NOTES

OF

ONE HUNDRED CASES OF CHOREA TREATED
IN THE WORCESTER INFIRMARY.*

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CHOREA, as you are doubtless aware, is much more frequently seen in the out-patient rooms of our hospitals than elsewhere. This is as much as to say that the poor are more prone to the disorder than the rich or well-to-do; and from this fact we obtain the first clue to its nature and predisposing causes. It is a disease, to a considerable extent, of poverty.

Agreeing with its usual origin, we shall generally find the subjects of chorea to be ill nourished, or of weak organisation, or both; for the former, in respect of children, implies the latter. It is during the period of active growth, or, if not, during that second period when, the growth having been finished, often prematurely, the constitutional powers have not yet acquired a proper degree of consolidation, and the nervous centres sufficient steadiness, that chorea attacks its victims. Taking my own cases, I find that the ages varied from six or seven to eighteen, or even twenty, years; a larger number at the earlier ages, a smaller at the later. As regards sex, females are found to be more susceptible than males, as their constitutions are more nervous, and their temperaments more excitable. Accordingly, when chorea attacks young persons just arrived at puberty, you will find that the girl is more prone to it than the boy.

Season of the year, situation as to town or country, healthy or unhealthy dwelling, have not shown much difference in the development of chorea. I think I have noted that the subjects have often belonged to large families; but then, of what disease affecting the poorer classes may not this be said? As regards temperament, a majority were of what is called the nervous temperament; with dark hair, sallow complexions, and thin wiry frames. I do not pretend in this paper to give you absolutely exact statistics, but the impressions of, at least, an unbiassed mind, looking at the curious phenomena of this disease with no desire to establish or to overthrow any theory of its nature or causation, or to vaunt any course of treatment for its cure.

I agree with those who regard chorea, along with some of its congeners or allies, as a pure non-organic neurosis; and a review of these one hundred cases fixes that belief firmly on my mind. The term implies, of course, that chorea has no anatomical or true pathological basis, *post mortem* examinations not having given to it any definite morbid anatomy. We must look upon it, therefore, as the outcome of a merely functional disturbance, with a substratum of that undefined, and perhaps for ever undefinable, alteration in nutrition of the nervous centres which, we must suppose, underlies all defects of their functions. It has alliances, no doubt—such as with pre-existing disease of the heart, with rheumatism, with hysteria, and perhaps with disordered blood from malaria, etc. Out of one hundred cases, I have not had one fatal. Chorea, therefore, does not derive any of its interest from its fatality. But perhaps my experience has been somewhat exceptional in this respect.

The phenomena of chorea are so variable, that they may be the most trivial, or amongst the most distressing of all affections of the nervous centres. From a mere twitch of the face, or a blinking of the eyelids, to the horrible contortions and dangerous jactitations sometimes witnessed, is indeed a long cry. The cases are also often of a mixed nature, then rendering the diagnosis, and even the prognosis, very difficult. In most of my cases, the symptoms came on gradually; mildly at first, then deepening in a few days or weeks into the severer forms. In some cases, however, the access was sudden and severe, and was evidently due to the aggravated nature of the cause. I have seen a severe form of the disease instantly develop itself in a girl admitted for something else, the moment she saw another case of chorea in the ward.

Chorea also contracts alliances with other nervous affections; with epilepsy and hysteria, for example. With true epilepsy, however, I have never seen it blended, although others have; with hysteria, I have

often. Now and then, partial paralysis accompanies the disease, coming and then going again, perhaps in about one-twelfth of the cases. Rigidity of some of the limbs, or of a group of muscles, such as we see in spinal meningitis, is occasionally intercurrent in the progress of the case.

If I search my note-books for the causes, predisposing as well as exciting, of my cases of chorea, for proofs of their alliance with other diseases, such as rheumatism or heart-disease; for the relative number showing unilateral or bilateral manifestations; for their connection with convulsions or hysteria; I think the following remarks will be a fair outcome of the search.

