Clinical Lecture

ON

PARALYSIS WITH WASTING OF MUSCLES, ESPECIALLY IN CHILDREN.

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GENTLEMEN,—There are many cases of paralysis met with in the adult, with regard to the commencement and past history of which the only ascertained fact is that the symptoms had their origin in infancy. Such cases commonly present wasting and shortness of the affected limbs, and not unfrequently deformity. The causes of infantile paralysis are numerous, and some of them are well understood, inasmuch as they differ in no special manner from those which are encountered in after-life; but there are some forms of paralysis, of which young children furnish the examples, that we cannot refer to the commonly recognised conditions of hæmorrhage, softening, tubercle, syphilis, and the like. So peculiar have these cases appeared that they have sometimes been called “essential paralysis,” and this, it would seem, from the fact that nothing beyond or besides the paralysis has been observed. When such cases fall under observation it often happens that the physician sees before him an apparently healthy child, in whom the only morbid condition that can be recognised is a weak and ill-nourished, or a paralysed and withered limb.

It is to the clinical history, pathology, and treatment of such cases that I wish to direct your attention. You have lately seen two such cases in Wards 3 and 4, and you have witnessed the marked improvement—I may say almost complete restoration—which followed treatment; but you had no opportunity of observing the earlier history of these cases, and I will therefore supplement the account of their symptoms by giving you the result of my experience of some other examples, the minute history of which at their onset I have been able to observe or learn.

1. *Commencement of symptoms.*—A. B—, a healthy girl, the youngest of three, born of healthy parents, without any premonition of disease of any kind, at the age of nine months “took cold in the head,” was feverish, and heavy in manner, for nearly a week, but improved towards the end of that time, and tried to get up. It was seen, however, that she “could not put either foot to the ground,” although both of the hands were moved quite freely, and there was no pain nor spasm in the lower extremities. In a very short time she moved and used the left leg as freely and firmly as before the attack of “cold,” but the right leg was paralysed, and in the course of a few weeks was observed to be cooler, softer, and smaller than the other.

C. D—, a fine boy, the fifth of six healthy children, at the age of four years suffered from some “stomach complaint,” was “poorly” for about a week, complained of his legs being “sore,” and was found, after keeping his bed for five or six days, unable to stand. At the end of a month he could walk, but, in doing so, dragged his left leg, which was then thinner, softer, and cooler than the right.

E. F—, a boy who had “never had a day’s illness,” the youngest of eleven healthy children, when two years old became fretful, restless, sore all over, and lay on his back; “seemed to lose the use of all his limbs,” and could not sit up; was distinctly feverish for a day, but for one day only; he moaned at night; but after a few days he seemed well. At the end of a fortnight he walked, but did so like a much younger child, and it was noticed that he made no use of his right arm—that the arm was thin, and especially so about the shoulder.

These three cases are sufficient to illustrate the ordinary manner in which the paralysis I am describing makes its appearance. The *febrile* symptoms were slight, and of only short duration; the constitution was good; there was no recognised cause of disturbance—no fall, no blow, no exposure to cold, no obvious external influence nor internal derangement which

could account for the phenomena. The age at the onset of symptoms ranged from nine months to four years, and dentition did not appear to have exercised any influence in the production of the malady. In some cases, that have come under my notice after several years’ duration, it has been affirmed that there were no febrile symptoms at the commencement, but that the child was suddenly, or accidentally, found to be unable to move any of its limbs, or even to sit up; but it must be remembered that slight accessions of fever are sometimes disregarded at the time, and are wholly forgotten afterwards. The child is put to bed because it is not well, and when it is “better” the paralysis is recognised. Laborde (in an excellent treatise entitled “*De la Paralyse dite essentielle de l’Enfance*”) states that fever was present in four out of five cases that came under his observation; and where I have been able to learn accurately the previous history there has invariably been some period of distinct but slight and transient illness. I therefore beg you to remember this febrile mode of onset; the fever being of only one or two days’ duration, being feebly marked, but continuous in type so long as it lasts, and unaccompanied by the vomiting and marked nervous disturbances which, under other circumstances, so frequently characterise its presence in early life.

