

ON A CASE
OF
MUSCULAR ATROPHY,
WITH
DISEASE OF THE SPINAL CORD AND MEDULLA
OBLONGATA.

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COMMUNICATED BY
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“Mrs. H—, æt. 38, was always delicate. Her father died æt. 62, neither of apoplexy nor paralysis. Always subject to menorrhagia. On the death of her husband she was compelled to work very hard. In June, 1864, she fell down stairs and hurt her right hand, and especially the right thumb. The hand ever after felt weak, but she continued her business as needlewoman until the commencement of 1865, when she had severe menorrhagia. She then began to complain of severe pain in the right arm, neck, and shoulder, and found that she could hardly hold a needle or lift the arm to her head. There was little or no pain in the hand and

forearm; but she complained that they felt generally much colder than on the left side. At this time all the muscles of the hand and forearm were much wasted. She took tinct. of nux vomica, and tinct. ferri sesquichlor., and in two months her health was greatly improved; she had less pain, and could hold a needle and work, and her hand did not appear so wasted or cold. She now married, became pregnant, and continued well for three months, complaining of very little pain in the shoulder. In September, 1865, her husband died suddenly. She was much shocked and never felt well after. Her face began to waste and lose expression; she complained of pain in the neck; weakness of the left hand and arm, as well as the right, and her legs dragged after her. Her voice changed; she did not pronounce words as usual; she never complained of any loss of sensation, except that her limbs sometimes felt cold and 'asleep.' As pregnancy advanced her feet became very œdematous; the pain in the neck increased; and she began to lose the power of elevating or moving her head. Her chin generally rested on the sternum, or the cheek fell on the right shoulder; and she was unable to move her head from either position, except by bending backward or sideways the trunk. She was able to shuffle about the house, but could not dress herself. She had almost completely lost the power of moving the left arm; over the right she had some power, but not much. Her deglutition now became difficult; she often saw double. Her taste was almost gone. She was confined of a healthy child in March, 1866, and suffered great privation and anxiety. After her confinement she suffered great pain in the right arm and shoulder; she frequently squinted and had double vision."¹

CLINICAL OBSERVATIONS.

By Dr. HUGHLINGS JACKSON.

Mary H—, æt. 38, admitted into the London Hospital under my care, April 3rd, 1866.

¹ The above are notes furnished by Dr. Conolly (of Aldersgate Street), who first saw the patient.

May 1st.—She lies in bed (spring-bed), and has done so ever since she came in. She cannot feed herself; she can, however, do so a little when her left hand, resting on her chest, is near her mouth. As she remarks, the chief loss of power in that arm is from the shoulder to the elbow.

Right arm.—It is perfectly motionless, and wasted from the shoulder to the fingers. There is no stiffness nor rigidity anywhere the fingers being quite supple; they are generally extended. There does not appear to be an absence of fat, as the fingers are rather plump. I can feel nothing at any part of the arm or shoulder which gives me any idea of muscle, except at the origin of the flexor muscles of the fingers, and here there is a feeling of something more distinct than fat under the skin. The arm generally seems bone covered by skin and fat. The forearm is very flat. The anterior fold of the axilla seems to be much wasted, but still there is apparently a little muscle. No action under the Faradaic current could be developed in any of the muscles of this limb or shoulder.

Left arm.—She can grasp a little with the hand, and can nearly extend the fingers, but the motions are slow and feeble. The ball of the thumb is flattened, and all the thumb muscles are wasted, and the motions of the thumb are slow and feeble. The forearm is flat in its lower two thirds. The supinators are wasted. Although she cannot lift the forearm, she can wriggle it along her chest, where it usually lies, towards her mouth, rotating it and flexing it as if making a walk with her fingers. There is muscular tissue on the upper arm, both front and back, in fair quantity. The interossei of the hand acted a little to the current, the extensors feebly.

Neck.—The right sterno-mastoid is lax, and if it can act it acts very little. It seems to have more tendon than the left. When the nurse raises the patient the head falls according to the patient's position, and the only motion is that she can bend the head laterally—not rotate it. The sterno-mastoids I find are of no real use in fixing or moving the head when the patient is held up.

There is slight power in the left trapezius, but none in the right.

The whole of the muscles on the back of the right scapula are apparently gone, and there is very little trace of those of the left side. There is a little muscular tissue on each side of the bones of the neck. There is feeble action of each sterno-mastoid under the Faradaic current.

