SYPHILITIC NEUROSES.*

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DISEASES of the nervous system may be conveniently divided into two classes: 1. Those which depend, as far as our means of observation enable us to judge, on a primary alteration in the nerve-cells or fibres, or in the interstitial tissue, which is, in its nutritive changes, associated in a remarkable way with the nutrition of the nerve-elements: 2. Those which are due to a primary alteration in the tissues, which protect, support, or convey blood to and from the nerve-textures—diseases of the bones, membranes, and vessels, with which we must class new growths. Diseases of the latter class have, as their consequence, secondary changes in the nerve-tissues, by which their presence is manifested.

Such a division of disease of the nervous system is often made in effect, if not formally. To the first class, the term neuroses is applied, but the term is somewhat ambiguous: it is often used in a narrower sense, comprehending only those diseases in which no changes visible even to the microscope exist in the nerve-centres. It is desirable to distinguish this second group, the diseases which begin in the adventitious structures (bones, membranes, and vessels), by some general term; and, since they are diseases of adneurial tissues, the term "adneurial diseases" is probably the most convenient for the purpose. We may, then, avail ourselves of the obvious antithesis, and use the term "neural diseases" as a less ambiguous designation for the first class.

The circumstance that we may have, at present, some difficulty in assigning to certain diseases their position in one or the other of these classes, does not diminish the salient distinctions between the two groups—distinctions which obtain alike in pathology and in etiology. The primary neural diseases have a family association, the tendency to their occurrence is interchangeable, and their progress is commonly along those lines of nerve-structure which correspond to function; the adneurial diseases are often associated with changes of a similar character elsewhere than in the nervous system; and their effects upon the nerve-tissues are, as it were, random, without, as a rule, any primary correspondence with function.

For the most part, the diseases of the nervous system which are ascribed to syphilis are of the latter class; they are adneurial diseases, with secondary random changes. Such are chronic meningitis, syphilitic disease of vessels, and syphilitic growths, which spring, almost, if not quite, exclusively from the membranes. It is not customary to regard the primary neural affections, including the neuroses, as the consequences of syphilis; but, of late, several observers, among whom must be mentioned especially M. Fournier of Paris, have come to the conclusion that at least some of these neural diseases do result from syphilis. The object of this paper is to present such evidence regarding the question as is to be obtained from a considerable number of cases of various diseases of the nervous system, which have come under my care chiefly at the National Hospital for the Paralyzed and Epileptic. I have preferred to take, as the material for the inquiry, the cases which have come under personal observation, rather than those which are on record, for two reasons: first, because the value of a collection of published cases is often lessened by the selection, for publication, of cases which are rare and not fairly representative of the actual frequency with which morbid conditions are associated; secondly, because it is necessary for the purpose of such an inquiry to study, more accurately than is often done, the clinical evidence as to the nature of the initial changes in the several forms of nervous disease which are due to syphilis. The only exact evidence as to their nature is such as is afforded by *post mortem* examination. But it is precisely this class of diseases with regard to which *post mortem* evidence is very rarely forthcoming. We have to rely, then, on clinical evidence. With care, this will often guide us to an accurate opinion. The cases in which there is most need for caution in forming an opinion are those of epilepsy and of sclerosis of the spinal cord. The rule I have followed is to reject every case in which there was any indication of primary adneurial disease, such as syphilitic meningitis or growth. Caution is also necessary to avoid ascribing all diseases to syphilis which occur in those who have, at some previous time, suffered from venereal sores. Those who have had syphilis may, of course, suffer like other individuals from nervous diseases, without the latter being in any way the consequence of syphilis. The exact method of proceeding would be to ascertain the frequency of these diseases among the syphilitic and the

non-syphilitic, on a very large scale; but such a statistical inquiry is scarcely practicable, on account of the extent of the field to be traversed in order to give a reliable result. I have, therefore, contented myself with rejecting, as examples of syphilitic neuroses, with certain exceptions which will be specified, all cases in which any other cause for the neural disease, such as inherited tendency, could be traced. It is, of course, possible that the venereal affection may have had some influence on the production of the neuroses in such cases; but the purpose of this inquiry renders their exclusion necessary.