Sometimes, but not more frequently than once in five cases (Laborde), *convulsions* mark the onset of infantile paralysis; and there is occasionally nothing in their actual phenomena which will enable you to distinguish between them and the fits which may arise from dentition, from worms, and from organic disease of the brain. But usually there is an absence of those symptoms which pertain to organic diseases of the brain: there is no vomiting, no headache, no strabismus, and no spasm of the face. Commonly, the limbs are found rigid after the fit has passed away; sometimes there is but one fit, but more frequently there are two, three, or four. When convulsions are present there is no fever, and, *vice versa*, when febrile symptoms constitute the commencement of the malady there are no convulsions.

2. *General paralytic symptoms.*—When first observed the paralysis is usually at its maximum, both of intensity and extent. It is often general—not only the muscles of all the limbs, but even those of the trunk are affected; the child can neither stand nor sit up, nor use its arms. The lower limbs are more distinctly and more frequently affected than the upper, and it is very rare to find paralysis of the sphincters. Paraplegia is the most common form observed at an early period, and this form of paralysis may become persistent; but more frequently the “clearing up,” if I may use the expression, of the paralytic state extends beyond the arms, and in a very short time—viz., from three to fifteen days, only one extremity remains affected. One of the lower limbs is more often paralysed than one of the upper; sometimes the right arm and the left leg are weakened; sometimes, but very rarely, there is hemiplegia.

The electric irritability of the muscles is distinctly diminished at the onset, and coolness and wasting of the limbs set in almost immediately.

There is no constant change in the sensibility of the skin, or of the organs of special sense; but reflex movements are sometimes, although not always, abolished in the affected limb.

Paralysis of the kind now described I have occasionally seen in the condition of *pregnancy*, having its onset in a precisely similar manner—i. e., appearing as general palsy after two or three days of slight febrile disturbance, and then becoming localised in one limb. Apart, however, from pregnancy—which condition bears some strong resemblances in regard of pathological tendency to the state of infancy,—I do not know of any disease in the adult which exhibits the clinical history now detailed. Ordinary wasting palsy, which is unfortunately but too well known, differs widely in its mode of onset, and in the distribution of its symptoms.

3. *Stage of limited paralysis.*—The paralysed limb *wastes*, it fails to grow at the same rate as the healthy limb, and thus it often remains withered, smaller, and shorter than its fellow. But long before any difference can be detected in length, or even bulk, there is distinct coolness, flabbiness, and softness. The rapidity with which wasting occurs is remarkable; in the course of a few weeks it is appreciable not only by the hand and the eye, but by the measuring tape. In this disease, as in all others which affect the size of limbs, there is often an amount of malnutrition, that may be quite obvious to the sight and to the touch, which measurements fail to represent; and surprise is frequently felt when a disparity, very obvious to the eye, is recorded in small fractions of an inch. But in the wasting paralysis of children the amount of inequality is often very great, and may be recognised, at once and to the

full, by measurement. Thus in C. D.—the calf of the right leg was $10\frac{1}{2}$ in. in circumference, that of the left only 8 in.; and here there was no shortening of the limb. That the failure of nutrition was mainly in the muscles was indicated by the fact that the right ankle was $7\frac{1}{2}$ in. in circumference, the left $7\frac{1}{4}$ in. Where the muscles were involved the diminution on the paralysed side was $\frac{1}{2}$ of the circumference; where the muscles were not included the difference was only $\frac{1}{8}$ of the circumference. In the same case there was obvious wasting in the left gluteal region, but it is impossible for me to tell you how much wasting there was in this unmeasurable locality. A similar difficulty prevents me from telling you exactly how great was the wasting in E. F.—, for here the malnutrition was most obvious in the deltoid muscle, in the pectoralis major, the supra-spinatus, and infra-spinatus scapulæ. It is so evident, however, to the eye that no other measurement is needed to tell you that it is very great. The head of the humerus may be seen and felt almost as distinctly as if it were removed altogether from the soft parts; for the bone appears and feels as if covered only by the thin and flexible skin of childhood. Again, in G. H.—, whom you have seen recently in Ward 3, and whose early history was similar to those I have described, it was impossible to represent fairly in figures the amount of wasting, for both lower extremities were affected, and that to about an equal degree. The girl was generally thin, but the malnutrition of the legs, as compared with the arms, was most obvious to all who saw her.

Sometimes particular muscles, or groups of muscles, are especially affected; thus, in the upper limb the muscles around the shoulder, and in the lower extremity the extensor muscles lying outside the tibia. Of the former, E. F.— afforded an excellent example; of the latter you have seen several illustrations, observing sometimes that instead of the natural roundness there was distinct hollowing external to the tibia.

