A CASE
OF
"FALSE DISSEMINATED SCLEROSIS"
DUE TO MEASLES,

WITH
REMARKS ON THE OCCURRENCE OF CERTAIN WIDE-SPREAD
NERVOUS DISORDERS AFTER THIS AND OTHER
INFECTIOUS DISEASES.

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THE following case, which I think must be classified as an example of so-called "false disseminated sclerosis," has been under my observation on and off, at intervals rarely exceeding two months, ever since the end of 1886, a few weeks after the attack of measles which gave rise to her nervous disorder.

Emily N—, æt. 3 years and 8 months, was first brought to the Shadwell Hospital for Children on December 29th, 1886, and was at once admitted under the care of Dr. Eustace Smith, to whom I am indebted for the use of the notes of the case while an in-patient. The mother considered herself to be a healthy woman, but she has since

been frequently treated for migraine, which she has in a severe form. The father was described as healthy, and two other children were and have remained healthy, with the exception that all three had chicken-pox in 1889.

The patient's younger brother was taken ill with measles on November 21st, 1886, and the patient herself showed the eruption of the same disease on November 30th. Dr. H. C. Wilson, who attended her, has been kind enough to inform me that she appeared to be suffering from an ordinary attack of measles, the rash being well out, when suddenly, on December 3rd, she was seized with convulsion. She was unconscious for ten days. After coming to her senses she could not speak, and had lost all use of her limbs.

When admitted on December 29th she had a very vacant, stupid expression, and was extremely apathetic. She appeared to recognise people about her—her mother, for instance, but cared nothing for their coming or going. There was some difficulty in swallowing. The food ran out of her mouth unless it was pushed well to the back of the tongue. She was very costive. She could not sit up, though she could move her limbs feebly; there was no obvious muscular atrophy. Two days later she was reported to have taken food well, and to be free from fever. She did not speak, and the mother stated that she had last spoken on December 3rd, the day the fit came on. She could put out her hands, the left better than the right. Motions and urine were passed under her. There was no cyanosis. The skin was of a good colour. She looked well, but kept the same vacant expression. She lay in bed with the lower limbs flexed, but when they were passively extended she seemed to have very little power of flexion; she could move the toes. There was, apparently, anæsthesia of the legs, neither an ordinary touch nor a prick being followed by any response. When the abdomen was pricked she frowned slightly. She could squeeze, but not strongly, with both hands. There was general and extreme paresis of both upper limbs, and

it was noted that "full control over the movements was not present." When raised into a sitting posture she could maintain herself in that attitude by holding on to the sides of the bed. She had to be fed by the nurse, and there was apparently some difficulty in closing the lips.

On January 4th, 1887, she was brighter, took hold of a hand held out to her, and was said to have spoken. She sat up, but could not stand. She did not appear to feel the prick of a pin anywhere in the lower limbs except in the foot; when this was pricked she "made a face" and the foot was drawn up, *i. e.* the toes and knees were flexed. The next note was made on January 13th. She could feed herself, moving her lips, masticating and swallowing slowly. She could not stand. She could feel the prick of a pin anywhere, but sensation appeared to be everywhere dulled, though there was no distinct area of anæsthesia. The knee-jerks were "easily got." There was no ankle-clonus. Though she could not stand, she could move her legs and toes slightly when seated on a chair.

On January 18th it was noted that the difficulty she found in feeding herself appeared to be due not so much to want of power as to inco-ordination. She grasped a piece of bread pretty firmly, but in carrying it to the mouth the movements were uncertain. When held in the upright attitude she made forward movements with both legs, but with the right better than with the left; on this day she tried to get on her knees. Sensation seemed to be returning in the limbs.

By February 15th there had been considerable improvement; she was able to walk, and talked a little, using single words. Thereafter there was little or no improvement while she remained in hospital, which she did until April 3rd. She would stand wherever she was put, leaning against any object, such as a chair, or the high fire-guard, holding on with her hands and putting very little weight on the legs.

After her discharge from hospital she continued to improve, but very slowly. At the end of two years she

was able to walk, but was easily fatigued. There was a fine tremor of the hands and upper limbs, aggravated when she was told to perform some definite act, as picking up a pin, or lifting a glass to her lips (with both hands). She was very much troubled at a later date by chronic diarrhoea and prolapsus ani, but with that exception her general health has been, on the whole, remarkably good, and her growth does not seem to have been retarded. Her mother thought that she was quite as intelligent as other children, but she appeared to be dull, and when an in-patient in 1891, on account of the prolapsus ani, she was considered by the nurses to be half-witted. She goes to school, but is still in the lowest standard. On the whole I think that there is certainly some mental deficiency, though this is not so great as strangers, judging from her very vacant expression, commonly suppose. She has undoubtedly gained considerably in the power of speech. Until she was six years old she spoke very slowly, and appeared to have difficulty in finding words to express her meaning. Speech was syllabic: she would tell me that she was "bet—ter." In this respect there has been some improvement; her utterance in November, 1891, was very deliberate, but hardly to be called scanning, and she did not seem to hesitate for a word. She could walk fairly rapidly, and as far perhaps as other children of her age, but her gait was of the spastic character, the legs were adducted, and she took very short steps. Owing to imperfect flexion of the knees the toes were very liable to catch as the foot was brought forward, whence many falls. There was no inco-ordination, but the movements of the lower limbs, when she was lying or sitting down, showed a small amount of irregular coarse tremor, and the head was unsteady. There was no paralysis of the arms, but the finer movements were not well performed, owing to a slight tremulous uncertainty. She could drink without difficulty, though the act was slowly performed, and swallowing was noisy; the cup was not rattled against the teeth, but there was some slow tremor of small excursion.

