CHAPTER VIII.

ATHETOSIS.

Under the name of athetosis (Ἀθέτος, without fixed position), I propose to describe an affection which, so far as I know, has not heretofore attracted the attention of medical writers, and of which two cases have come to my knowledge. It is mainly characterized by an inability to retain the fingers and toes in any position in which they may be placed, and by their continual motion. From these phenomena, I have applied the term athetosis to the disease, having as yet had no opportunity of ascertaining by post-mortem examination the nature of the lesion to which the symptoms are due.

These symptoms will be evident from the following histories:

J. P. R., aged thirty-three, a native of Holland, consulted me September 13, 1869. His occupation was bookbinding, and he had the reputation, previous to his present illness, of being a first-class workman. He was of intemperate habits. In 1860 he had an epileptic paroxysm, and, since that time to the date of his first visit to me, had had a fit about once in every six weeks. In 1865 he had an attack of delirium tremens, and for six weeks thereafter was unconscious, being more or less delirious during the whole period.

1 This patient was several times at my clinics before the class of the Bellevue Hospital Medical College, first in the autumn of 1869 and last in January, 1871.

Soon after recovering his intelligence, he noticed a slight sensation of numbness in the whole of the right upper extremity, and in the toes of the same side. At the same time severe pain appeared in these parts, and complex involuntary movements ensued in the fingers and toes of the same side.

At first the movements of the fingers were to some extent under the control of his will, especially when this was strongly exerted, and assisted by his eyesight, and he could, by placing his hand behind him, restrain them to a still greater degree. He soon, however, found that his labor was very much impeded, and he had gradually been reduced, from time to time, to work requiring less care than the finishing, at which he had been very expert.

The right forearm, from the continual action of the muscles, was much larger than the other; and the muscles were hard and developed, like those of a gymnast.

When told to close his hand, he held it out at arm’s length, clasped the wrist with the other hand, and, then exerting all his power, succeeded, after at least half a minute, in flexing the fingers, but instantaneously they opened again and resumed their movements.

I treated him with galvanism, primary and induced, for four months, without notable result. His fits were, however, arrested with bromide of potassium.

His memory began to be impaired soon after his attack of delirium tremens, and his intellect was manifestly weakened when I first saw him.

January 17, 1871, he entered the New York State Hospital for Diseases of the Nervous System, when the following points, which I cite from the report of Dr. Cross, the Resident Physician, were noted:

The head is symmetrical, but is peculiar in shape—the posterior portion rising to a much higher point than the anterior, while the latter slopes downward and forward, giving the cranium the form of that of a Flathead Indian.
action. The toes are kept restrained to some extent by the boot, but as soon as it is removed they become flexed and take on their peculiar movements.

When, by a strong effort of the will, he succeeds for an instant in arresting the movements in the hand, the little finger at once becomes strongly abducted, the third finger participates to some extent, the second finger is slightly flexed, the index-finger is extended, and the thumb is extended to its very utmost. These are the positions in all cases in which he succeeds in quieting the actions, and they are well shown in the accompanying woodcut (Fig. 29) taken from a photograph.

In account of the severe pain in the whole arm, caused by the spasms in the muscles, the patient is at times unable to go to sleep until quite exhausted. On awaking, however, after a few hours' repose, although the actions have continued during his sleep, they are not so severe as at any other time through the day or night. This state of comparative repose lasts for about half an hour.

His habits are bad. He boasts that he has often drunk as many as sixty glasses of gin in a day, and it is therefore doubtful whether the tremulousness observed in the tongue
and the muscles generally is the effect of the disease, or of
drink, or of both combined. I have never, however, seen
him drunk, or even under the influence of liquor. His
mental faculties are decidedly more obtuse than when he
first came under my observation.

Under the use of the primary galvanic current to his
brain, spinal cord, and affected muscles, and the internal
use of chloride of barium, he is certainly improving, but I
have little hope of any permanent result being obtained.
His epileptic paroxysms are kept down with bromide of
potassium.

The second case occurred in the practice of Dr. J. C.
Hubbard, of Ashtabula, Chio, who forwarded to me the
following excellent report, dated January 11, 1870, and two
photographs—one full length on a small scale, and another,
from which the woodcut, Fig. 30, has been engraved:

"H. S., aged thirty-nine years, a farmer by occupation,
moved in 1830, and has always been a tenant farmer. His
father and maternal grandfather were free
ers of ardent spirits. His only brother died in phthisis
pulmonalis, and I think he inherits a tubercular tendency
from his mother. The patient is short, muscular, is well
made, and has always had good health till about eight years
ago, when he had several attacks of headache, followed by
vertigo and loss of power to maintain the upright posture,
or to sit in a chair. After falling, he lost consciousness for
a few moments. He had three of these attacks in two
months.

"Three years after the last one, being five years and a
half ago, while at work on a hot day in the open air, he
lost consciousness and fell to the ground. This attack was
more severe than the preceding ones, and he was confined
to his bed three days. The headache was very severe, and
continued a week after he left his bed. Aphasie, and the
incoördination now affecting his right forearm and right leg,
were the sequence of this stroke. His powers of speech
were gradually re-established in the course of six weeks, but
the impediment to normal voluntary muscular motion has
remained to this day.

"In June last [1869] he applied to me for relief from
cephalalgia, pain in the right side of the chest, cough, and
dyspnoea. He complained also of vertigo and of flashes of
light before his eyes. His memory and judgment were
slightly impaired, and he was gloomy and irritable.

