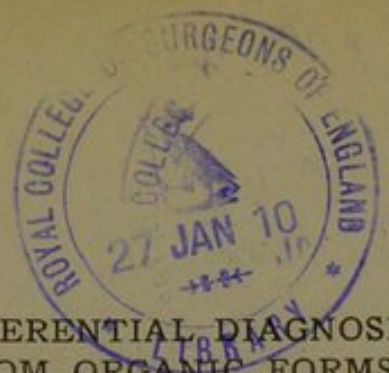
The differential diagnosis of functional from organic forms of motor disability / by Tom A. Williams.



THE DIFFERENTIAL DIAGNOSIS OF FUNCTIONAL FROM ORGANIC FORMS OF MOTOR DISABILITY.

By Tom A. Williams, M. D., Washington, D. C.

On the last occasion when the honor of addressing the Medical Society of the District of Columbia was extended to me, I took occasion to sketch the recent progress in a field of practical clinical medicine hitherto neglected by most clinicians on account of the technical difficulties. I showed how these difficulties of examining disorders of the sensibilities had been smoothed away, and had the pleasure of demonstrating a large number of pictorial illustrations for which the subject was well adapted.

The subject I have chosen on this occasion, though often complex, is one with the difficulties of which each of my listeners must have been faced; for whereas the method of detecting alleged disorders of sensation is often erroneously believed so fallacious as to be hopeless, on the contrary every clinician believes himself capable of appreciating disorders of motility. While this is true, the important question in any case of motor disability is to determine its pathogenesis; and this often requires diagnostic methods of great delicacy and considerable experience in the technique of their application, as well as a knowledge of the anatomy, physiology and pathology of the nervous system, which few have time to attain.

The matter does not well lend itself to pictorial illustration; and for its presentation by clinical examples, more time would be required than I have at my disposal to-night. However, by this time, I have collected a considerable number of cases illustrating the points I am going to discuss; and should any of my hearers wish it, I shall be gratified to arrange a clinical demonstration for their benefit.

My subject is: "The Differential Diagnosis of Functional from Organic Forms of Motor Disability;" but to-

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*Read before the Medical Society of the District of Columbia, Washington, D. C.

Reprints from the Gulf States Journal of Medicine and Surge y and Mobile Medical and Surgical Journal, April, 1909.

night, on account of the limitation of time, I must omit almost all but those of cerebral origin. I shall therefore consider in order:

I. Hemiplegia;

II. Paralysis Agitans;

III. Tics and Spasms of the Face and Neck, and Occupation Cramps.

Nothing in the practice of medicine is more important than the ability to distinguish palsy purely functional, whether psychic or not, from that due to destruction of nerve tissue; for the appropriate treatment of the former variey will obviate the years of disability and suffering which so many unfortunates have undergone through want of diagnostic knowledge on the part of the physicians they have consulted.

At the Congress of Lille I endeavored to show how often and in what manner diseases were, if not produced, at least perpetuated by ill directed statements on the part of medical advisers. I showed how a motor disability induced temporarily by a shock, fright, or even by physical trauma or evanescent disease was often fixed in the patient's mind by an exaggeration of its gravity, the patient's preoccupation with his state being fortified by the doctor's tactless suggestion.

But it is an equally serious fault to minimize the gravity of a lesion to cheer up a patient, and to appeal to his will-power when he is functionally disabled on account of organic destruction of tissue, or even temporary paralysis of nerve centers or interruption of nerve paths by oedema, infection or intoxication. Hence, the supreme importance of correct diagnosis of the cause of paralysis.

A good illustration of these points was afforded by a case recently seen with a leading physician of Washington. It was that of a young married woman who some years before had undergone ablation of the appendages at the hands of a gynecologist of international fame, who was stated to have been treating her also for syphilis, on account of a right hemiplegia and aphasia. The symptoms had ceded in about six months, and had not recurred until a few days before I saw the patient. I found her lying in bed totally unable to move the arm or leg, which were, however, flacid and anaes-

thetic. She suffered no pain, there was no hemianopsia, ataxia, nor trembling. I could therefore exclude a lesion near the thalamus, which never causes complete powerlessness and is always accompanied by some of the foregoing symptoms. The anaesthesia at least was probably therefore hysterical, but organic disability is very frequently augmented by additions arising from suggestion of further disability by the mind of the patient or others.