First, as regards the predisposing causes: Looking upon chorea as essentially a disease of debility, we are not surprised to find, in almost every case, a state of supermotility, a want of power to restrain, as well as duly to co-ordinate muscular movement. Not only are the muscles insufficiently under the control of the will as to movement, but as to inhibition also. Now in all this there is surely debility, or deficiency of nerve-power. Over-action, we know, always indicates weakness, pre-existing or consecutive. Children and young persons are more mobile than older persons; and hence the age at which we find chorea most frequently to occur ranges from six or seven, to fifteen or eighteen years. These ages, are they not those when poverty presses hardest? Whilst the infant is at its mother's breast, it generally gets food enough, whatever may become of the mother. It is when the child comes to partake of the harder fare of the parents that chorea begins to crop up. Or, if it come on later, it is when puberty, and the consolidation of the newly made tissues, make an extraordinary demand upon the constitution, requiring it to be well sustained by good and plentiful nourishment, which is frequently wanting. In my mind, therefore, chorea is doubly associated with poverty. To poverty we may, of course, add an originally defective organisation, shown in the puny frame, and the unsteady nerve or muscle, derived from feeble parents and from unwholesome surroundings. Hence chorea is essentially a disease of heredity. The sins of the parents, as Dr. Handfield Jones has well observed, are indeed here handed down to the third and fourth generation.

Chorea often follows upon a severe attack of some one of the zymotic diseases, such as measles; but here, again, chiefly in the children of the poor. That vicious habits on the part of the children themselves are a predisposing cause, is highly probable; but it has never been proved in any of my own cases that masturbation, in either sex, was indulged in, at least to an extent to arouse our suspicions. Other predisposing causes of chorea are said to be the syphilitic taint, irregular action of the heart after rheumatic endocarditis, miasmata, and exposure to great solar heat. I cannot remember one case in which either of these circumstances, except the endocarditis, was well established.

With regard to the existing causes of chorea, I need only say that, when the mobile frames of young children have been subjected to the influences indicative of poverty and weakness, it requires but a slight additional disturbance to throw the nervous apparatus out of gear, and to cause its movements to escape from the control of the will. Chief amongst the exciting causes, I am persuaded, is fright. All authors lay stress upon this point. I think I may say that I can establish the effect of fright, or terror, as the immediate determining cause of the chorea in quite two-thirds of my cases. Fright may operate in various ways, some simple, some more continuous and complicated. It need not be sudden, although that is generally the case. There is a kind of fear or fright to which children are exposed for long periods of time. Ill-tempered parents, especially the mother, may keep a child in perpetual trepidation and dread of punishment for unavoidable disasters. Again, the coming home of a drunken father must often be a source of continual terror to a delicate and sensitive girl. Ghost stories, and foolish threats of "Old Bogie", and the like, so constantly used by ignorant mothers and nurses, need only to be mentioned to be severely reprobated.

Amongst other exciting causes, I have found worms in the intestines in several instances; but, when these were got rid of, the chorea they set up had still to be cured. In a few cases, overwork at school was to be blamed, and once the anticipation of delight from the visit of a friend. But we need not multiply exciting causes. Anything which suddenly adds to the pre-existing debility caused by long-continuing predisposing conditions, will arouse the disease. It is only the last straw that breaks the camel's back!

Now a few words on the general symptoms. I have invariably found the muscular power impaired whenever the case has been of some standing. Likewise, hebetude, or feebleness of intellect, is nearly always observed. Partial anæsthesia of parts, or of the whole of the surface, is also common; whilst loss of memory, absence of interest in play, etc., are equally common. In severe cases, we have had to

* Read before the Worcestershire and Herefordshire Branch.

deal with—the involuntary discharge of the feces, and more often of the urine, which add much to the undesirability of mixing such cases with others in the wards of a hospital. Sometimes we have had to resort to the strait-waistcoat to restrain the excessive jactitations; but this did not appear to add to the distress of the patients. Occasionally a choreic patient will be found lying in bed in an almost cataleptic condition. The eyes are fixed and staring; the limbs rigid, with almost total loss of sensibility; so much so as to lead one to fear that cerebral effusion had taken place; but, after some hours, this condition generally passes away.