"His utterance of most words was perfect, but he stam-
mered over at least one word in each sentence. It required
a good deal of effort for him to connect his ideas and his
sentences. He stumbled at monosyllabic words, such as
and, then, to, at, and other conjunctions, but in a moment,
after considerable effort, he could speak these words and
conjoin his sentences correctly.

"On examining his right foot, I found that he had lost
the normal antagonizing force between the flexors and
extensors of the toes. The toes were ordinarily in a state
of flexion, so as to present their ends to the floor. He could
restore the balance in muscular action by a strong effort of
the will, pressing at the same time the sole hard upon the
ground, and drawing the foot backward a little. Soon,
however, the extensors would be wearied by their extra
work, and the toes would resume their abnormal position.
The foot is slightly inverted at every step, and it is not ex-
actly guided by the will. His gait is awkward—the foot
being set down with a kind of pawing motion, as in taipas
varus.

"A similar incoördination is observable in the right
hand and fingers. He cannot flex his fingers without the
aid of the opposite hand, but when it is closed the grasp is
as strong as ever. By an intense action of the will he can
keep his fist closed for a few moments, till the apparently
tired flexors give way. The little and ring fingers are but
partially extended, and are strongly abducted. The ab-
ductor minimi digitii, and the flexor brevis minimi digitii,
are hypertrophied, firm, hard, and in a state of contraction.
most of the time, and the affected hand measures three-fourths of an inch more around the palm than its fellow. Tactile sensibility is as perfect in the affected limbs as in the others. His muscular powers are good, and he thinks he can walk twenty-five miles without injurious fatigue. The temperature of the affected limbs is slightly lower than that of the opposite ones. Has slight headache frequently, generally at evening; sleep relieves it. He sleeps well when undisturbed by pains in his limbs. Tongue clean and tremulous. Has slow, moving pains, from the hand and foot up to the body. They often last half a day, and are worse at night. Has no pain, tenderness, or feeling of weakness, in any part of the spine.

"He had no systematic treatment till last June. The chest symptoms referred to were owing to subacute bronchitis. A seton was inserted between the shoulders, and iodide of potassium was administered for ten days. His lungs being then better, phosphoric acid, cerium, cannabis indica, sulphate of quinine, and sulphate of iron, were given till the 1st of December following. He then felt so much better that he discontinued the medicines. The seton continued to discharge till the date of this communication [January 11, 1870], and he presents at this time a very marked improvement. His headache is not severe, he has less pain in his limbs, and he speaks without hesitation. By a strong effort of the will he can close his hand without assistance. He came five miles on foot, in a driving snowstorm, to see me to-day."

The accompanying woodcut (Fig. 30) is from one of Dr. Hubbard's photographs. The resemblance to the condition shown in Fig. 29 is very striking, and the histories of the two cases are so nearly identical, in regard to all essential points, as to leave no doubt that they describe instances of the same disease. Dr. Hubbard's case was probably, when he wrote the history, in a more advanced state than is mine at the present time. The distortion of the hand is certainly greater. In the other photograph, which is indistinct, the toes are seen fully flexed.

The symptoms of athetosis are clearly indicated in the foregoing histories. Both cases came on with epileptic paroxysms—a feature accompanying other organic diseases of the brain and spinal cord. In both there are similar head-symptoms, tremulousness of the tongue, numbness on the affected side, pains in the spasmodically-affected muscles, and especially complex movements of the fingers and toes, with a tendency to distortion. In neither case is there any paralysis. Relative to the character of the lesion producing these symptoms, and its exact seat, I am not yet prepared to speak with any degree of certainty. The phenomena indicate the implication of intra-cranial ganglia, and the upper part of the spinal cord. The analogies of the affection are with chorea and cerebro-spinal sclerosis, but it is clearly neither of these diseases. One probable seat of the morbid process is the corpus striatum.

I should not have incorporated these cases and remarks in the present treatise, but with the hope of calling out the
experience of others on the subject, by directing attention to an affection which has probably hitherto been overlooked or confounded with some other.\(^1\)

\(^1\) Since the foregoing chapter was written, my friend and colleague, Prof. Fordyce Barker, to whom I showed the cuts and described the cases, has informed me that several years ago he had an exactly similar case in his practice.

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**SECTION IV.**

**DISEASES OF NERVE-CELLS.**

Under this section I propose to consider certain diseases which are due to degeneration and atrophy of the cells in intimate relation with nerve-roots, and which immediately preside over the functions of the nerves arising from them.

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**CHAPTER I.**

**ATROPHY AND DISAPPEARANCE OF TROPHIC NERVE-CELLS (PROGRESSIVE MUSCULAR ATROPHY).**

Although cases of progressive muscular atrophy were noticed by the older writers, the first systematic account of the disease was given by Duchenne,\(^1\) in 1840. In 1850 M. Aran\(^2\) published his memoir, in which he gives the histories of eleven cases; and three years subsequently Cruveilhier\(^3\) read a paper on the same subject before the Académie de Médecine. About the same time other memoirs were published on the subject.

\(^1\) Atrophie musculaire avec transformation graisseuse. Mémoires de l'Académie des Sciences, 1840.


\(^3\) Sur la Paralyse musculaire progressive atrophique. Arch. Gén. de Méd., 1853.