

ILLUSTRATIONS OF DISEASES OF THE NERVOUS SYSTEM.

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NO. II. GENERAL SOFTENING OF THE MEDULLA SPINALIS.

CASE. Miss C. first came under my care on November 8, 1843. According to the history I received, she had been subject for many years to frequent attacks of inflammation of the coats of the liver, but had not lately suffered from any acute affection of the kind. At the time of my visit, she complained of a dull, heavy pain in the right hypochondrium and epigastrium, the parts being tender on pressure. There was no enlargement of the liver, nor any tenderness in any other part of the abdomen. She had no cough, and could draw a full breath without pain; but the lower part of the right chest did not expand so well as the left. There was no headache. On the preceding night, she had had rigors, followed by fever. When I saw her, the skin was perspiring freely. She complained of slight nausea. The tongue was covered with a white clammy fur, and indented by the teeth; the bowels were open, without the aid of medicine. Pulse 98, soft. She felt restless, and had no appetite. The complexion was sallow. She had not menstruated for five weeks. These symptoms were in a great measure relieved by local bleeding, alterative aperients, and occasional sedatives; but the pain and tenderness did not leave her, and, on the 14th, she had, in addition, severe pain in the lower lumbar and sacral regions. There was also a spot about one inch to the right of the umbilicus, where pressure caused much suffering, and where there was an obscure feeling of hardness. A few days after this, she began to complain much of pain in the region of the heart; and this symptom was long persistent, being frequently accompanied by irregular action of the organ; but there were no murmurs, nor any other evidence of structural change. The catamenia appeared, with much pain, on the 22nd.

During the next month, matters remained in much the same condition. The digestive organs were sometimes in a more healthy state; but the improvement was only transient, and there were rigors almost every night.

In January 1844, the cardiac pains were so severe, as almost to merit the appellation of *angina pectoris*; and in this form they continued to manifest themselves, in spite of all treatment, until the end of April. Nor, when this symptom had at length disappeared, was my patient much benefited; for if the chest was more easy, the back was worse, the lumbar and sacral regions being very tender on pressure, and the seat of frequent acute pain, which extended along the right sciatic nerve, and into the right hypogastric region. The latter was more especially affected during the catamenial periods, which were always characterized by intense suffering.

It would be tedious to narrate with any minuteness the progress of this wearisome and most unsatisfactory case. My notes record a melancholy succession of aggravations and partial improvements; of spasms

in the limbs, and spasms in the chest; of violent palpitations, and sudden momentary arrests of the heart's action; of headache, and inflamed eyes, and gastric disorder; and the ever-recurring terrible dysmenorrhœa, against which all medicines but opium were utterly powerless. The general health, of course, gradually deteriorated. Motion, of any kind, so greatly increased my patient's suffering, that, after long perseverance, she gave all efforts up, and was allowed to remain almost constantly in bed.

At the beginning of 1845, her aspect had become very cachectic, resembling that of a person afflicted with malignant disease. The pains were intense; and, in the hope of affording some temporary relief, I ordered, on February 16th, the tincture of Indian hemp. She took three doses, of ten drops each; after which, she complained of creeping sensations in her limbs, and fancied that a mouse was in the bed. The medicine was then discontinued. An hour or two afterwards, while getting out of bed to relieve the bowels, she suddenly became insensible. General convulsions then ensued, and lasted during twelve hours, when she died.

