tincture of lytta, and afterwards the sesquichloride of iron. He still got no better.

On the 23rd of June he was seen by Dr. Pidduck. On now examining the spine, a spot was found very tender over the atlas vertebra, and our patient said that for some months past he had felt severe pain there whenever he lifted his head from the pillow suddenly or without support. But I think that his recollection as to the duration of this symptom must have been at fault; for he had so repeatedly been questioned about pain and always denied it. He experienced even now no pain or difficulty in rotating, flexing, or extending the head. Dr. Pidduck agreed in the opinion that there was an affection of the Cord, but believed it to be of an inflammatory nature—the result of the injury received in the fall a week or two before the accession of the first symptoms. He recommended perfect rest, leeches to the tender part, and an alterative treatment.

The leeches were applied the next day, and that night, being the first night for many months, *he had no cramp.* On the 1st of July,

four more leeches were applied, and he had next day less numbness and more power of his arms, so that he was able to lift his cup to his mouth without assistance, (this he had not been able to do before for a long while). After this, he had leeches on several times, with the general result of diminishing his nervous irritability, and perhaps alleviating the pain felt in his thighs and arms, but with no further benefit; and the weakness increased. This was his condition up to the 28th of July, after which, in consequence of his having removed to a considerable distance from my neighbourhood, I only saw him occasionally,

The remainder of the history is soon narrated. The amendment which leeches and the antiphlogistic regimen at first produced not having continued (except that the cramp never returned), he was induced to try galvanism. After this, by the advice of Mr. Lonsdale, he had a seton. I saw him on the 21st of December, much more helpless, having been confined to his room for two months: he was then about to try homœopathic treatment. His homœopathic attendant, unable to relieve him, soon transferred him to his brother, a spinal surgeon, by whom he was induced to leave his comfortable home and become an inmate of a spinal institution. Here, though he received from day to day the flattering assurance that he was improving, he became more and more hopelessly paralytic, and died from exhaustion on the 27th of February, 1850.

Post-mortem Examination. His body was removed home, and an examination made sixty hours after death (on March 2, 1850), by myself, in the presence of Mr. Derbyshire and Mr. Theophilus Taylor.

The body was emaciated. The head and spine only were examined. The surface of the cranium was very exsanguine; the skull was rather thick and firmly adherent to the dura mater. The pia mater was rather congested. The brain itself, cerebellum, and medulla oblongata, were quite healthy; the ventricles were empty. The arches of the vertebræ in the centre of the back (about the sixth and seventh dorsal) were a little softer than natural, the rest were of the usual firmness. The theca spinalis was distended with serous fluid; the arachnoid lining it was quite transparent. The Spinal Cord was not unusually vascular, but healthy apparently, except about two inches of its cervical portion, beginning not quite two inches below the pons Varolii. This was softened into a putrilage, without any appearance to the eye of nervous structure. Examined under the microscope immediately afterwards, by Mr. Clover, of University College, it was found to contain exudation corpuscles in moderate abundance; but no pus globules.

REMARKS. The foregoing is one of a class of cases which are alluded to by Dr. Abercrombie¹ as presenting instances of a remarkable modification of ramolissement of the Cord; were described more particularly by Dr. Darwell in 1830, under the designation of a peculiar species of paraplegia; and which formed the subject of a portion of the interesting Gulstonian Lectures delivered by Dr. Gull before the Royal College of Physicians in 1849, and were by him termed, not inaptly, cervical paraplegia.² There are many cases of this form of disease now on record.

¹ On Diseases of the Brain, etc. Fourth Edition, p. 345.

² Lecture III. Medical Times, vol. xix, p. 505.

They agree generally in this, that it is in the superior extremities and adjacent organs that the symptoms first manifest themselves, the lower extremities being affected at a later period, or not at all; that the deltoid and muscles of the shoulder are those which suffer first; and that in a limb, the parts next the trunk are earlier and more completely paralytic than those more remote; the upper arm, for example, than the fore arm or hand: but their progress is by no means uniform; their duration and mode of termination are very uncertain, and their pathology is still a matter of doubt and obscurity.