Though the patient expressed inability to sit up, she sat up when urged, ostensibly to test the patellar reflexes. The muscles of the abdomen and pelvic girdle were then seen also to contract coordinately along with their contralaterals, though quite unable to perform ordered movements alone. This never occurs in complete palsy by organic interruption of nerve paths; and was therefore a positive sign of hysterical palsy.

There was no means of testing the peculiar trepidating and clasping grasp of the truly palsied hand of hemiplegia, nor the " marche en fauche;" as the patient could neither grasp nor walk.

Babinski's combined flexion of the thigh and trunk could not be elicited, as the patient professed inability to raise herself in the regular way. I was not then acquainted with the modification of this sign for which we have to thank Hoover. This consists in the pressure exerted by the heel of the sound limb upon the floor or bed when the patient tries to lift the opposite leg or to sit up. A normal person synergically presses both heels against the floor when trying to get up from the recumbent position. In a true hemiplegic full pressure is exerted only by the sound limb, the pressure of the paralyzed limb being diminished proportionately to the defect of the motor neurones; however hard the patient is trying to rise or to lift the opposite leg as the case may be. A simulator or hysteric on the other hand cannot lift a sound leg without exerting synergic pressure with the heel of the paralyzed leg; and when he is asked to lift the paralyzed leg, his feigned attempt is unaccompanied by synergic downward pressure of the contralateral limb; this proving that no real attempt is being made to lift the leg. A further modification of this sign has been described by Zennier. This consists of

estimating the downward pressure of the thigh instead of that of the heel as employed by Hoover. The writer has tested each of these signs and finds them both of easy application, and does not feel the difficulty in appreciating the pressure of the heel which Zennier has experienced in employing Hoover's test.

The uninitiated might have been thrown off his guard by the certain history of hemiplegia treated as organic by so eminent a man. I addressed myself, however, to the objective signs. I found no exaggeration of the tendon jerks of the patella, Achilles, triceps masseter nor radialis, no diminution of the homolateral abdominal reflex, no extension of the great toe on stroking of the sole. Both platysmae contracted normally on forcible depression of the chin. There was no hypotonia, and lastly the palsied arm and leg when suddenly let go after being supported or gradually lifted showed distince contraction of antagonist muscles and there was no synergic contralateral contraction upon forced efforts. There was no implication of facial or ocular movements and no dysarthia. A paralysis flaccid and absolute, an anaesthesia complete and ceasing abruptly at the mid-line comprised the whole syndrome. These characters were sufficient to exclude organic hemiplegia in the present attack, and moreover made it highly probable that the former attack was incorrectly diagnosed; for it is certain that a relapse of cerebral hemiplegia of vascular origin would have been certainly accompanied by distinctive objective signs, especially that of Babinski, which was not the case with this patient.

Were another argument needed, the immediate success of my treatment furnished it, for I told the patient that her hemiplegia was certainly not organic, that it was curable by the education of the movements which I showed her how to make, at first passively; and that on my return visit I expected her to shake hands. The co-operation of her husband, a medical man, was enlisted by explaining the mechanism of the affection in due course. At my next visit, several days later, the patient shook hands with me, and walked across the room, as she had been doing for several days. The slight remaining weakness I assured her would disappear in a few

Facial Palsy and Blepharospasm.

The help derived from the character of a facial palsy was not afforded in this case. As should be well known by now, hysterics sometimes simulate facial palsy, as well as ptosis with or without orbicular spasm or contracture. In them, however, there is always synergic response of the palsied side when the well one contracts, for it is not possible to contract the muscles of involuntary expression homelaterally without long practice. The fact that the frontalis or orbicularis are spared does not, however, negative a lesion; for these are innervated by a separate portion of the facial nucleus (Page, May and Marinesco) in the medulla, and have also a separate cervical center; accordingly they may escape palsy derived either from the high or lower neurone, as well as in hysteria.