Before describing the appearances found on dissection, I must say a few words regarding the *treatment*. It, of course, varied from time to time, as particular symptoms seemed to demand special appliances; but, on the whole, it partook more of a tonic character than of any other. The cardiac pains, after resisting all other means, yielded at last to arsenic, and remained absent for a considerable time; but they subsequently recurred on several occasions, though scarcely with the same violence or frequency. The severe pains in the back and right hypogastrium, were most effectually relieved by small local bleedings; sedative applications did no good, and counter-irritants proved rather injurious than beneficial. The preparations of steel were found to be the most useful tonics, and morphia the only trustworthy sedative. The long progress of the case afforded me many opportunities of testing the efficacy of various new remedies, which were highly lauded in the journals of the period; while its extreme obstinacy not only warranted, but seemed to demand a trial of anything which held out a prospect of relief. I cannot, however, say that I had ever any reason to congratulate myself on having made the experiments. The *succus corii*, strongly recommended by Dr. Neligan, proved a very inefficient sedative. The tincture and extract of *cymara*, of which Dr. Baddesley speaks very highly, produced no effect, excepting a transient unpleasant sensation in the head and eyes, the latter feeling as if they were too large. The *terchloride of carbon*, which was stated at the time to be a remarkably powerful local and general sedative, proved an utter failure; it had no action whatever. I tried the *Indian hemp* two or three times, both as a hypnotic, and for the purpose of relieving the dysmenorrhœa, but without any good effects in this case; though, at the same time, it acted like a charm with a sister of my patient's, who suffered very severely at the menstrual periods, and with whom opium always disagreed. On one occasion, two grains of the extract caused much disturbance of the action of the heart, and then affected the head with confusion, giddiness, etc.; but these symptoms soon passed off, after the administration of a little ammonia.

SECTIO CADAVERIS, THIRTY HOURS AFTER DEATH. *Head and Spine.* There was sub-arachnoid effusion in the head, and the brain was somewhat cedematous, but otherwise healthy. There was also considerably more fluid than usual in the spinal sheath. The spinal arachnoid was spotted with numerous white scales, about a line in diameter, some smooth, others scabrous and feeling gritty, as if from commencing bony deposition. The cord, throughout nearly its whole extent, was in a state of ramollissement, its true structure being scarcely discernible. The nerves of the *cauda equina* were covered with innumerable granules, about the size of a pin's head.

Chest. The right lung was intensely congested, and united to the parietes of the chest, over its entire surface, by old adhesions. The left lung was free, and less congested. There were no tubercles. The heart was healthy.

Abdomen. The omentum was found firmly adherent to the parietes in the right iliac region, the attachment being of old date. The liver was perfectly healthy, both in its substance and tunics. There was a small cyst in each ovary.

REMARKS. This case, as regards its symptoms, stands in marked contrast to the one which I recorded in my former paper.¹ In that, it will be remembered, the most prominent manifestation of disease consisted in diminution of the sensibility of the cutaneous surface; there was much pain in the back, when the spine was exposed to succussion, or other violent motions, but want of feeling was the great and pressing ailment. In the case now brought forward, the very opposite state of matters obtained,—intense and scarcely mitigable pain was its chief feature. And yet the difference between the pathological conditions of the cases, as revealed by dissection, was not great. In both we found morbid softening of the spinal cord. In Mr. P.'s case, this ramollissement, confined, or nearly so, to the cineritious matter, was complete in its degree, the centre of the organ being reduced to the consistence of thick cream; in Miss C.'s, all the tissues were involved, but the softening had not proceeded so far. It was sufficiently decided to render the structure almost indistinguishable by the naked eye, but not enough to convert it into a pulp. And herein, perhaps, we may find the means of reconciling the symptomatic discrepancies; for it is quite conceivable, nay, demonstrable, that the same disease of a nervous centre may, in different stages of its progress, produce results of the most opposite character. The great difficulty which lies in the way of this explanation, is involved in the fact, that the *first* symptom in Mr. P.'s case was the anæsthesia; at least, the first of which I had any cognizance.

