

ON CERTAIN POINTS IN THE DIAGNOSIS OF THE DISEASES OF THE NERVOUS SYSTEM.

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THE Diagnosis of the Disease, in the full sense which I have attached to this term in my *Observations and Suggestions*, Series I, p. 211, is the *first* step which the physician is required to take in his responsible office of the *cure* or care of the sick. Without the Diagnosis, all is darkness. Having first established an accurate Diagnosis, every duty to our patients becomes plain and obvious.

But skill in Diagnosis, in the large sense I attach to this word, implies a sound knowledge of anatomy, physiology, and pathology. All this will be apparent from the following observations, from which it will appear, I think, that however the "practical man"—in other words, the empiric—may exist without a knowledge of physiology, the able diagnostician and physician cannot. Experience, or the habit of visiting the sick, may teach much that it is desirable and even essential to know; but it cannot, without anatomy, physiology, and pathology, or the knowledge of the healthy and morbid actions, enable us to seize each link in the chain of cause and effect in disease, and so "to know the disease".

I. OF HIDDEN SEIZURES. The first topic which I shall bring before my reader, in illustration of these remarks, is that of *hidden or unobserved seizures*.

I was called, before I had detected the cause of hidden seizures, to a patient affected with protracted delirium, or aberration or confusion of mind, and other symptoms of *arachnitis*. By mild mercurial and aperient remedies, with quiet, a low diet, leeches, a spirit lotion, etc., my patient gradually recovered.

All appeared to be well, when, suddenly, and without assignable cause, except the usual events of business to which he had returned, my patient had a relapse, and now the malady was of tenfold violence: it was furious mania, and long protracted. Again, however, he recovered, though less perfectly.

Again my patient relapsed. But now the malady assumed the form of absence, rather than of excitement of intellect, with imperfect replies to questions, partly from amentia, partly from defective articulation. The case appeared to present the effects of *effusion*. The recovery from this third attack was, however, too prompt and too decisive, to admit of that opinion being retained. I asked the anxious wife of the patient whether there could have been anything resembling a *fit*; and now, for the first time, in answer to this interrogatory, a singular sort of "shuddering", which had occurred immediately previously to this attack, was described.

The patient was slowly but very imperfectly recovering from this third attack, when a decided *epileptic* seizure took place; the eyes, the features, and the head, being convulsively drawn to the right side, followed by augmented symptoms of mental injury, the obvious result of eating too heartily of turbot. In a few days another attack followed, adding

a degree of hemiplegia of the right side of the face and of the right hand to the other symptoms,—a paralysis happily but transient in its duration.

This brief sketch will give a vivid idea of what I mean by the terms “hidden seizures”, paroxysmal delirium, paralysis, etc., and spasmoparalysis.

An epileptoid seizure may take place in the night, at the water-closet, in the city, or elsewhere, unknown to any one. The *effects* of such seizure are referred to other causes,—to other conditions of the nervous centres. The case is called arachnitis, apoplexy, paralysis, mania, etc., according to the prominent symptoms. Who will affirm that he has not made an imperfect diagnosis in such cases? Much careful and thoughtful inquiry, indeed, is required to form a correct opinion. A slight convulsive action, a bitten tongue, an ecchymosed eye-lid, may lead to the detection of a seizure *hidden* hitherto. But before this investigation can be pursued, the mind must be informed and the attention excited. Something slight of this kind may take the speech, the use of the fingers, the vision (in one case, one-half of objects only were seen), etc., for a moment or two, or for a longer time. The affection is, happily, generally transient, as it is paroxysmal. The *seizure* is absolutely *hidden*, except in its *effects*. How much of skilful observation is required before this subject shall be worthily explored!—its hidden character, its paroxysmal form, its form of coma, paralysis, mania, amentia, syncope, sickness, be thoroughly known! This remark leads me to the second topic of this brief practical paper.

II. ON THE VARIOUS FORMS OF SEIZURES. I had the advantage of attending a most interesting case, four months ago, and again a few days ago, with Mr. Martin, of Grosvenor-street. The former attack was apparently induced by *emotion*. In the latter, no cause could be assigned except the recent keen easterly wind. In it, the head was violently drawn to the right side, the external jugular was distended, the eyes injected and the pupils dilated, and the temporal artery was like a cord, or rather a rope; stupor and hemiplegia were added to these appearances. The right side of the face was slightly agitated by convulsive movements. The next day, a sort of delirium took the place of this stupor. The hemiplegia had (as in the former attack) mostly disappeared; it was paroxysmal and transitory.