As she is thin it is not easy to show that there is any wasting of the intercostals, but the action in inspiration is nearly solely abdominal. After the abdominal inspiration the upper part of the thorax seems to move with a jerk. She is always in bed. There has never been any feeling of dyspnoea.

The following refers to parts supplied by the cranial nerves. Smell, taste, and sight good.

Pupils normal in size; under rather than above size; they contract well by light; the right is perhaps a little smaller than the left; the eyes move quite well on careful testing.

The masseters and temporals appear to act well. There is a little temporal hollow, but nothing unusual, and I feel the action of the temporal muscles. She says she feels well on each cheek when I touch her.

It is to be noted that she always frowns upwards, and this is nearly always her fixed state of face; but I now carefully ascertain that she can open her eyes without this movement. She can shut her eyes, and can "screw them up tightly."

When I ask her to frown downwards she either does not or cannot; she frowns upwards instead.

She does not blow out the cheek when asked, and makes a large long, not a round hole, for whistling, but does not whistle. When I joke her on this she smiles a sort of stiffened smile, but the movements are equal, and the angles of the mouth are drawn up. The facial muscles act but slightly. She can cough a little, and her voice is clear.

The palate moves little, and more as if blown than as if raised. She does not say ah! but makes a vague noise.

The tongue is protruded badly; about a quarter of an inch beyond the lower teeth. It is atrophied on each side, and in folds, reminding one of cerebral convolutions. It is also

tremulous, and it does not seem to tremble as a whole, but in waves of tremulousness. Her power of swallowing is very imperfect, and she can only take sop, mincemeat, &c. Her talking is nearly unintelligible; to me it is generally quite unintelligible, but the nurse can usually manage to make out what the patient says.

Her legs were like sticks, but the right was the one more wasted. On this side there was action, and that but slight, of the peronei and gastrocnemii only. On the left leg there was considerable action of the muscles.

The left thigh was thinner than the right, and the muscles of this side acted less than those of the right. The gluteal muscles of both sides acted considerably.

The patient lay in bed till her death, and her condition did not alter appreciably from that above described. She died July 18th, 1866.

EXAMINATION OF THE BRAIN AND SPINAL CORD.¹

By Mr. LOCKHART CLARKE.

The vessels of the pia mater on the surface of the brain were somewhat congested. The grey substance of the convolutions was dark and almost purple. In the white substance the puncta were very numerous. There was no accumulation of fluid in the lateral ventricles, but the right optic thalamus was narrow—narrower than the left, and a cyst about the size of a small pea was attached to the choroid plexus of the left side.

The medulla oblongata was below the average size. It was not, however, softer than usual, nor was it anywhere damaged by *disintegration* of tissue; but many of its nerve-cells, particularly about the floor of the fourth ventricle and calamus scriptorius, were in different stages of *degeneration*. They were not very much reduced in size, but they had lost their sharp outlines; their surfaces were uneven, and many of them

¹ It may be well to state that the following descriptions were written and the drawings made before I had seen the notes of the case.

contained an unusually large number of yellow or brown pigment granules, as in the degenerations of old age.

The spinal cord was soft at different parts, but particularly in the cervical and the middle of the dorsal region. Opposite the second and third cervical nerves, although the cord retained nearly its usual consistence, the anterior grey substance, on each side, was atrophied to a certain extent; for the cornua were unnaturally pointed, and the nerve-cells within them were wasted to a remarkable degree, as one of the accompanying preparations will show. Scarcely a trace could be discovered of anything resembling the large cells that belong to these parts, which were now filled instead with a multitude of small granular masses and minute stellate bodies, like some of those found in the connective tissue of the white columns.

In the middle of the cervical enlargement the right lateral column was raised into a convex swelling about half an inch in length. On examining transverse sections of the cord at this part, both the white and grey substances were found to be extensively and variously damaged. Plate VIII, fig. 1, represents exactly the right lateral half of one of these sections. *a* is the anterior white column; *b* the lateral white column as far back as the posterior lateral fissure *b'*. The caput cornu posterioris is between *a* and *a'*, fringed by the pale gelatinous substance, which is traversed and divided into areas of different shapes and sizes by bundles of the posterior roots. *c* is the anterior cornu, and *d* is the transverse commissure. Along the right or lateral border of the grey substance are numerous dark masses *b b'*, of different shapes and signs, and inclosed in a network of fibres and blood-vessels. These are the cut-ends of longitudinal bundles of fibres traversing the part which I have named the *tractus intermedio-lateralis*, and which I have shown to be connected with the lowest roots of the spinal accessory nerve. Below them, and on their left, along the border and central part of the grey substance, are several blank irregular areas, which differ considerably in shape and size, and frequently coalesce at different points, or on different sides.