The degree of paralysis varies from slight weakness to absolute immobility. If the leg be affected a child may simply "drag its foot" in walking, or it may be unable to do anything but crawl upon the floor. When G. H.—, who is now quite well, came into the hospital she could not stand, for in her the affection was paraplegic, and the wasting and weakness of the glutei were carried to an extreme degree.

The electric contractility of muscles is peculiar and interesting. In some cases it is entirely lost, but in others it is only diminished, exhibiting, except in the fact of diminution, its ordinary characters. But what is very remarkable is the following fact, that in certain medium cases, where the loss of voluntary power may be complete, but the failure of nutrition by no means extreme, the muscles respond at once to the application of an interrupted battery current of low intensity, and at the same time exhibit no action when an induced current of high power is directed upon them. This has now been observed so frequently that it must be regarded as a common—not an exceptional—fact in the history of such cases; and it may be displayed very readily by a comparison of the paralysed with the healthy limb. An induced current which causes violent contraction in the muscles of the healthy side awakens no movement in the wasted limb; and, *vice versa*, an interrupted battery current, which is too feeble to cause any contraction in the healthy muscles is sufficient to produce distinct action of the wasted muscles. There would appear, therefore, to be an exalted readiness of response to one form of electricity, a diminished readiness of action to the other. This condition is not limited to the paralytic state I am now describing. It has been observed in other diseases by myself, and by my friend, Mr. John Netten Radcliffe, who will, I hope, furnish the results of his large experience in this matter in a collected form.

The sensibility of the skin in the paralysed limbs I have examined very carefully, and have found it to be normal, when tested by the compasses, by the application of heat or cold, by pinching, pricking, and the electric brush.

The reflex motility has been, so far as I have seen, utterly abolished in those limbs which have been completely paralysed to the will.

The temperature of the paralysed extremity has been reduced in all the cases that I have seen. This reduction has been obvious to the hand, and has been verified by the use of the thermometer. I have found a difference varying from five to nine degrees Fahrenheit between the limbs of the same patient, and this after taking the utmost care to avoid sources of fallacy.

The state of mind, and of the general bodily health, may be, and usually is, that of perfect health; and it is almost infinitely rare to find anything like bedsores, or localised malnutrition of the skin.

4. *Consequences of paralysis.*—These are either simple uselessness, and all the discomforts which may follow therefrom in paralysis of any kind; or they are certain deformities which arise from the peculiar distribution of the paralysis and wasting. It is not my purpose to give you any description of these deformities, but you will at once see that they are the most marked when the paralysis is limited to particular groups of muscles; for then the antagonists of those muscles are thrown into overaction, and distortion of the limb is the result.

5. *Anatomy.*—The muscles and bones are small, and the former often lose all their characteristic structure; and, until recently, it has been affirmed that beyond these changes in the limbs nothing abnormal was to be found. You may read descriptions of post-mortem examinations in which it is stated that the brain, spinal cord, and nerves were in their natural state; and it is only of late that, by a process of more minute investigation, the real nature of the malady has been discovered. M. Laborde has shown that there is a distinct change in certain portions of the spinal cord; that the anterior columns are more translucent than natural, and present a very appreciable greyish-rose tint to the naked eye; and that a similar change may be observed, although to a less degree, in the lateral columns. The consistence of these tracts of nerve-tissue is diminished; and upon microscopic examination there may be observed a marked proliferation of the elements of the connective tissue, cells and nuclei being dispersed in the midst of a finely granular substance, in which there are fibrils of extreme tenuity. In the parts which are the most affected nervous tubules are either lost altogether, or they present a varicose appearance; while the other portions of the spinal column preserve a perfect integrity.

6. *Treatment.*—There is nothing special to be observed in the treatment of the early febrile symptoms; but it is of the very highest importance that the nature of the affection should be recognised as soon as possible, and that the paralysis should be encountered vigorously.

