CLINICAL LECTURE

ON

SYPHILITIC BRAIN-LESIONS.

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1. Syphilitic Arteritis; 2. Tumor of the Brain.

Gentlemen: The first patient whom I bring before you to-day, I introduce merely for the purpose of exhibiting to you in an exaggerated form a symptom which is also seen in the next patient, who is suffering from some cerebral affection of very obscure origin, and upon whose case I wish to dwell somewhat more at length. This symptom is increased reflex movements, and in the present instance they are certainly phenomenal, being much more marked than in any case which I have as yet had an opportunity of bringing before you. The man had hemiplegia two years ago, and since then reflex muscular action has been most extraordinary. You are probably all familiar with the reflex movement that is caused by striking the leg a sharp blow just below the patella when the limb is flexed and allowed to hang in a relaxed condition; and you perceive how very exaggerated the motion is here when the experiment is tried, the slightest tap, such as would scarcely kill a fly, being all that is necessary to produce it. In the upper extremity the same strongly-marked phenomena are exhibited when the tendons of the flexor longis pollicis, biceps, triceps, and other muscles, are thus lightly touched.[1]

[1] This symptom—increased tendon-reflex—has recently been brought into prominence by Profs. Westphal and Erb in Germany, and I have followed

I pass now to the second patient, whose case, I think, we shall find a very interesting and instructive one. The man's name is Peter R——, an Irishman, thirty-seven years of age. Fifteen months ago he had a chancre, which did not appear until a month after exposure, but which lasted for a considerable time. Six months later, blotches, which did not itch, appeared upon the skin, but no other signs of syphilis became developed. This is not, perhaps, a very satisfactory history of specific infection, but it is, at all events, as clear as we ordinarily obtain from hospital and dispensary patients, and so I think we shall have to accept it as such. With the exception of this eruption, he remained well until September last, when he noticed a weakness of the right leg. There was slowly developing paralysis in this extremity, which continued to increase until about November, since which time there has not been much change in the condition of the limb. The paralysis also affected the upper extremity on the right side, and about a month ago the grasp of the right hand indicated, in three trials, the numbers 35, 35, and 34 respectively upon the scale of the dynamometer, against 40, 40, and 36 respectively marked by that of the left hand. In addition, there has been right facial paralysis and some little impairment of memory. He has never had any injury to the head, nor does he suffer from cephalalgia. There is nothing wrong about the eyes, as far as can be detected by the ophthalmoscope, and the urine has also been examined with a negative result. Finally, speech is entirely normal, there being no evidence of any kind of aphasia. One week ago a new and important symptom

their researches with much interest. I had this same patient before you last autumn, and tried the experiment of freezing the skin over the ligamentum patellæ, and then tried the test. The reflex contractions of the quadriceps were then just as well marked as before the freezing, showing that the sensory nerves concerned in the act were not cutaneous but tendinous. It is interesting to note that, since the clinical observation of Westphal, nerves have been discovered in tendons. The meaning of increased tendon-reflex I do not hold to be specially or specifically useful in practice. It simply is one more means of determining increased spinal excitability. Prof. Westphal has claimed that absence of tendon-reflex at the knee (knee-phenomenon) is an early symptom of sclerosis of the posterior columns; and I am pleased to say that observation upon several of my abetic patients has confirmed this.

showed itself, and that is, weakness of the other lower extremity. There has also now become developed, for the first time, increased reflex. In this instance it affects not only the muscles, but the bladder and other organs in addition; in other words, it is both tendinous and visceral. Formerly it was erroneously supposed that in such cases there was real paralysis of the bladder, and such is the vague sort of impression still prevalent among many of the profession; but, about twenty years ago, Brown-Séquard demonstrated conclusively that frequent, interrupted involuntary escape of urine from the bladder was due merely to reflex spasm.

Now let us look for a moment at the objective symptoms. The walk, you perceive, is not that of hemiplegia, lacking entirely the scythe-like leg movement so characteristic of that affection. This man drags his feet after him in a very slow and painful manner; and, while both the limbs are lacking in power, it is evident that the right one is considerably the weaker of the two. In walking he frequently staggers (though there is nothing especially significant about this), and he is unable to stand upon one leg. The naso-labial fold is much more distinct on the left side of the face than on the right, and the left pupil is slightly larger than the right. The tongue is found to deviate somewhat to the left, contrary to the ordinary rule in such cases, according to which it should incline toward the paralyzed side. The relative power in the two hands, as shown by the dynamometer, remains about the same now as it was a month ago. As far as we are able to make out, therefore, the case presents the symptoms of double, incomplete hemiplegia. There is also increased reflex in the muscles, which, though not so extraordinary as in the first case I showed you, is still exceedingly well marked, and, as you perceive, is much stronger upon the right side than on the left, both in the upper and lower extremity.