The pathological explanation of them which is given by Dr. Abercrombie, is this: that they are dependent on disease of the Cord analogous to a form of disease of the brain in which there was originally inflammatory action of a low chronic character seated in a small part of the cerebral substance. "This," he says, "may continue for a considerable time in a state of simple inflammation, and subside; or it may terminate in a permanent change in the structure of the parts, generally with some degree of induration, in which condition it is found when the patient dies of another disease, but if it is itself the fatal disorder, it seems to be so by passing either into ramollissement or into partial and unhealthy suppuration." "It is probable", he adds, "that the same character of disease takes place in the Spinal Cord; and it is found in the same manner sometimes in a state of ramollissement, sometimes in the state of induration, and sometimes one part is found indurated and another softened."¹

A totally different view of these cases is presented by Dr. Gull. The disease is regarded by him as one not having its origin in the nervous centres at all, but in the periphery; "a primary affection", he says, "of the muscles", or an affection both of muscle, and of the nerve distributed to it; and he thinks that the disease spreads by travelling to adjacent muscles (and I presume in cases where ramollissement takes place, to the Cord), through the neurilemma. The cases which he cites in illustration of this position are ten in number; five of which were recorded by Dr. Darwell, and five occurred under his own observation. With one exception, they were all due either to a strain, or a blow upon the particular muscle or muscles, or to rheumatism. None of them had been fatal, but several had not terminated at the period of the report. It had been already contended by Dr. Graves,² that ramollissement and structural degeneration of the spinal marrow might arise, especially in the gouty diathesis, from the extension of inflammation from the extremities of the nerves along the neurilemma. He asserts this generally, and not with special reference to cervical paraplegia: but one of the cases narrated by him resembled this disorder, in the arms being affected for two months before the lower extremities, differing from it, however, in so far as the affection began in the fingers and extended up the arm.

The facts of the present case would seem, at first sight, to be not inconsistent with this view of the subject. My patient was of a rheu-

¹ Op. cit., p. 348. Dr. Abercrombie offers this as a *general* explanation of chronic ramollissement, whether commencing in, or confined to, the upper extremities (cervical paraplegia), or commencing in the lower.

² Clinical Lectures, vol. i, p. 475.

matic family, and had himself had, occasionally, rheumatism. The disease first made its appearance in the muscles which elevate the arms, and, excepting a transitory affection of a similar kind in the muscles of the thighs, was confined to them for nearly four months: the stiffness and want of power of which he complained, resembled rheumatism, by disappearing when the body was heated: and even when, at the end of six months, the affection had extended over the limbs generally, it so closely simulated this disease, that one of our most experienced physicians was unable to make a satisfactory diagnosis. In the view taken by Drs. Graves and Gull, the disease would all this time have been local; it would, about the period to which I have just referred, have invaded the Spinal Cord, by extension along the neurilemma, and would have caused that aggravation of existing symptoms and appearance of new ones, which took place about this time, but which did not, until nearly a twelvemonth afterwards, lead to a fatal termination.