But, setting this aside, and not attempting to speak dogmatically of what is probably insusceptible of absolute proof, the case just narrated appears to me of especial interest, as showing that there may be more organic mischief going on than is commonly suspected, in that class of cases to which the term *spinal irritation* is usually applied. That this was the nature of my patient's disease, all who saw her were, I believe, thoroughly convinced. It presented the phenomena generally regarded

¹ LONDON JOURNAL OF MEDICINE, January 1850, p. 10.

as diagnostic of that affection. There were the variable neuralgic pains ; sometimes seizing on the chest with intense severity, and giving rise to the tortures of angina pectoris ; sometimes localized in the hypogastrium, or darting down the sciatic nerve, or fixed in the back itself, and rendering motion almost impossible. In addition, there were the uterine disturbance, scanty menstruation, with intolerable suffering, and the various indications of disordered functions, which are almost never absent under circumstances of that nature. Moreover, on more than one occasion, we had manifestations of those anomalies, which so frequently characterize purely nervous disorders. Being strongly impressed with the views of the case just noticed, and anxious every way to give tone and strength to the system, I encouraged and urged my patient to persist in leaving her bed, and going into the open air as much as possible. Of course, this was done cautiously, all unnecessary motion being avoided ; and she persisted in it, although she affirmed that on every movement the pains were much aggravated. I confess I scarcely believed this (imagining that, in common with most patients of the same class, she unconsciously exaggerated her sufferings), until, on one occasion, my visit happened to be paid while she was out of doors. I found her lying on a stretcher in the garden. She had been carried there as gently as could be accomplished ; but the pale, anxious, ghost-like face, the feeble pulse, and cold clammy hands, convinced me that my suspicions were not correct, and taught me to be less urgent in future. And yet, in spite of all this, we had conclusive proof that she did, more than once, get out of bed unaided, and walk to various parts of the room to procure what she wanted, without any evidence of such increased suffering as, at other times, was induced by simply lifting her from the bed to a sofa. It is not easy to explain these things.

The most commonly received view of the pathology of spinal irritation is, that it depends upon a congested state of the medulla ; and the relief so frequently afforded by local blood-letting, is a strong argument in its favour. I have seen the most obstinate and incessant vomiting, which had for days resisted all treatment, at once removed by the application of a few leeches to the spine. But the case before us shows, that a more serious local mischief may give rise to symptoms of precisely the same nature. It shows that they may have, as their cause, something more than mere vascular congestion,—that there may be actual perverted nutrition of the cord itself. And it is well to bear this in mind ; for it is clear that, in such a case, if the disease be not arrested in its progress, the issue may be paralysis.

We come then to consider, what was the cause of the spinal affection. Some years before she came under my care, my patient fell down some stairs, and hurt her back a good deal ; but the immediate effects soon passed off, and she had no symptoms indicating mischief in the parts. Nevertheless, it is quite possible that this accident may have laid the foundation of her future ailments.

But there is another hypothesis to which I would direct attention for a few moments, because, though perhaps it is unneeded in, or even inapplicable to, the explanation of the preceding case, it yet, as appears to me, will prove of much value in the elucidation of the majority of instances. Dr. Todd, in his Lumleian Lectures for 1849, contends for

the humoral origin of chorea and epilepsy; and the writer of a very admirable article on the "Physiology and Diseases of the Nervous System," in the January number of the *British and Foreign Medico-Chirurgical Review*, while examining, and in a great measure supporting Dr. Todd's views, extends them also to the protean disease, hysteria. The idea, as my readers are doubtless aware, is, that in these cases there exists a depraved and perhaps a poisoned state of the blood, whereby the nervous battery is irregularly or abnormally excited, and thus the phenomena of the disease are produced. To my mind, this appears a much more satisfactory method of accounting for the morbid manifestations, than the vague nonentities, nervous irritation, functional disturbance of the nerves, etc., to which they are usually referred. A short time ago I had, in my own person, a proof of the correctness of the general principle. I was suffering from a severe attack of hemiplegia, the pain being seated in the right side of the head. When it was at its height, I was seized with a most unpleasant sensation throughout the whole of the left side of the body, and the extensor muscles of the left leg were excited to clonic contractions. The action was entirely automatic. I could control them by a determined effort of volition; but the moment the influence of the will was withdrawn, the motions recommenced, and the limb was gradually and forcibly extended to its full length. I observed, also, that there was a perfect absence of the feeling of muscular fatigue which accompanies voluntary movements. Now, in this instance, the exciting cause was, very manifestly, imperfect elimination of bile, which had existed for some days previously; and the attack was at once ended by a gentle mercurial alterative, which restored the right action of the liver.