The next question that arises is, which is the situation of the lesion, or rather lesions which have produced the phenomena noted. If these had been in the anterior lobes of the brain and near the island of Reil or the third convolution, we should have had some interference with speech; and it is equally certain that they cannot have been in the posterior lobes. The first lesion is, no doubt, to be looked for in th

middle portion of the left hemisphere, and the second in the corresponding part of the right hemisphere. I think we can exclude here a lesion of the base near the median line; for, when this occurs, serious trouble ensues much more rapidly than has been the case in the present instance, and the cranial nerves are affected in a much more marked manner.

Now, what is the nature of the lesion? When the nature of the attack that has occurred is taken into consideration, we must undoubtedly exclude both hæmorrhage and embolism. As far as relates to the latter, moreover, I may mention that the heart is entirely normal. Again, there does not seem to be any reason to suspect a diffused peri-arteritis, causing aneurisms from which might possibly result the symptoms present in the case. Syphilitic tumors of the brain are quite common; but, if there were one at the base here, we should unquestionably have a lesion in the eye, such as choked disk, or neuro-retinitis. Let us, then, inquire whether we may not have here the form of arteritis sometimes met with in syphilis.

Syphilitic arteritis is not degenerative, like atheroma of the vessels. It is true that some authorities are of the opinion that atheroma is proliferative at first. This view lacks proof, however, while there can be no possible doubt that syphilitic arteritis is essentially hyperplastic and proliferative. In the first place, you must remember that the lesion is a diffused one, affecting the arteries in the rest of the body, as well as those of the brain. To speak more strictly, it is an endo-arteritis, the hyperplastic formation taking place on the inner surface of the vessel, and usually confined to one side of it. In some cases, however, the whole surface is affected in the same manner, and then the calibre of the artery becomes so diminished by this choking-up process as to finally be almost impervious. The deposit of inflammatory products is not uniform along the whole course of the vessel, but takes place irregularly at various points, so that a number of consecutive little tumors are thus produced. After a time the proliferation cells undergo fatty, but never calcareous, degeneration. By this choking of the arteries the supply of blood to the brain is much diminished, and sometimes we have the same result as occurs in embolism, viz.: parts of the brain become necrosed in consequence. In such cases recovery depends on

whether a vital part of the brain has become affected or not. If the third frontal convolution were involved, the patient would never recover his speech, although he might take any amount of iodide of potassium. The prognosis, as you may readily understand, is usually very grave.

In the present case, however, the paralysis is so imperfect that there is room for considerable hope. No essential portion of the brain has probably as yet become affected; but the result, I would impress upon you, is still very uncertain.

This syphilitic arteritis is a very recent discovery in medical science, and it was only in 1873 that Heubner first described it. Since then it has been suggested that we may possibly have a somewhat similar arteritis which is non-syphilitic; but as yet there is not sufficient evidence to prove the point. Heubner says that the specific arteritis is as common as specific tumors of the brain; but whether this is really the fact or not can only be determined by a more extended series of observations than there have as yet been time and opportunity for since the discovery was made.

In the patient now before us, we are led to exclude common tumor of the brain on account of the absence of three prominent characteristics of that condition, viz.:

1. Choked disk.
2. Convulsions.
3. Localized pain in the head.

On the other hand, the symptoms correspond perfectly with what we would naturally expect in the syphilitic affection of the cerebral arteries described; and, as there has been a distinct history of syphilis in the case, I think there can be no reasonable doubt of the correctness of our diagnosis.

But the third patient, whom I now present to you by way of contrast (and I am very glad, indeed, to have the opportunity of thus bringing the two together for your observation), has all the three symptoms of tumor of the brain to which I have just called your attention. This woman is a widow, fifty years of age, a native of Ireland. Like many others suffering in a similar manner, she found her way to an eye infirmary, and it was through the kindness of my friend Dr. Webster, under whose care she came, that she was sent to me. The following is her history: One morning in the month of

November, 1876, she found to her astonishment that she was paralyzed and numb on the left side. Her speech was also considerably affected, but was not lost. Afterward the paralysis very decidedly improved, but there was no change in regard to her power of articulation. At the same time she began to suffer from severe pain in the head and noises in the right ear. Her eyesight remained good for quite a long time, but became impaired about the beginning of February of this year. Dr. Webster, who examined her eyes at the Manhattan Eye and Ear Hospital, states that there is no diplopia or hemiopia, but that there is well-marked neuro-retinitis, with hæmorrhages in the retinæ, and, in addition, incipient cataract in one eye. About ten years ago, just before her husband's death, the woman had a venereal wart, followed by the characteristic symptoms of constitutional syphilis, such as sore-throat and non-itching roseola.