These are the morbid spaces, where the grey substance had first softened and then passed through the stages of transparent granular disintegration.¹ By inspecting the preparation from which this figure was drawn it will be seen that these spaces are variously transparent, and rendered more or less granular by particles of disintegrated tissue. Some of them are crossed, or only partially traversed in different directions by fine nerve-fibres, or by fibres of connective tissue which had hitherto escaped destruction. In the central part of the anterior cornu is the tortuous portion of a blood-vessel, surrounded on one side by one of these morbid spaces. But not only by disintegration was the grey substance injured. Atrophy, or shrinking of particular parts, was very conspicuous in this region of the cord. The nerve-cells, especially of the anterior cornu, were wasted to a remarkable degree, as may be seen at *c*, fig. 5, and in the preparation from which it was drawn under a magnifying power of 250 diameters. When they are compared with cells taken from the same part of a healthy cord, and magnified to the same extent, as represented at *a*, fig. 5, this degree of wasting is very strikingly shown. But they are not only reduced in size, they have lost their sharpness or their regularity of outline, and all traces of their nuclei.

Nor were the lesions of structure, in this case, limited to the grey substance; for the swollen lateral column (*b*) was very much softened, and in several places was completely destroyed by patches of transparent disintegration, as represented at *e*, *f*, *g*, *h*, fig. 1. Between and around these areas the tissue was damaged, to a less extent, by the same kind of lesion, and was densely crowded with compound granular corpuscles of various shape and size, as represented by the dark dots in fig. 1. In the same section the posterior column on each side was considerably softened, but not otherwise altered.

Immediately below this softened swelling of the right lateral column the whole of the grey substance of the same

¹ For a description of this process see my paper "On Tetanus" (appendix), 'Medico-Chirurgical Transactions,' vol. xlvi, 1865, p. 264.

side was much wasted and much altered in shape, as may be seen in fig. 2. The caput cornu posterioris was reduced to about half its ordinary size, at the extremity of a long slender neck; while a large portion of the *anterior* cornu, corresponding to *i* of the *left* side, had entirely disappeared. A little lower down the shape of the *right* lateral half of the grey substance was nearly normal, but the anterior cornu (*c*, fig. 3) was considerably reduced in size. At the lower third of the dorsal region, the antero-lateral column of the *left* side was raised into a softened swelling of considerable size. The grey substance, also, was much altered in shape; it had lost its sharpness of outline, and in many places was drawn out in streaks which were blended or mixed up with the softened white column. For some distance lower down the entire thickness of the cord was much firmer and much more healthy; but opposite the eleventh and twelfth dorsal nerves the deep strata of the posterior columns were soft, and the antero-lateral grey substance was much reduced in size, as shown in fig. 4 (*c*, *l*). Here we find that the large group of cells (*k*, fig. 4) constituting the posterior vesicular column has entirely disappeared on the *left* side. Nearer the middle of the lumbar enlargement the cord was again much firmer, but the anterior cornu on each side was smaller than natural, and the cells which they contained had degenerated to a certain extent, although they were not very much reduced in size. Through the lower third of the lumbar enlargement both the white and grey substances were rather softer, but retained their natural shape and general appearance. Indeed, the whole of that portion of the cord which supplied nerves to the lower extremities was very much less damaged than that which gives origin to the nerves of the upper extremities. The conus medullaris, or tapering extremity of the cord, was perfectly healthy.

DESCRIPTION OF PLATE VIII.

Fig. 1.—Right lateral half of a transverse section of the spinal cord.

A. The anterior white column.

B. The lateral white column.

B'. The posterior lateral fissure.

C. The anterior cornu.

D. The transverse commissure.

a, a'. The caput cornu posterioris.

b, b'. Dark masses enclosed in a network of fibres and blood-vessels, along the right border of the grey substance.

c, f, g, h. Patches of transparent disintegration in the lateral column.

Fig. 2.—

a, a'.

i. Left anterior cornu.

Fig. 3.—*c*. The anterior cornu.

Fig. 4.—*c, l*. Antero-lateral grey substance considerably reduced in size.

k. Group of cells constituting the posterior vesicular column.

Fig. 5.—*c*. Wasted nerve-cells of the anterior cornu, &c.

d. Ditto, magnified.