The diseases included in this inquiry are: idiopathic epilepsy, chorea, general paralysis, paralysis agitans, progressive muscular atrophy, and lateral and posterior sclerosis of the spinal cord.

IDIOPATHIC EPILEPSY.—My own observation affords almost no evidence that idiopathic epilepsy occurs as a consequence of acquired syphilis. Epilepsy usually commences early in life. Now and then, it begins late; and in some of these cases we have occasionally, but very rarely, a history of constitutional syphilis at some previous time. As a rule, in such cases, there are other causes to which the disease can be ascribed. Out of a very large number of cases of convulsive disease of which I have notes, in only one or two did idiopathic epilepsy occur, without other distinct cause, in those who had suffered from syphilis. But epilepsy without obvious cause is not very rare among those who present no suspicion of syphilis. There seems, then, little reason to regard idiopathic epilepsy as a result of acquired syphilis.

Of course, convulsions, often recurring for years, are common enough in cases of constitutional syphilis; but in these, as an almost invariable rule, the characters of the convulsion or associated symptoms are such as to indicate the presence or previous existence of local brain-disease originating in the adneurial structures. Either the convulsion was local or began locally, or was or had been accompanied by persistent headache, optic neuritis, or paralysis of cranial nerves or limbs. A syphilitic tumour, or softening from syphilitic disease of a vessel, may cause convulsions which persist in the same form, when, by treatment, all other signs of the local disease have passed away. But such convulsions cannot be regarded as syphilitic epilepsy (in the sense in which a growth may be said to be syphilitic), any more than those which accompany a cerebral tubercle, or persist after it has become quiescent, are to be regarded as tubercular epilepsy, or those which accompany the softening due to cerebral embolism are to be regarded as embolic epilepsy. Whenever the repeated explosive discharge of nerve-cells has been induced by local irritating disease, a habit of morbid action is set up, which perpetuates itself by its repetition, and has an existence, so to speak, independent of its cause.

On the other hand, several cases presenting the symptoms of idiopathic epilepsy in the subjects of inherited syphilis suggest the existence of a causal relation between the two diseases. In most of them, indications of local brain-disease have been absent, and the fits commenced at a later period than that in which local adneurial disease is commonly met with in inherited syphilis. In most of the cases, however, there has been evidence of a double causation, an inherited tendency to nervous disease, as well as the inherited specific disease. In many of them, the neurotic family history was slight. A good example of the effect of this double heredity in causing dementia has been given by Dr. Hughlings Jackson (*Journal of Mental Science*, January 1875). The comparative rarity of inherited syphilis in recognisable form gives a significance to the association of the two causes which cannot attach to the association of the more common acquired disease with inherited neurotic tendency. We know that congenital syphilis arrests development in many ways; and it is intelligible, therefore, that it may increase the effect of an inherited tendency to defective development of the nerve-elements, which is probably the ultimate cause of most forms of idiopathic epilepsy.

The following brief notes of cases illustrate this association.

Mary H., aged 20, single, came under treatment. Of seven brothers and sisters, six died under twelve months. The first two were still-born, and the patient was the third. The teeth were stunted, and one central incisor was characteristically chisel-shaped and notched. The two outer incisors were also chisel-shaped, with a single notch, which in the left was small. At eighteen, she suffered from double keratitis. Both eyes presented choroiditic atrophy of the discs; outline not sharp; tint dull uniform red; vessels small. She had one fit in infancy during dentition; no others till nineteen, when attacks commenced four months after some operation for diseased bone in the upper jaw; this had healed completely. The attacks were preceded by no warning; consciousness was lost, and the tongue bitten, the convulsion being bilateral. Under the use of bromide and iodide of potassium, the fits ceased entirely.

Edward P., aged 16, had no neurotic family history. His father admitted venereal sores, followed by secondary symptoms: an ulcer-

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tion of the nose, which had left symmetrical scars on the alæ nasi. The boy's central incisors presented a crescentic depression at the extremity on the anterior surface, but no actual notch. The boy had some fits at three or four years of age; no others till fifteen, when they recurred without known cause. Consciousness was lost, and convulsion was considerable, the tongue being bitten.