It is not my intention to pursue this subject at this time. I must content myself by observing, that the principal *forms* of these seizures are—1, the *Cerebral*; 2, the *Spinal*; 3, the *Cardiac*; 4, the *Stomachic*; that is, inducing cerebral, spinal, cardiac, and stomachic symptoms, variously combined.

Without being unjustly confident in a matter obviously not of a simple character, I would venture to suggest that emotion, or some excitant of reflex actions, is the first cause of these seizures; contractions—morbid and abnormal contraction of the muscles of the neck—an early effect; then compression of the veins in that important region, etc. etc. I propose this subject, as the former one,—as I would every one,—for further and fuller *unbiassed* observation, all *emotion* being excluded. I think, then, that in a certain class of cases, the cerebrum is chiefly affected

with cerebral symptoms; that in another, the spinal centre is chiefly involved with convulsive affections; and that in a third, the medulla oblongata, at the junction of the pneumogastric nerve, is specifically injured with syncope and sickness. This subject for *diagnosis* and for investigation, I commend to the young scientific and physiological physician.

III. ON ALGO- OR SPASMO-PARALYSIS. It is the object of this part of my paper to call the attention of physicians to the difference between paralysis *with* and *without* pain or spasm, to point out the diagnosis afforded by these facts. But, first, I must speak of the different kinds of pain in these cases. This consists chiefly of the sensation of "pins and needles", as it is termed, and of undue sensitiveness, amounting almost to pain, on touching or gently irritating the cutaneous surface. The *first* diagnosis afforded by the presence of this kind of painful sensation, is that between cerebral and spinal paralysis. In cerebral paralysis, the sensation is generally one of numbness, or of the interposition of some thin substance, as muslin, between the object touched and the fingers. There is rarely any more positive or painful sensation. It is in spinal paralysis that the morbid and painful sensations, which I have described, present themselves. Their absence or presence, therefore, in any given case, is diagnostic of paralysis of cerebral, and paralysis of spinal, origin. But there is a *second* kind of diagnosis afforded by the presence or absence of painful sensations. The presence of such sensations shews, that the lesion of the spinal centre is not complete destruction of its structure, for then sensibility would be annihilated; but that it is rather a state of *irritation* than of destruction,—a diagnosis of the most momentous kind.

What I have said of pain, is still more true in regard to spasm. Spasm never results from lesion of the cerebrum: it implies lesion of the spinal marrow. Spasm is the result of irritation, not of destruction, even of this latter centre of the nervous system. In any case of algo- or of spasmo-paralysis, then, we conclude that it is of spinal, not of cerebral, origin; and that it is irritation or erethism, not destruction or catalysis, of the spinal centre. Indeed it may be observed, in general, that affection of the cerebrum can only give rise to affection of the cerebral functions, as undue excitement of the spinal senses, of the perceptions, of the imagination, etc., or to diminution or abolition of these functions. *Pain and spasm belong to other systems.*

In my examination of patients, I frequently ask—"Have you the sensation of 'pins and needles'?—have you any cramp or spasm?" And I find the replies greatly to *prompt* the diagnosis—the diagnosis between irritation and destructive lesion, between arachnitis and myelitis. I leave these *suggestions*, for such alone they are, to the careful consideration of my readers.

IV. THE SEAT OF PARAPLEGIA. In Paraplegia, the first questions, after those relating to pain and spasm, are—Is there reflex action on applying an excitant, as heat, or cold, or tickling, to the foot or feet, or to the higher parts of the cutaneous surface?—and, how *high* does the point of excitability extend?

By these inquiries we learn, whether a portion of the spinal marrow remain intact below the seat of the disease or lesion; and by bearing in mind the oblique mode in which the spinal nerves leave the spinal marrow and canal, we learn the seat of this lesion still more accurately. In the absence of reflex actions, we learn the seat of lesion by ascertaining how *low* the loss of sensation extends. By ascertaining the existence of reflex actions, on one hand, and the downward extent and boundary of sensation on the other, the anatomist and the physiologist may form a very accurate diagnosis of the seat and limitation of the lesion. Nay, I have a case of no ordinary kind and interest under my care at the present time—for the opportunity of witnessing which I am indebted to Mr. Humby, of St. John's Wood—in which the disease is (probably) limited to arachnitis over the anterior part of the vertebræ, on which the brachial plexus takes its origin; for the case is one of spasmoparalysis, limited to the muscles of the two hands and arms! I intend to give the case with all its details shortly; meantime I will merely mention, that a ptosis of the right eye-lid, and imperfect motion of the right eye outwards, have already ceased under a mild mercurial treatment, and the arms are rather more under command. The arachnitis had probably extended to the base of the brain. In the neck, the vertebræ project a little, giving the appearance of roundness, and throwing the chin upon the sternum, an effect also somewhat lessened. The case is probably one of syphilitic affection of the cervical vertebræ. At any rate, the light thrown upon the diagnosis by our anatomy and physiology, the only sources of knowledge we possess in such a case, is most interesting and most valuable.