There was decided rigidity of the lower limbs, but the deep reflexes were only slightly exaggerated; the knee-jerks were very easily obtainable, and very free—in fact, exaggerated; there was no ankle-clonus, but front-tap contraction was present. Tactile sensibility was unaffected. There was no rigidity of the arms. Micturition was normal; and the prolapsus, to which reference has been made, appeared to be of the ordinary type—the bowel came down when she had a motion, and the stools were slimy. The condition was recovered from, under the use of a castor-oil mixture.

A note of her condition was taken about six years after the attack of measles. The deep reflexes were distinctly increased in the lower limbs. Knee-jerk was exaggerated, and on flexing the foot on the leg three or four clonic contractions occurred; front-tap contraction was elicited very easily, and one percussion was followed, as a rule, by three or four contractions. An effort to perform any movement revealed a little coarse tremor of the hands.

On April 12th, 1893, when she was ten years old, her mother stated that she was still very backward at school, could only read little words, and could write "hardly at all." Owing to the unsteadiness of the hands she cannot be trusted to help her mother, and the attempt to, for instance, wash a cup, leads to much shaking, not only of the hands, but also of the head, and is liable to end in the destruction of the cup. There is slight tremor on attempting to pick a pin off the table, and it is aggravated when she attempts to lift a tumbler full of water. She walks rapidly and steadily, but with short steps, and the mother states that she has walked as far as six miles recently. She is very easily upset, and has had so many falls that she is no longer allowed to go into the school playground.

The symptoms observed in this case present a general resemblance to those of disseminated sclerosis. The presence of tremor, aggravated by attention, the scanning

speech, the dull, heavy expression of the face, with drooping lip, half-open mouth, and general air of stupidity, the spastic gait with exaggerated deep reflexes, are points of agreement ; on the other hand, no nystagmus has been observed at any time in the course of the case, and the disease has not been progressive, but has shown a steady tendency to improve.

Although cases of a similar character have been recorded as occurring after other acute infectious diseases, I have not been able to find a parallel case after measles. There are, however, a considerable number of anomalous widespread nervous affections occurring as complications or sequelæ of measles on record. Some of these present points of resemblance to the case of E. N—. Dr. Colcott Fox has recorded a case in which a girl aged four and a half, when beginning to recover from an eruptive illness which the mother stated to be measles, became vacant and unable to sit up. Two months later there was marked inco-ordination of the head and limbs, nystagmus, slow laboured speech, and vacant expression. The reflexes were not exaggerated. The limbs were weak, and there is no mention of rigidity. The child improved slowly, and when discharged eight months after the onset of the illness she was almost well. In a case observed by Schepers the patient, a girl aged eight, suddenly became comatose on the fourth day of a mild attack of measles. When she recovered from the coma, three days later, she was unable to speak. The movements of the upper limbs were "choreiform ;" she could not stand owing to ataxia, and there was great impairment of memory. A fortnight later speech was slow, heavy, nasal, and brief. She could stand resting against a table. Later she began to walk, at first with the aid of sticks, but her gait was uncertain, and resembled that of a person with locomotor ataxy. The *Pendlebury Reports* (1883) contain a brief note of the case of a girl aged four, who when taken out of bed after an attack of measles in August, 1882, was found to be unable to walk. When

admitted on December 4th she was unable to bear the whole of the weight of her body. The knee-jerk was increased, and front-tap contraction was present, but not ankle-clonus. She improved under treatment by faradisation, but when the last note was made, about six months after the attack of measles, though she could stand alone for a short time, she swayed from side to side; she could walk with help, throwing the legs forward and bringing them down on the heels; the knee-jerks were much exaggerated, but there was no ankle-clonus.

A case which has an important bearing on the subject is that recorded by Dr. Thomas Barlow in the 'Medico-Chirurgical Transactions' (lxx, p. 77). In that case the patient, an adult male, first presented distinct nervous symptoms on the fourth day of the exanthem, and died about thirty-six hours later, apparently from asphyxia. Microscopical examination made by Dr. Penrose showed wide-spread acute myelitis of the disseminated type, the maximum affection being in the upper dorsal region, where the cord was diffuent. In other regions of the cord, however, the parts most affected were the anterior cornua. The lesions were all vascular—hæmorrhages and intense distension—and no changes were found in the nerve-cells, fibres, or supporting tissues of the cord. Similar changes were found in the medulla oblongata.