James M., aged 16, had no fits in infancy; the first at thirteen, and this had recurred since about once a fortnight. They commenced by turning of the head. Consciousness was lost completely. The patient's two central incisors were broken off. The corneæ presented the peculiar metallic reflection which is strongly suggestive of previous slight interstitial keratitis. Of the family, four children had died in infancy, and one was still-born without known cause; and there was a history of miscarriage early in pregnancy.

The following two cases are instances of the double heredity.

Laura H., aged about 20, had suffered when seen for three months from severe hystero-epileptic seizures, sometimes with loss of consciousness, sometimes without, and preceded by a sense of pain and weight at the top of the head. Her father died of phthisis; his brother was insane. The patient herself presented no present indication of inherited syphilis; but her sister next older had most characteristic chisel-shaped and notched incisors. Several other children had died in infancy; and one brother, who died at nineteen, suffered from epilepsy.

In the following case, the convulsive attacks began at a very early period; but there was no indication of adneural disease.

Susan F., aged 8. Her mother's uncle and aunt suffered from fits, and several brothers and sisters had fits during dentition. The patient had had a fit every month since the age of six months, when the first occurred without known cause. Her second incisors were not cut; but both corneæ presented traces of opacity, and her tonsils and the soft palate were scarred.

CHOREA.—I have met with no cases of chorea in the subjects of acquired or inherited syphilis. Very few cases are to be found in medical literature. Dr. Alison, in an interesting paper on syphilitic chorea (*American Journal of Medical Science*, July, 1877), was able to collect only four in the subjects of acquired, and two in inherited, syphilis; and one instance of its occurrence in the inherited disease has been recorded by Dr. Hughlings Jackson. But in two of these cases in acquired syphilis, there was evidence of probable adneural disease; and Dr. Alison, on the vascular theory of chorea, assumes the existence of vascular disease in all. The inclusion of chorea among primarily neural diseases may be considered questionable; but the neurotic relation of chorea in family histories is so strong, especially when approached from the side of the neuroses (epilepsy and insanity), as to leave little doubt that one of its factors, at least, is primarily neural.

GENERAL PARALYSIS.—Certain forms of general paralysis are believed by Fournier and others to be common consequences of syphilis; and my own observation supports the view. They are for the most part forms which differ from the classical variety of asylums in the frequent absence of marked optimism, and the more chronic course; the common symptoms being motor weakness, often irregular in distribution and paroxysmal in character; occasional convulsion; tremulous, hesitating, and "drawing" speech; confluence of articulation; sometimes inequality of the pupils, and ultimately more or less mental change; sometimes mere mental weakness, often with more or less delusion, rarely with excitement, and rarely still with marked optimism, and usually with no sign of adneural disease. I have not been able to follow these cases up, as they commonly soon go into asylums.

PARALYSIS AGITANS.—No evidence exists, I believe, to connect paralysis agitans with syphilis; and certainly none has come under my own notice.

PROGRESSIVE MYO-ATROPHY.—General muscular atrophy, on the other hand, has constitutional syphilis for a not unfrequent antecedent. It is necessary to remember that wide-spread myo-atrophy may result from an occasional adneural effect of syphilis—spinal pachymeningitis. But in some cases which have been under my observation, there was no indication of this; the disease began in some with wasting of the hand-muscles, and progressed very gradually, spreading in some cases to the medulla; in some, it was not preceded by weakness, and, therefore, there was probably a primary degeneration of the anterior cornua; in others, it was preceded by weakness, and, therefore, possibly commencing in the lateral columns, and invading the cornua secondarily.