V. ON "THE NERVOUS CIRCLE" OF SIR CHARLES BELL. There is a class of phenomena in some cases of paralysis, which, I think, throw a ray of light on the phenomenon which Sir Charles Bell has designated "*the Nervous Circle*", and defined thus:—"Between the brain and the muscle there is a circle of nerves: one nerve conveys the influence of the brain to the muscle, another gives the sense of the condition of the muscle to the brain." I think this view an error. I believe we have no consciousness of the condition of individual muscles, or sets of muscles, as we have no power of acting on such muscles. The sense, sometimes denominated the muscular sense, is, I believe, not in the muscle, or in any sentient muscular nerve, but in the nerve of touch, or of vision; and volition is not directed to any muscle, or set of muscles, but to the aim, object, and purpose of their contraction. We are guided in our voluntary actions, not by muscular sense or nerve, but by the sense of touch or of vision, by the *cutaneous* or the *optic* nerves. If there be loss of sensation in the fingers, the patient lets any object held by them escape and fall, unless the eye be continually directed towards them, to regulate the force of muscular contraction. If a patient have lost the power of sensation in the feet, he cannot walk in the dark; the eye is essential to the due action of the muscles of the lower extremities. I have a patient afflicted with partial paraplegia, who has no power of *balancing* himself without the aid of the eye. We have only to consult our own consciousness to be aware that "the nervous circle" is not between muscle and muscle, but between one sentient nerve, whether

of touch or of sight, and another. The sensation does not ascend from the muscle, nor does volition descend to it; but the former arises from a nerve of sense—of special sense—and the last is directed to an aim or purpose, in attaining which the former is the *guide*.

This short disquisition—and I intend to treat the subject more at length hereafter—has rather arisen out of the study of the *diagnosis* of diseases of the nervous system, than afforded a means of such diagnosis. Still, I believe, that real and sound physiological views always find their application in practice, sooner or later; and I have therefore thought it right to notice this amongst the “Certain Points in the Diagnosis of the Diseases of the Nervous System”, which I proposed to myself as the object of this communication. The purpose of my life of labours is, if possible, to raise Medicine to the rank of Surgery, to exchange its empirical condition to that of science—its own science—Physiology, and to exclude the mere quackeries, whether in the profession or out of it. I shall conclude by a brief notice of—

VI. PAIN ALONG THE SPINE. Much has been said on the subject of “Spinal irritation”, and of the presence of tenderness along the spine. If there be inflammation or disease of the vertebræ, their ligaments, etc., it is plain that pressure will induce pain. But the anatomist sees at once that no pressure on the spinous or adjacent tissues can occasion pain, where the malady is seated *within* the spinal canal. Besides, the pain now in question is one, if it really exist at all, of mere hyperæsthesia of the *cutaneous nerves*, generally mere hysteria. And although hysteria is *real* enough, as we see in hysteric palpitation of the heart, yet it must be viewed as *sui generis*, and be treated wisely, and not as we would treat organic lesion. Scarcely do percussion, or the application of a sponge, taken out of hot water, along the spine, afford us more definite results. The diagnosis in this class of diseases is, in fact, the result of an enlightened and enlightening *anatomy* and *physiology*. The diagnosis of the Diseases of the Nervous System must rise out of the diagnosis of its functions, and I may with great truth and justice repeat, that the detection of the *Reflex Spinal System*, and its distinction from the cerebral and the ganglionic, constitute the basis of all further progress in this department of our science.

Long ago, and on many occasions, I had set forth the *idea*—and much more than the *idea*—and in the *idea* is the *discovery*,—that the science of obstetrics is a branch of that of the reflex spinal system; and Dr. W. Tyler Smith has recently accomplished (as, I believe, no one else could have done), what I had suggested, in the following words:—“The whole question of abortion and parturition, and, in a word, of *Obstetrics*, as a science, is one of the true spinal system; and he will do humanity great service who, with suitable opportunities, will trace it fully.”¹ We know that the mamma is an excitor of uterine action, whilst the ovarium presides over other parts of the generative functions. If Dr. Tyler Smith shall *prove* that the ovarium is the excitor of parturition, which appears so probable, I shall consider that proof a brilliant *discovery*.

14, Manchester-square, June 1849.

¹ On Diseases of the Nervous System, p. 341, § 1711.