Other interesting forms of chorea are those in which some one muscle, or a small group of muscles, are alone affected. In two cases, all that could be called chorea consisted of an almost rhythmical jerking of the head to one side, about every twenty or thirty seconds. I remember, also, a case of chorea of the diaphragm, the patient every two or three minutes, except when asleep, giving a sharp, jerky hiccup. No other muscle was affected. The case lasted several weeks; and, although many drugs were administered—amongst others, belladonna, time, as usual, was the chief healer. There is another form affecting the external muscles of the abdomen, together with the levator ani muscle. The movement, which could easily be seen when the patient was undressed, consisted of frequent, but irregular, contractions—a sort of lifting-up of the recti muscles, and also of the levator ani. But I need not further dilate upon the vagaries of this strange disorder.

As regards hemichorea, I am surprised at the frequency with which this form is mentioned by systematic writers. For many years I had not seen a case in this hospital. Latterly, we have had a few; but our proportion is much below the usual average, as recorded in books. I account for this discrepancy by the fact, that one side of the body is frequently more severely affected than the other; but in almost all cases of so-called hemichorea, I believe that careful observations would detect some movements on the better side. Also, as is mentioned by Trousseau, some cases begin as one-sided, and, after a time, both sides become affected.

As regards the pathology, or true nature, of chorea, as distinct from its morbid anatomy, there is something to be said. The comparatively few fatal cases on record afford no clue to the true pathology of the disease, because, in the first place, it is seldom that chorea is fatal at all. In most of the necropsies related in our standard works, such as those of Watson, Trousseau, and Handfield Jones, it is clear that the complications with other distinct diseases with the chorea were answerable for the more considerable of the morbid changes observed. I have not known a single fatal case of uncomplicated chorea, so I cannot tell what might, or might not, have been found, if any such had proved fatal.

When complicated with previous heart-mischief, or when violent convulsions have preceded death, congestion of the membranes and partial hæmorrhage, or other crude injury to the nervous centres, have appeared; but it is a fair question to ask, whether these appearances were not rather *caused by* the chorea, by its violent disturbance of the circulation, than that they were the cause of it. Softening, and thickening, and opacities, have been sometimes found, but in no particular situation. The fact is, there is no constant lesion, or any which does not frequently appear on the inspection of those who have died of other diseases. The small hæmorrhages into the substance of the brain, sometimes found, had been attributed to emboli carried from the diseased cardiac valves. But, then, would chorea be so easily and soon cured as it is, if this were often the case? The question may now be asked, whether chorea is frequently dependent upon previously existing disease of the heart, rheumatic or other? In some fatal cases—notably some related by Dr. Broadbent—fibrinous vegetations had been found on the cardiac valves; and some minute particles of these have doubtless become emboli, and given rise to minute hæmorrhages in the brain. But if any such dislodgment were of frequent occurrence in cases of chorea, we ought to find signs of embolism in various other organs, including the skin; but such are, I believe, almost unknown. The combination which I have observed in a few—a very few—cases, is as follows. First, there has been acute rheumatism in early life. The heart has become affected. The patient recovers—at least, so far as such patients ever recover. Some time afterwards—perhaps two or three years—the same young person is brought to the hospital suffering from chorea. In this case, it is impossible to say that minute vegetations—or, more correctly, minute fibrinous particles—have *not* been detached from the cardiac valves, or from the tendinous chords of the ventricles. But we have no proof of it. Indeed, if this were a frequent cause of chorea, symptoms of this disorder ought to follow more quickly after those of the heart-affection than is generally observed; when, in fact, these minute fibrinoids are soft and fresh, and easily detached from their bases. Well, the chorea is cured, or relieved, and the patient ultimately dies

of the original mischief done to the heart. Is it not more reasonable to conclude that the chorea is the result of disordered nutrition of the nervous substance, caused by the irregular and defective circulation which almost always obtains in such cases?