James H., aged 36, with no neurotic heredity, had a chancre eight years before admission. Seven years afterwards, he found he was losing the power of using his fingers, and soon afterwards the movement of his tongue became impaired. On admission, there was drooping of both eyelids, said to have existed from birth. The ocular and facial movements were normal. There was atrophy of the right half of the tongue. There was no paralysis of the palate. Both sterno-mastoids were thin,

especially the sternal portions on each side. There was wasting of the pectorals, deltoids, biceps, triceps (less), of the forearm muscles (especially at the back), and of the interossei and thenar muscles. The legs were weak; the right was generally thin; there was no special muscular wasting. He could, however, manage to walk a mile. Both so-called "knee-reflex" and ankle clonus could be obtained; the latter present in each foot. This patient himself denied that he had any venereal affection beyond an attack of gonorrhœa, and no indirect history of syphilis could be obtained. The information stated above regarding the chancre was kindly furnished me by Mr. Wagstaff of Lincoln, under whose care the patient was, and who also stated, that, soon after acquiring the primary sore, the man communicated the disease to his wife, and that she was suffering from general muscular atrophy, very similar to that of which the husband was the subject.

Elizabeth G., aged 28, when admitted to hospital, was a thin, spare woman, with well-marked muscular atrophy. The arms were almost powerless at the shoulders and wrist-joints. Both deltoids were much wasted, and the arms could not be raised above the level of the shoulders. The triceps and biceps were little wasted, and possessed moderate power, but the forearms were greatly wasted. The wrists could not be moved, and were fixed in pronation; the interossei and thumb-muscles were practically gone, and the hands presented well-marked *main en griffe*, and were powerless. Faradaic irritability was low, but equal in the two sides, even in the interossei; but it was gone in the right thumb-muscles. The legs were very weak, both at the hip and knee-joints. The muscles were flabby, but not conspicuously wasted; electric irritability was normal. The tongue was unaffected, but tremulous. There was some difficulty in swallowing, less marked with solids than with liquids. Articulation was very defective; the explosives were slovenly pronounced, *d* and *t* worse than *p* and *m*; *a* could be pronounced; *k* and *g* hard, were pronounced *ch* and *gh*. There were traces of an old right-sided facial paralysis, with secondary contracture. No affection of other parts supplied by cranial nerves was found. Her mind was extremely emotional; no other disturbance. Her history was that, nine years before, she had syphilis, followed by well-marked constitutional symptoms, but no specific symptoms for some years. There was no history of intemperance, or inherited tendency to nervous disease. Four and a half years before admission, she had an attack of right-sided facial paralysis. Two years later, she first noticed that the left arm and leg gradually became weak, and, some months afterwards, the right arm and leg also; and she then gradually became able to walk only with assistance, and, for the last six months, not at all. Wasting of the arms was not observed until a year after the commencement of the weakness; but it was only noticed when the commencement of the deformity of the hand drew attention to it. The difficulty in speech commenced at the time she first noticed the wasting. Antisyphilitic treatment of each kind was thoroughly carried out, but without the slightest improvement.

LATERAL SCLEROSIS.—Considerable care is necessary in inferring the existence of a primary lateral sclerosis, to exclude an occasional origin of the condition adneural disease in the middle or upper part of the cord, and secondary descending sclerosis. It is therefore needful very carefully to inquire into the initial symptoms. Primary sclerosis of the lateral column, in my experience, is an occasional, but not a common, neural consequence of syphilis. In some cases, the sequence is so well marked, that it is impossible to doubt their connection. The following is an example of the association.

Victor G., aged 31, came under treatment May 20th, 1878, with paraplegia, he was just able to walk with crutches. His legs were well nourished, and became rigid on attempting to stand; there was extreme ankle clonus and excessive knee-reflex. There was no affection of sensation or nutrition. The onset of symptoms was gradual, affecting both legs equally. There was history of constitutional syphilis, the primary sores having been six years before the onset of the symptoms.

POSTERIOR SCLEROSIS: LOCOMOTOR ATAXY.—Several observers (Fournier, Hutchinson, etc.) have pointed out the frequency with which locomotor ataxy is preceded by syphilis; and this my own experience completely confirms. Here, also, however, care is necessary to distinguish the forms which are primarily neural from those in which a neural degeneration succeeds a primary adneural disease. Degeneration apparently occurs, and spreads, in the posterior columns with great readiness; and it is common for an acute change, which extends more widely through the thickness of the cord to clear from all except the posterior columns and persist in those. This occurs in both local primary myelitis, or damage by the pressure of an adneural disease. In these cases, which are not rare, a general weakness of the legs, sometimes complete, of sudden or of gradual onset, occurs at the commencement of the affection; and, as the weakness clears away, inco-ordination of movement remains, and often increases, so as to present

the typical features of locomotor ataxy. When, however, all these cases of secondary ataxy are eliminated, and only primary ataxy of slow onset remains, a large proportion of the cases—from my own experience, I should say that nearly one-half—present a history of antecedent syphilis. The following cases are examples of this association.