Here, the disturbance of the nervous system was both slight and transient; but in the case to which I shall now briefly refer, it was of a very much more severe, and even, at one time, alarming character. The subject of it was a lady, who had been for many years in bad health, suffering from a complication of maladies, which it is not necessary to particularize. The attack for which I was consulted commenced as severely acute bronchitis. She was first seen by my friend Dr. Batterby, on Nov. 27, 1843, having been ill for some days. I was called in on the 30th. She was then apparently almost moribund, with a death-like countenance; orthopnoea; loud tracheal rattles, which could be heard in every part of the room; a dry tongue; quick, compressible pulse; and no strength to expectorate. From this very depressed state she gradually rallied, under the use of senega, wine, etc., and was able to relieve herself of a quantity of muco-purulent secretion. Her progress was fluctuating for several days, but on the whole, she appeared to gain ground slowly, though the brain was often oppressed, and there were fits of extreme restlessness, in which she sometimes rolled the head from side to side with great rapidity. On the evening of January 9th, she was found throwing her arms about violently, with rigidly extended fingers: she was sensible, but dull: the head was cool. Next morning, she had violent convulsions, and there was much stupor: during the day, the paroxysms became shorter, and in the evening, the spasms left the limbs; but the muscles of the face became frightfully affected, and there was almost trismus. These symptoms continued more or less for many days, but gradually passed off, and the patient satisfactorily recovered.

Now here, I apprehend, it is also abundantly clear that the blood was the element at fault. Our patient was habitually asthmatic; her lungs were emphysematous, and she had suffered from an inflammatory attack which nearly destroyed life by suffocation. That the blood must have been most imperfectly decarbonized, there can be no doubt; and that the secretions generally were in a most disordered condition, we had ocular proof in the unhealthy evacuations. Moreover, each temporary improvement was coincident with a free discharge from the stomach and bowels; and there was nothing either in the past history, or the immediate antecedents of the case, to render it probable that there was actual disease of the nervous centres.

The sequence of causation would, therefore, I imagine, be somewhat of this nature. The blood, not originally of the most healthy character (as was evidenced by the history of our patient, and more especially by the fact, that she was subject to frequent attacks of eczema), had become imperfectly arterIALIZED from the long-continued and severe obstruction to the respiration. This half-venous blood, carried to the various secreting organs, proved an abnormal and insufficient pabulum, and was, in consequence, not thoroughly purified by the separation of the ingredients of the secretions: and being thus still further deteriorated, it acted as an unnatural stimulus to the nervous centres, disturbing, in Dr. Todd's language, their polar state, and thus inducing the convulsive phenomena.

May not something analogous to this be the operative agent in many cases of spinal irritation? May it not be found that these cases too, as well as those we have already noticed, own a true humoral origin? Much may be said in favour of such a view. The subjects of the disease are, for the most part, persons of weak constitution, delicate females, who do not menstruate properly; and in almost all, there are evidences of depraved nutrition, and of disordered function of important depurating organs. The phenomena of the disease too, the sudden shifting of the pains from one part of the body to another, the tendency to periodicity not unfrequently exhibited, and the common complication with the regular hysteric paroxysm, appear to me to point in the same direction. The character of the remedies found to be most successful in the treatment, and the general *juvantia* and *ludentia*, will equally receive their most correct exposition on such an hypothesis. Nor am I prepared to affirm that, even in cases like the one which has been the subject of this paper, where absolute organic change is found after death, the same explanation is altogether inapplicable; for it is quite conceivable that the continued stimulation may, under certain favourable conditions, induce abnormal nutrition in the organ thus acted upon, precisely as in some cases of gout and rheumatism, the *materies morbi*, directed during a long period to particular joints, leads to the deposition of what are called chalk-stones, and to other positive structural changes.

Torquay, May 1850.