The treatment which has been the most efficacious has been the judicious use of electricity—viz., its application, in proper form and in suitable intensity, to the affected muscles. It often happens that, as in the case of G. H.— which you have lately seen, the recovery is complete; and this after several years' duration of the paralysis. The most efficacious application is that of the interrupted battery current; and a curious fact is commonly elicited by its continued use. You find, for example, a group of wasted, palsied muscles, inactive to faradisation, but responding readily to galvanism. You apply galvanism on several occasions, and observe that gradually some voluntary power returns, and with this a diminution of response to the agent you are employing. The same muscles were unaffected by faradisation at the first; but now—as their voluntary power returns and their contractility to the battery current diminishes—they act readily when the induced current is applied. At this period in the history of a case I have found it desirable to change the form of electricity, and to employ faradisation, carefully avoiding the use of such power as shall cause pain to the patient. Galvanism requires most patient exhibition in cases of this kind: for many months it should be continued, provided that there be the smallest improvement in voluntary power, or in the nutrition of the limb. When, after six or eight applications of both faradic and battery electricity, there has been no appearance of electric irritability, I have seen no good result from its continued use. It is probable that, under such circumstances, the muscles are so changed in structure, or, rather, so thoroughly destroyed in proper texture, that nothing can restore them; and the only thing that can be done is to prevent the deformity which might arise from the unopposed action of those other antagonistic groups of muscles which yet retain their integrity.

Electricity may have its action assisted by frictions and passive movements; but I have not seen any definite result, *quoad* the paralysis or wasting, from the exhibition of drugs. Of course, if the child be out of health, you would do your best to bring it into a more favourable condition; and in one case you would give alteratives, in another iron, in a third cod-liver oil, and the like. But your main object must be to treat the muscles, and to treat them without delay.

7. Your prognosis, in a case of infantile paralysis, is bad when the loss of voluntary power is absolute, when the wasting is extreme, and when, after three or four applications of electricity, you can detect no trace of contractility in the muscles. It is bad under such circumstances whether the disease be of old standing or of comparatively recent development. On the other hand, if some slight voluntary power remain, or even if, when it be lost altogether, you still find in the wasted limb

some flickering contraction as you apply the battery current, you may confidently expect a cure or a notable improvement, although the wasting and the paralysis may be highly marked, and although they may have existed for many years, provided that you will persevere steadily in directing the course of treatment that I have described.

Even at the very onset of the malady you may form some notion of its probable severity by regarding the intensity of the initial fever; and you may, when the paralysis is passing into its period of localisation, ascertain by an electric examination the direction in which the malady will throw its strongest forces. Thus taught, you may often prevent the occurrence or full development of symptoms which are very obstinate when once established, and may relieve your patient, by the treatment of a few weeks, from that which, if once firmly rooted, may require twice as many months to cure.

Clinical Lecture

ON

HYSTERICAL VOMITING.

Delivered at Charing-cross Hospital.

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(Concluded from p. 2.)

Now what is the nature of this singular case of vomiting? Is it organic? Is it functional? Is it dependent on primary stomach mischief? Or is it dependent on some remote cause, the stomach affection being secondary? The three forms of vomiting that we find the commonest in young women (putting aside the vomiting of pregnancy) are—(a) Some form of dyspeptic vomiting; (b) the vomiting of ulcer of the stomach, and (c) hysterical vomiting. Is it any of these; and if so, which?

In the first place, is it any form of dyspeptic vomiting? The girl has not a single dyspeptic symptom; there is no pain after eating, no flatulence, no pyrosis, no epigastric tenderness, and the appetite is always good; indeed she is always hungry, the vomiting not interfering with her craving hunger even for a moment. Moreover, in spite of the vomiting, there is no nausea, no sense of sickness, which is always present in dyspeptic vomiting. Then again the vomiting has no relation to the digestibility of the food, but seems quite independent of it; the most wholesome things have been vomited the most, while the most indigestible have been retained the best; fluids even have been vomited more than solids, whereas in dyspeptic vomiting it is almost always solids that are rejected. Moreover, if the vomiting arose from dyspepsia she would suffer more in her nutrition, in which she can hardly be said to have suffered at all. Indeed, considering the quantity that the stomach rejects, her condition is such as to show that her power of assimilation must be remarkably good.

In the second place, is the vomiting the vomiting of gastric ulcer? There are four symptoms which we may almost call the essential symptoms of ulcer of the stomach, and on the presence of which, in almost all cases, the diagnosis rests—pain after eating, having a certain seat; epigastric tenderness on pressure; the vomiting of food; and hæmatemesis. Of three out of the four she has not a trace: she has never vomited blood, she has no tenderness on pressure at the pit of the stomach, and she has no pain after eating. Under such circumstances I should not hesitate to say that it is absolutely impossible for the vomiting to depend upon gastric ulcer.