Nevertheless, it must be confessed that there is a difficulty in accounting for cases of hemichorea, as those other cases where only a small group of muscles is affected, upon the general principles of defective nutrition to which I have attributed the great majority of cases of chorea. Defective nutrition, unless it be caused by some local circumscribed obstruction, should operate upon the whole nervous system alike; or, at least, upon the two sides equally. It will scarcely, therefore, adequately account for the cases named above. To interpret their pathology, we may have recourse to embolism if we like. Small emboli, pushed off the cardiac valves by the force of the circulation, are easily sent along a single carotid artery, and these *may* be the cause of those partial cases where a small group of muscles, or even a single muscle, is thrown into choreic action.

To sum up the pathology of chorea, then, which I gather from these one hundred and more cases, everything points, with slight exceptions, to defective nutrition of the cerebral substance, and, perhaps, of the spinal cord also. In any bad cases, and with other complications, especially with epilepsy, we may expect it to prove fatal; and then the result of starvation of the brain will very likely be seen in softening, in hæmorrhage, or in some low inflammatory product. The symptoms are those of inco-ordination and defective inhibition. These are the result of brain-starvation, caused by morbid products, which strangle the vessels, cutting off the proper supply of blood to the nerve-cells. What then happens entirely agrees with this view. Instead of an easy and rapid recovery, the case goes on into a chronic, or permanent, condition, indicating that the morbid changes in the nerve-cells are such as cannot be removed. Speaking subjectively, the condition of the cerebral system is one of unstable equilibrium, in which the power to act, and the power to inhibit action, are alike defective. In physics, this condition may be likened to a steam-engine, set to go without a proper amount of steam up—enough to cause vibration or oscillation, but not to send the engine along in proper working order. Compared with electricity, it is as though the battery would not generate a sufficient current, or that the wires connecting it to the rheophores were out of order, and that the current were not conducted to the point of operation. The force residing in the brain-cells is defective, owing, probably, as Andral put it, to their defective aggregation, or to want of firmness in the conducting white substance, or to both. The rapidity with which proper food and medicines calculated to give tone to the nervous system act in curing the disorder, is the proof from treatment which comes to confirm the verity of this view of the pathology of chorea. A few words on this treatment, and some few illustrative cases, must finish these somewhat crude notes on a very interesting disease.

[To be concluded.]

BINGHAM RURAL DISTRICT.—The report on this district for 1880 is long, and painfully tedious; but it at least shows Mr. Poyntz Wright energetic in his work as medical officer of health, and earnestly desirous for the sanitary improvement of the district. He reports of the water-supply that it is not entirely satisfactory, either as to quantity or quality. There seem to be difficulties in the way of providing proper supplies in consequence of the geological character of the soil; but the question must evidently be faced by the authority without delay. Mr. Wright has formed a wrong estimate of the usefulness of water-analysis, when he urges the "extreme necessity of an analysis of every suspicious water", apparently on the ground that it is, in "very many cases, utterly impossible to detect disease-germs by any other means than a proper analysis". No method of chemical analysis has yet succeeded in detecting these germs, and it is usually by far the more sensible plan to judge of the purity of the water from its physical surroundings than from the figures given by chemists. The drainage of the district seems to be slowly progressing, and additional privy accommodation has been provided. Mr. Wright estimates the birth and death rates at 30.54 and 19.91 per 1,000, both of which were higher than the rates of 1879. The mortality amongst infants, especially of those under one year, is much in excess of what it should be, and is attributed by Mr. Wright to the impoverished condition of the labouring classes, owing to the general agricultural depression; to ignorance and neglect; and to the deprivation of children of their natural food. His remarks under this head are very interesting and suggestive. Zymotic diseases showed an increased fatality, though no disease was particularly prevalent. Mr. Wright deplors the absence of hospital accommodation for the isolation of infectious patients, and urges the necessity of compulsory notification of all cases of zymotic disease.