The nervous affections which have been observed as the more or less enduring consequences of measles fall into three classes:

- (I) Hemiplegia.
- (II) Cases of limited muscular atrophy, of the type of infantile paralysis. (To these conditions I do not propose to refer more particularly here.)
- (III) Cases of widely diffused nervous affection, lasting for varying periods:
 - (a) Acute disseminated myelitis.
 - (b) Cases presenting at a later date symptoms resembling disseminated sclerosis (false disseminated sclerosis).

- (c) Cases in which, with some symptoms similar to those of the preceding group, the most prominent symptom is inco-ordination.
- (d) Cases of "extensive, ascending, diffuse, or disseminated" paralysis, resembling diphtherial paralysis.

The points to which, in commenting on the case here recorded, I would especially draw attention are two :

In the *first* place, that, as is well known, a similar complex of symptoms is occasionally observed after many other acute infectious diseases ; and

In the *second* place, that after measles and other acute infectious diseases, a condition to which the term pseudo-ataxy has been applied is sometimes observed, and that this condition, from which recovery occurs, is probably related to "false disseminated sclerosis" in the sense that the one is a minor form of a similar order of lesion.

With regard to the first point—the occurrence of cases of false disseminated sclerosis after various acute infectious diseases—it would be tedious to cite individual cases recorded in literature. It will suffice to say that the symptom-complex has been observed after scarlet fever, variola, typhoid fever, whooping-cough, influenza, and diphtheria.¹ An examination of the cases under each of these diseases to which references are given, and of the collections made by Whipham and Myers, and by Marie, is sufficient to prove this point.

The clinical histories of the cases in which this complication arises present a considerable degree of similarity. Symptoms pointing to a grave involvement of the nervous system are, as a rule, first noticed after defervescence ; but in not a few cases the patient has suffered from convulsions during the acute stage, or a peculiar condition of stupor or somnolence has been noticed at that period. The clinical history of "pseudo-ataxy" is not very dissimilar, the ataxic paralysis, which affects the lower limbs

¹ To this list ought, perhaps, to be added erysipelas, pneumonia, and ague.

in most cases more distinctly than the upper, being observed when the patient first attempts to get out of bed.

It appears to me to be quite impossible to draw any distinction between the symptoms presented by these cases of "pseudo-ataxy" and those not infrequently observed in the course of diphtherial palsy, indeed the best examples of "pseudo-ataxy" are to be seen after diphtheria.

Further, I would submit that the difference between these cases and those of well-marked "false disseminated sclerosis" is one of degree rather than of kind. Improvement in "pseudo-ataxy," though it may, after it has once begun, progress for a time with great rapidity, in some cases becomes greatly retarded at a later date, so that such patients cease to seek medical treatment while there still remains some defect in speech, or some uncertainty or weakness in the movements of the lower limbs.

It is common to assume that diphtherial paralysis, if it do not cause death at an early stage, always ends in recovery, that is to say that the parts paralysed recover their function. This, however, is not always the case. Some permanent affection of the muscles of deglutition or phonation remains in certain patients. In others there remains some disorder of the motor functions of the lower limbs, spoken of commonly as paraplegia or paraparesis, but in which some degree of ataxia exists. Further, it is important in this connection to note that cases of the type of "false disseminated sclerosis" have been observed after diphtheria (Stadhagen, Schoenfeldt).

Finally we have observations of acute disseminated myelitis terminating rapidly in death, by Westphal in smallpox, and by Barlow in measles. Westphal has suggested, as Barlow pointed out, that a slighter degree of mischief than that found in acute disseminated myelitis might give rise to changes which would result in a clinical condition resembling disseminated sclerosis.

In conclusion, I would lay stress on the following points:

The occasional occurrence after all, or nearly all, the acute infectious diseases observed in this country of cases presenting symptoms indicating a wide-spread affection of the nervous system.

The fact that the grouping of the symptoms renders the cases, whatever may have been the infectious disease to which they were secondary, strikingly similar to each other and to diphtherial paralysis.

The fact that occasionally in the pyrexial stage of acute infectious diseases, or during convalescence, there is developed, usually with rapidity, a profound affection of the nervous system, characterised usually by loss of consciousness; the patient, if he survive, being found on recovery of consciousness to be bereft of speech and to be suffering from extensive paralysis, paresis, or ataxia. From this condition he may recover completely, or he may develop symptoms resembling those of disseminated sclerosis, but with this difference that the disease is not progressive but rather regressive. In the cases fatal at an early stage, the changes in the central nervous system appear to have been mainly or primarily vascular; and the most reasonable hypothesis to account for those cases in which complete recovery takes place at an early date is that they also are due to vascular derangement. Analogy would suggest that this vascular derangement is produced by the circulation of soluble poisons.

That cases of " false disseminated sclerosis " may be observed as a sequel to diphtherial paralysis.

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(For report of the discussion on this paper, see 'Proceedings of
the Royal Medical and Chirurgical Society,' Third Series, vol. vi,
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