Organic ptosis must therefore be diagnosed by distinguishing the positive signs, such as the constant contraction of the corresponding corrugator supercilii to compensate for the loss of the levator palpebrae, though even this may be simulated by a forcible contraction of the orbicularis at the same time, which will give rise to a clinical picture resembling true blepharospasm with or without palsy. It is distinguished by the twittering and expressive volleying of the true spasm, while the hysterical is like a voluntary contraction, and does not so invariably begin in the orbicularis. A true palsy of the orbicularis is revealed by the sign of Cestan and Dupuy Dutemps, which consists of the raising of the eyelid when the patient attempts to close the eyes while looking down. The palsied eyelid will perceptibly ascend before the eye closes (Charpentier).

The ptosis caused by the extreme fatiguability one finds in myasthenia gravis must be confused with neither this defect nor with hysteria.

It is sometimes hard to dceide that atrophy of muscle is present; for on the one hand, fat may mask wasted muscle, and on the other, general emaciation may make one suppose that the muscles are absent when that is not the case. I need not here enlarge upon the electro-diagnostic criteria of lower motor neurone palsy. They are infallible when used by one knowing the pitfalls of electrical resistance.

Evanescent Perturbations of the Motor Tract.

It can not be too widely known that a mere interruption of the pyramidal tract by oedeme, anemia, or perhaps even a toxin, may give rise to a temporary Babinski sign, which will disappear with its cause. Therefore one should not prognose in a case where such a possibility is not excluded. It is not uncommon that dyscrasic states, such as diabetes and uremia, injure predominantly only one side of the nervous system. Even the causal factor of polyneuritis may act only unilaterally, as shown by the striking case of ascending paralysis cited by Camp, and found post mortem to be solely a unilateral peripheral neuritis without implication either of cord or brain.

Paralysis Agitans.

Nor must its unilateral commencement allow the spasticity of paralysis agitans to be confounded with that of frank pyramidal disease. Here the slight weakness of the Achilles jerk sometimes occurs, as Rissian Russell points out. Hysteria, however, can not be excluded in some Parkinsonian cases; for even the trembling is much influenced by the will, and spasticity becomes relaxed as the limb is used. A test I have often used is to suddenly clutch and raise the arm or leg while the patient is engrossed. Flaccidity excludes paralysis agitans, and renders probable a diagnosis of psycic affection. The therapeutic test may then clinch the diagnosis. As the old proverb has it, "Naturam morborum curationes estendum." This test is of course not applicable to permanent hysperical contracture, but the general character of these contractures are not likely to be confounded with the spasticity or paralysis agitans.

Any tremor in the aged, accompanied by spasticity, is by no means Parkinson's, for the so-called essential or hereditary trembling may not ensue until late in life. For diagnosis of these we must depend upon their character, for these essential tremors approximate to those found in toxic conditions, i. e., are finer and less regular than that of paralysis agitans.

Occupation Cramps, Tics and Spasms.

A special kind of incapacity for movement is that found in occupation cramp. Here the muscles can quite easily per-

form any movement called for except the particular one required by a scientific act. It is not difficult to see from this very definition that its pathogenesis is psycic. It is indeed in mechanism a tic, only differing from one in being excited by a particular specific stimulus, viz., the desired automatic act; whereas, a tic, in the strict sense, is excited by all and sundry stimuli, indeed independent of any.

It is thus a great error of practice to treat Scriveners' palsy by local applications, massage, electricity, or strengthening exercises.

The muscle "cramp" is caused by the idea of the need to write, and is relieved at once by the replacement of that idea by another, such as the idea to perform some other act even by the same muscles, as for instance in the case of the girl who could not write with a pen but could do so quite well with a pencil. Is it not puerile to suppose that incapacity due to a weak muscle could extend to a pen without doing so to a pencil?