James R., aged 43, had a primary syphilitic sore at twenty-one; a little time afterwards, double iritis, recognised as syphilitic. At thirty-nine, he began to suffer from rheumatic and "throbbing" momentary pains in the legs. Soon afterwards, he found walking difficult. When seen, he had a well-marked ataxic walk; no patellar tendon-reflex; loss of sensibility to touch, especially on the soles; not to pain; some loss of sensibility to heat; no marked retardation. The pupils were small, motionless. The sight of each was $\frac{1\frac{1}{2}}{2\frac{1}{2}}$ and $\frac{12}{12}$.

George W. had venereal sores before marriage; and, since, three children, born dead. There was well-marked ataxy, slight in the arms (especially left), great in the legs. The onset was gradual twelve months before, with "rolling about", especially in the dark. He had "shooting" pains. There was considerable loss of sensibility to touch, and pain as high as the knees. The pupils were small, not acting to light; power of accommodation was good. Vision, left, $\frac{1\frac{1}{2}}{1\frac{1}{2}}$ and $\frac{8}{8}$; right, $\frac{1}{1\frac{1}{2}}$ and $\frac{8}{8}$.

Alfred H., aged 45, had chancre and indolent bubo at twenty. Slight occasional unsteadiness on legs was noticed at the age of thirty; but, at thirty-five, he found difficulty in the dark, which increased. There was well-marked ataxy on the legs, with throbbing pains, considerable loss of sensibility; no delay. There was no loss of sexual power.

William R., aged thirty-seven, had a venereal sore at twenty-one. Three of his children were born dead without cause. The affection commenced with failure of sight three years before, and two years later, rapid failure of power of using the legs, with later shooting pains, always well marked. He was unable to stand with the feet nearer together than six inches. There was no patellar tendon-reflex. There was marked defect of sensation, especially in localisation. The pupils were small (.1 inch diameter*); they did not act to light.

Thomas L., aged 47, was transferred to my care in University College Hospital by Mr. Godlee, in August 1878, with locomotor ataxy. There was no neurotic family history. He had syphilis at twenty years of age, and subsequently sore-throat for several weeks. For two years before admission, he had frequent shooting pains in the legs. There was defective power over the sphincter vesicæ, unsteadiness of gait for eight months, and loss of sexual power for six months. Ataxic gait was well marked; he was just able to walk alone; he could not stand with the eyes shut, or with the feet together and the eyes open. There was marked diminution of sensibility to touch on the legs below the knees, and slighter on the soles of the feet. There was marked diminution of sensibility to pain; slight of that to heat. There was slight retardation of painful sensation. The arms were almost unaffected; merely slight unsteadiness of movement with the eyes shut. He had ptosis of the left eyelid (said to be, in part at least, the result of an old injury); complete paralysis of the left external rectus; the pupils were small; there was no action to light; there was slight contraction on convergence of the eyeballs, the condition described by Argyll-Robertson; the sight was impaired. Large doses (5j daily) of iodide of potassium, and subsequently mercury, were given without improvement.

I have not included acute myelitis among the diseases described; because, although cases, apparently the result of syphilis, have come under my notice, they have occurred earlier in the syphilitic history than the other neural consequences, and the probability is great that the softening of the cord is secondary to adneurial (e.g., vascular) disease.