The impairment of vision, you will perceive, is quite a late symptom. The pain in the head, on the contrary, has existed from the beginning, and has always been more marked upon the right side. I regret that no thorough examination of the ear on that side has been made. Yesterday the patient told me that within the last two or three months she has had several attacks of dizziness, accompanied with complete loss of speech. These lasted but a few moments, she says, and she thinks that she did not lose her consciousness in them. They seem to be epileptiform in character, as far as I am able to make out, but not to amount to real convulsions. I should like, however, to have the testimony of others besides that of the patient upon this point.

On examining into her present condition, we find that she still suffers from a good deal of pain in the head, chiefly upon the right side, and that she has impaired vision with choked disk. In addition, the weakness upon the left side of the body still continues, and she now has attacks of temporary loss of speech. When she walks, her gait is very peculiar, there being a distinct falling of the whole side (left) in which the hemiplegia has occurred. There is no facial paralysis present, as you perceive that the naso-labial folds are equally distinct on the two sides. The strength of the left hand, as compared with that of the right, is indicated by the dynamometer,

which marks for the former 17 and 18, and for the latter, 25 and 28, in two testings.

Let me now direct your attention for a moment more particularly to the lesion met with in the eye here, for it is one which I think all medical men should learn to recognize. In the normal condition of the eye we get a very distinct outline of the disk. The margin is sharply defined, and not raised above the level of the surrounding retina. Indeed, it is sometimes actually depressed, and when this is the case it is denominated normal or congenital excavation. In neuro-retinitis, however, instead of the creamy color and sharp outline of the disk of the optic nerve, we find a swollen surface, not infrequently of a decidedly reddish hue, and without any distinct demarkation between the nerve and the surrounding retina. There are often blotches of hæmorrhage on various parts of the retina, and sometimes in the disk itself. This condition is seen in the present case, and the nerve is also very decidedly protuberant here.

As to the situation of the cerebral lesion in this case, we can only say that it is probably situated somewhere in the middle portion of the right hemisphere, no more definite localization of it being as yet possible. As regards its nature, there can be little doubt that we have to deal with a tumor. In favor of its being such, we have the three points of localized pain in the head, choked disk, and attacks of loss of speech, which are in reality probably epileptiform seizures. If the patient had two lesions, with aphasia, we should undoubtedly have other symptoms which are now lacking. Next, as to the essential nature of the tumor, with the history that the patient presents, the probabilities are altogether that it is of syphilitic origin. In these specific tumors of the brain, which are technically called *gummata*, the new cells, formed at the expense of the connective tissue of the brain, are found very closely packed together; and fatty degeneration is exceedingly apt to occur in those lying in the centre of the growth.

One point seems a little difficult to understand, and that is why a patient with such a tumor of the brain should be taken with a sudden paralysis. But we must remember that most portions of the brain accommodate themselves in a very remarkable manner to any slowly-increasing growth of thi

character, and that it is often only after it has attained quite a considerable size, or produced some special irritation, that such a tolerance is no longer possible. When this point is reached, either paralysis or convulsions are apt to occur in a very sudden manner.

These two cases form a very interesting study when taken in connection with each other, and, in order to bring them more clearly together before you, permit me to once more run briefly over the prominent points in the former one: The patient, a male, and thirty-seven years of age. Fifteen months ago he had constitutional syphilis, and six months ago right hemiplegia, gradually developed, and without aphasia or sensory disturbance. Recently there has been double hemiplegia, the left side being also affected, and with this, increased reflex. Finally, there has been no localized headache, no epileptiform seizures, and no lesion of the optic nerves. The diagnosis is syphilitic arteritis, and consequent localized cerebral softening.

The prognosis in the two cases is very much the same, but probably somewhat better in that of the patient with the tumor than that of the one with arteritis.[1] As regards the case of tumor, however, it is necessary to make the prognosis concerning the affection of sight separate from that in regard to the general condition; for there is great reason to apprehend irreparable atrophy of the optic nerve. It is possible that the tumor may not prove fatal to the patient, though in a considerable number of cases such is the result. This case illustrates very admirably the utility of the ophthalmoscope in the study of nervous diseases, and we are now called upon quite frequently to resort to it in troubles about the head. As instances, I may mention the cases of basilar meningitis occurring in children which I brought before you some little time ago, and in which it would have been quite impossible to make a correct diagnosis without the aid of this instrument. So, too, in Bright's disease and other affections, the instrument is often of the greatest assistance to the general practitioner, as well as to the specialist; and I think that every medical man should be more or less familiar with its use.