The whole matter of the tics cannot be entered into here save to mention one form of torticollis. This is a palsy in the sense that the head cannot be voluntarily straightened whether contracted constantly (tonic) or intermittently (clonic). The agonists of the desired act are overcome by their antagonists. Functionally speaking, the muscles are rarely groupable in terms of a particular peripheral nerve, but are always so in terms of physiologic acts. They therefore correspond to cortical, not neural groupings. The author has recently considered the diagnosis between tic and true spasm, and he placed the differential points in the form of a table.

Hence the tortocollis only differs from a normal act in being ill-timed, functionally useless or injurious, often excessive, imperfect or a mere sketch of some normal act. As Meige puts it, "A smile with no corresponding pleased thought, a cry or word denoting no appropriate idea; a gesture to relieve a non-existent irritation, a chewing movement while the mouth is empty." The well known imperative need to perform the morbid act and the satisfaction ensuing upon its completion, do not differ from the physiological, except by its domination of the victim.

An understanding of this pathology shows how useless and indeed injurious is a section of nerve and muscle in such an affection. Of course, I am not speaking of tortocollis induced by that rare condition, a neuritis or pressure upon the spinal accessory nerve, or the spasm caused by its irritation. Nor do I speak of hysterical wry neck which is sometimes abolished by surgery through the suggestion of cure the cutting brings. These forms are both rare, however, in comparison with true mental torticollis. The positive diagnosis too is generally easy, for the stigmata of psychasthenia are rarely absent, and the procedure involved in their detection is not too difficult for the average practitioner who will take the trouble to acquire it. As illustrating the errors of diagnosis caused by such cases I quote two cited by Cruchet, the first from Boetius. The patient, an Irish woman, became ill after having rubbed her neck with a mercurial ointment procured from a charlatan. The author tells us that the woman was completely cured at the end of two weeks by using sudorific tisanes, by frequent applications of fomentations, and by ointments, etc., applied to the neck; but that a short time later, having been imprudent enough to apply the same ointment to the nape of the neck, the contortions returned. These were neglected for some time and subsequently they augmented to such an extent that neither the remedies already applied nor any others were successful.

A recent example of the regrettable confusion derived from indiscriminate use of the word "spasm" is afforded by the two cases reported by Giriamo Mirto: one was treated by alcohol injections into the 7th nerve, the other by nervectomy of the ophthalmic. Both relapsed early, and Mirto inferred that the blepharospasm must therefore be psychic, one of these cases being a tic of professional movement, and the other, also a tic, being due to a faulty habitual attitude.

The work of Meige has left no excuse for such ineffectual and risky operations. As Brissaud trenchantly remarks, "Instead of proceeding to operate at once and being content thereafter to enjoin on the patient, whenever the wound is healed, a course of exercises to be persevered with over long months or even years, better give the same good advice long

months or even years before inflicting him with the operation."

Another instance where accurate neurological technique was sadly lacking was afforded by the cases reported by Desterac to the Congress of Toulouse. The walk of one resembled the spastic gait of Friedreich's ataxia; that of the other was incoordinate like cerebellar ataxia, in addition both had spasm of the hand in writing, spasmodic movements of the trunk, and spasmodic torticollis. Both had clubfoot and scoliosis, and one was afflicted with spasm of the face and left arm. In this case further there was nystagmus, together with loss of reflexes and difficulty in articulation, while fibrillary contractions were to be observed in his muscles. The other patient's reflexes were exaggerated, and he showed a double extensor response. Meige later saw the former case and found that the scoliosis was not permanent, the deformation of the foot could be overcome, and at the same time he failed to convince himself of the presence of nystagmus and the absence of the knee-jerks. Moreover, he happened to observe the patient in the street unawares, and remarked how between two phases of bizarre contortions his vicious attitudes and convulsive gestures almost entirely vanished. In fact the clinical picture seemed to be quite other than that associated with organic disease such as Freidreich's disease or hereditary cerebellar ataxia.

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