But a closer examination of all the phenomena manifested, will, I think, show that a fuller and more accurate explanation of them is afforded by the older hypothesis. The commencement of the disease by the equal and simultaneous affection of both arms, coincident with an affection of exactly similar character in the thighs, appears to me to point to some central, or, at all events, some general and constitutional cause; and that this was not rheumatism, affecting a number of muscles at a time, seems probable, 1. From the powerlessness being out of all proportion greater than the stiffness and pain; 2. From the disease having originated, apparently, from the shock communicated to the whole system by a severe fall; and 3. From the existence, from the outset, along with the other symptoms, of one which was eventually proved to have been due, in this instance, to direct irritation, or inflammation of the spinal marrow; viz., cramp. I say eventually proved; for, having been one of the most constant, painful, and distressing symptoms throughout the whole course of the malady, and having resisted every remedy, and been scarcely alleviated by any, it at once yielded to the application of a few leeches over the inflamed portion of the Spinal Cord. Nor is it inconsistent with this view, that the symptoms, after three weeks duration, should cease, when my patient went into the country, and that, when he came back to town, they should return in the arms only, the thighs being no longer affected. I presume that, under the influence of rest, change of air, and freedom from excitement, the inflammatory, or congestive condition of the cord was spontaneously subsiding, and would probably have subsided altogether, had not premature exertion recalled it, and caused that, which was at first a diffused state of irritation, or congestion, to become localised as an inflammation in a particular portion of it.

Neither is it inconsistent with this explanation, that power should be restored to the muscles for a while, on excitement or the application of warmth, though it was this symptom, so common in one form of rheumatism, which tended more than any other to obscure the case. Moderate warmth is one of the most powerful excitants both of the muscular and nervous systems; and its influence in exalting the nervous energies, and elevating the vital powers, is referred to constantly by physiological writers.

In a case of *Ramollissement*, recorded by my friend, Dr. Madden, in the LONDON JOURNAL OF MEDICINE for January 1850, in which *anæsthesia* was the most prominent symptom, it was observed, that under the influence of a fit of excitement, followed by an attack of erysipelatous fever, the sensibility was greatly increased. "Was this", he pertinently asks; "due to the cerebral excitement? or might not the quickened circulation, in which the cord, in common with other organs, must have shared, have stimulated for a time its half-destroyed energies?"

And, lastly, it is no objection to this explanation, that so long a time should have elapsed before pain, or tenderness, of the spine came on. Little reliance is to be placed on these as signs of inflammation, or *ramollissement* of the cord. Of six cases occurring to Dr. Abercrombie, they were absent altogether in two, and there was pain only on pressure in one. And of eleven cases of inflammation, *ramollissement*, undefined suppuration, or abscess, to which he refers, they were absent, or not mentioned as being present in eight; and mentioned as present in only three. In my own case there was some evidence of an inflammatory state of the cord, in the remarkable aggravation of the symptoms caused by the administration of steel, for months before pain was complained of, or tenderness observed.

The conclusion to which I, therefore, incline is, that there was in this case, from the commencement, a state of low inflammatory action in a portion of the Spinal Cord, which, whether it did or did not pass through the series of changes presumed by Abercrombie, ended, at all events, in inflammatory softening. Whether this view be right or wrong, and whether the disease in question be central or peripheral in its origin, is obviously not a matter of mere pathological curiosity, but one of the deepest practical importance. By applying our remedies away from the real seat of the disorder, we are not only losing time, but are losing, probably, the only opportunity we have of effectually relieving; for when the series of changes, which we denominate softening, has once taken place, we know of no means whereby the nervous structure may be restored to its integrity.

I am far, however, from wishing to extend the conclusions I draw from my own case to *all* cases, or to say that cervical paraplegia *may* not have a peripheral origin. I assert only that such is not invariably, nor, I believe, very frequently the case, and that, therefore, it is not a correct statement of its pathology to say that it is a disease primarily of the muscular tissue. Of the five cases occurring under his own observation, which Dr. Gull has related in his *Gulstonian Lectures*, three had symptoms indicative, more or less, of disease of the nervous centres. In the first, there was, during the whole course of the case, pain in the head, which was stated to have been peculiar, and to have originated apparently in the upper part of the neck. In the second, there was weakness, though transitory, of the legs, and an equally transitory numbness in one side of the face. In the fourth, there was uneasiness low down in the neck, on flexion or rotation of the head, and the patient was improving on a treatment, directed under the idea of disease of the spine, when he got an attack of rheumatic fever, after which his paralysis was so greatly relieved, that he was able to return to a very laborious occupation.

77, Sloane Street, October 1850.