The facts given above suggest certain differences between these primary neural diseases and the common adneurial effects of syphilis. These differences might at first be supposed to furnish evidence against the neural diseases being consequences of syphilis; but it is clear that this question must be determined by the frequency of their association. If the frequent association of the two morbid states be established by wide and independent observation, there must be a causal connection between them; and as it is difficult to conceive that they can be effects of a common cause, it follows that the consequent must be regarded as in some way the effect of the antecedent; and any differences which are to be recognised between these and other effects of the same antecedent, suggest differences in the mode of causation rather than in the fact of the causal relationship. The first difference is the long interval

after the primary disease at which these neural changes occur. I have not seen them at a shorter interval than six years, and an interval of twenty years is very common. The ordinary adneurial changes, the growths, meningeal inflammation, and vascular disease, occur usually at an earlier period—may follow in a few months, and are rarely postponed longer than eight or ten years. The longer period is, however, no evidence against the activity of the syphilitic influence, since some of the later cutaneous manifestations of syphilis occur at as late a period. In one of my patients, who had had syphilis twenty years before, a characteristic syphilitic psoriasis was present. In these long intervals, the neural effects of syphilis remind us of many of the consequences of inherited syphilis, and the resemblance will be seen to obtain in other points.

A second difference is the frequency with which other causes act with the syphilitic influence in producing the neural disease. Although instances in which no other cause is to be traced are frequent, in many some other cause coexists. This is seen, for instance, in inherited syphilis, in which, in some cases, we have epilepsy without other traceable cause; in others, again, we have epilepsy associated with a double inheritance of syphilis and neurosis. Again, this is seen, curiously enough, in the disease, which is, I think, the most frequent primarily neural effect of syphilis, locomotor ataxy. Whatever it is which determines the occurrence of locomotor ataxy in men and very rarely in women, and which must be regarded as one of the causes of ataxy, operates in conjunction with syphilis in confining the syphilitic ataxy also to men. Other consequences of syphilis occur in women as well as in men; ataxy, in men almost exclusively. I have several times; it is true, seen ataxy in women who have had syphilis, but it has always been distinctly of the secondary form, the remnant of a wider damage from adneurial disease.

A third difference relates to the effect of treatment in these cases, and constitutes another point of resemblance to the late symptoms of inherited syphilis. As far as my own observation has gone, the cases of primarily neural disease, the sequences of syphilis, are not influenced by antisyphilitic treatment in nearly the same degree as are the adneurial syphilitic diseases, chronic meningitis, growths, etc. They require the treatment suited for other diseases of the same class, in addition to antisyphilitic remedies. The latter often help, but, of the two, the former are the more important. This has not, I believe, been the experience of all observers, but I am doubtful whether care has always been taken to discriminate between the affections which are primarily neural, and those which are secondary to adneurial disease. Observations on this point, to be of value, must be made early in the history of cases. In all syphilitic diseases of the nervous system, the good which is effected by treatment is, *ceteris paribus*, proportionate to the promptness with which the appropriate treatment is employed. As a rule, the opportunity for such treatment rests with the general practitioner and not with the consultant, who often only sees a patient, either in private practice or at a hospital, after the disease has existed for a considerable time. One object in bringing these facts before this Association is to impress upon practitioners the probability that many primarily neural diseases are due to syphilis, and to urge upon them the importance of employing, in all cases in which the probability exists, antisyphilitic remedies—for the sake of the patient, that all possible good may be effected, and for the sake of medical science, that we may learn whether, in these cases, antisyphilitic treatment promptly employed does or does not possess the power of relief which, in most cases, it has seemed to me to lack.

TREATMENT OF ANGULAR CURVATURE OF THE SPINE BY A PLASTER-OF-PARIS JACKET APPLIED IN THE RECUMBENT POSTURE.*

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THIRTEEN years since, in the summer of 1865, I read before the Cambridge and Huntingdon Branch of this Association notes of a series of cases of Pott's Disease of the Spine treated by a gutta-percha jacket, applied in the recumbent posture, according to a method which I then described. This jacket I continued to employ up to the time when Dr. Sayre published the account of his treatment of curvature of the spine by a plaster-of-Paris jacket, applied while the patient was suspended by the head and shoulders. Until he demonstrated that the rigid jacket might with safety completely encase the body, I believed, as did Dr.

* To physicians, the catheter-gauge method of recording the size of the pupil recommended by Mr. Hutchinson is less convenient than to surgeons. The diameter in fractions of an inch or millimeters is a far more convenient mode of statement.

* Read in the Section of Surgery at the Annual Meeting of British Medical Association in Bath, August 1878.