There remains then the third hypothesis, that the vomiting is what is called hysterical vomiting. Let us see what is the evidence on this point.

In determining whether any symptom is hysterical, we are often guided by the existence or not of other signs of hysteria—by signs which tell us whether the individual is one in whom hysterical symptoms are likely to occur. These presumptive circumstances in favour of hysteria are in this case very strong. In the first place, we have evidence of hysterical tendency. The girl was nervous and excitable as a child, and subject to

hysterical paroxysms both in childhood and recently. Her manner and aspect are characteristically what are called hysterical: she speaks to you with averted eyes, and never looks you full in the face; she is nervous, fidgety, twitching, and restless; she has a “hang-dog,” sullen, glum expression, and an “injured” manner. Then she has those two characteristic symptoms of hysteria, the passage of what is called hysterical water, and the lump in the throat. The topography also of most of her symptoms, except the vomiting, is such as we see in hysteria: they are almost all of them pelvic—the pain in the lower part of the back, in the genitals, legs, and groin, and the painful micturition. It is extremely common for morbid sensations having an hysterical origin to group themselves in the neighbourhood of the generative organs; and in any case of supposed hysteria such a localisation would, to my mind, be a strong presumption in favour of such a diagnosis.

Then, again, the aggravation of the symptoms at each monthly period points to the same conclusion. The headache is then worse, the paroxysms of pain in the genitals are then almost constant, the irritability of the bladder is greater, and pain is then felt, and only then, on passing her motions. The sudden aggravation of the symptoms at the establishment of the reproductive function is, in relation to diagnosis, a congruous circumstance: she never vomited her supper till she menstruated; then the vomiting became constant instead of occasional, then the headaches commenced, and then the other pains in sacrum, genitals, legs, &c., became suddenly worse.

But we have, besides all this presumptive evidence, specific and positive proof of the vomiting itself being hysterical. In the first place it was evidently nervous vomiting—that is, it was under nervous influence, for if a stranger was present it could not take place; then, again, it was worse at each monthly period, and, if stopped, always recurred at that time; then, again, as I have already mentioned, it became more marked and constant when menstruation was first established. It had besides evidently a vicarious relation with her other hysterical symptoms; when she does not vomit, the pain in the genitals is worse and the lump in the throat;—that is, if the hysterical state does not manifest itself in one way it does in another. Lastly, the character of the vomiting itself is such as we see in nervous vomiting, and therefore such as is compatible with an hysterical interpretation of it; and not such as we see in primary stomach vomiting: there is no nausea, no warning of any kind, she never felt and never feels *sick*—the stomach simply empties itself.

Whether the loss of power in the left arm, recurring every morning for so long a time, was a form of hysterical paralysis, or whether it was that peculiar form of loss of power in the hand and arm in the morning which I have seen in many females, and which I believe to be rheumatic, I will not say, and therefore I will not give it any weight as a symptom.

It may be objected that the vomiting could not be hysterical because it occurred habitually before the functions of the uterus were established—back into her early childhood, as long as she can remember, the girl says that she was troubled with this symptom. But this objection I think amounts to little more than a proof that the word *hysteria* is a bad word for that which we mean to designate by it. It is quite certain that children may show all the symptoms of what we call hysteria long before menstruation commences; and when I call this case a case of hysterical vomiting, I mean that the vomiting is a symptom of that morbid irritability that we so often see in females, that depends on the impressibility and mobility of their nervous organisation, and is oftener set wrong by derangement of the sexual functions than by any other cause. Hysteria depends on type of nervous organisation, and not on the possession, or the disturbed function, of a uterus.

A word about the thirst. The girl says she was always thirsty, and is so still. Has this symptom any independent meaning or value? I think none at all. I think it simply points to the vomiting, and simply depends upon it. The thirst of vomiting is something of the same nature as the thirst of hæmorrhage, except that in the one case the thirst depends on a demand for water to make up for the circulating fluid that has been lost, and in the other on the fact that the vomiting prevents the water constantly demanded by the blood from ever reaching it in sufficient quantity. The state of a person who always vomits fluid the moment it is swallowed is very much that of a person who never drinks. Wherever there is constant and immediate vomiting there is thirst.

I may here mention a case that occurred to me not long ago in private practice, presenting many points of resemblance to the one I have been commenting on, and evidently belonging to the same class.