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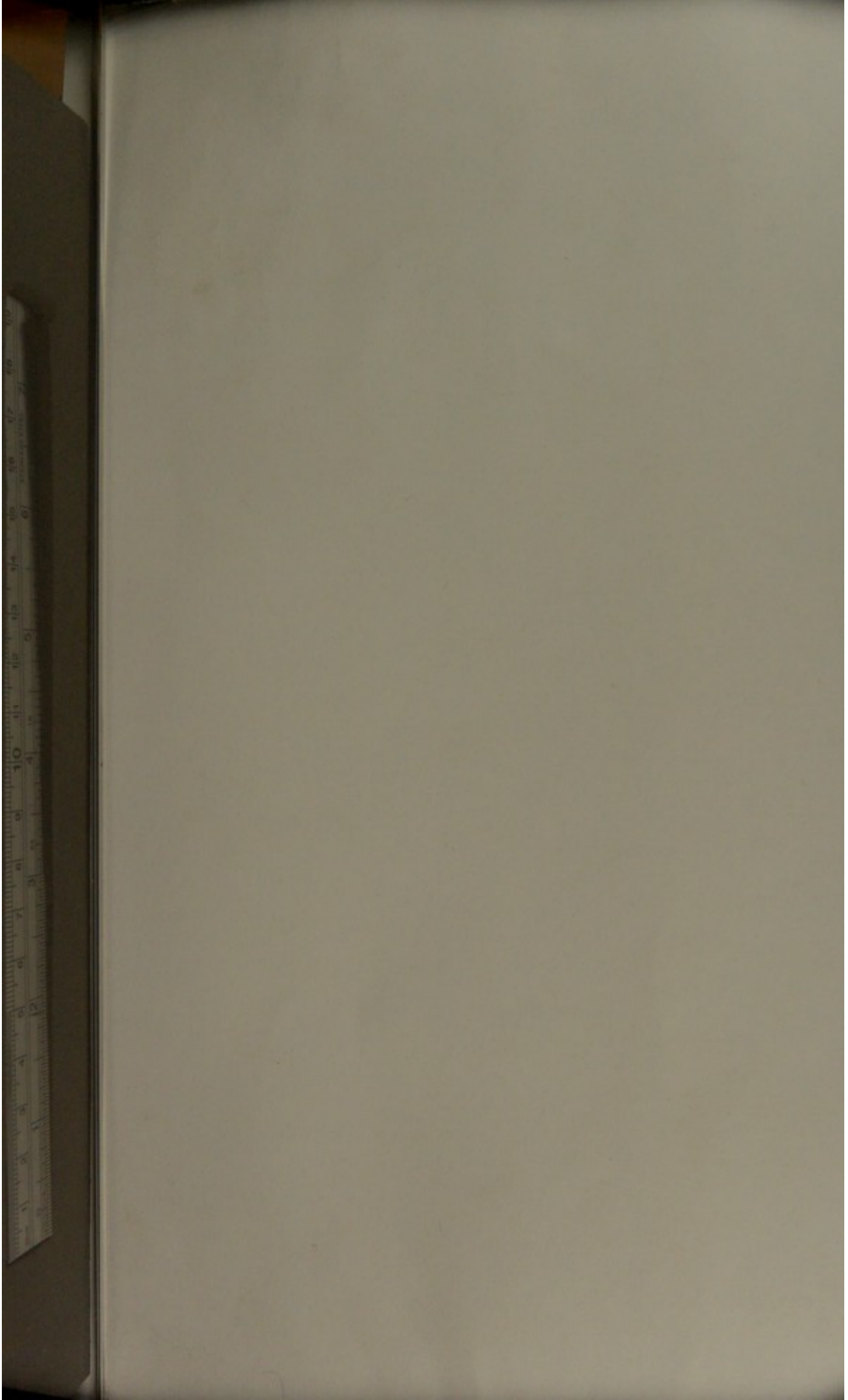

THE COINCIDENCE OF FACIAL PARALYSIS WITH ACUTE ANTERIOR POLIOMYELITIS.

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The Coincidence of Facial Paralysis with Acute Anterior Poliomyelitis. By G. A. Gibson, M.D., D.Sc., F.R.C.P.Ed., and J. G. Cattanach, M.B.

Many difficulties arise in the diagnosis of nervous diseases when diverse lesions are associated in one individual, and it is only by collecting and comparing cases in which the co-existence of separate affections has been observed, that our knowledge can be advanced. With the hope that it may be as really helpful as it is undoubtedly interesting, we wish to place the following case on record.

M. F., rope spinner, æt. 41, single, was admitted to the Deaconess Hospital on 10th March 1896, complaining of a varicose ulcer on his left leg of about seven months' duration. The nervous symptoms, although somewhat unusual in distribution and sufficiently serious to impair several functions, were not complained of. They had lasted, as the patient said, all his life, and he was able to do his work in spite of them. The prominent clinical features consisted of marked atrophy and paralysis of the muscles of the shoulder girdle and upper arm of the right side, along with right facial paralysis.

The patient's family history was good. His father, now nearly 70 years of age, always enjoyed good health, and was still working as a labourer. His mother died some years ago, æt. 50, of heart disease. A brother and two sisters were alive and well. Two other children died in infancy of some causes unknown. No other case of nervous disease could be traced in either branch of the family. The patient himself had always enjoyed good health since childhood, with the exception of an attack of pleurisy six years ago. His father, an intelligent man, informed us that the patient was his first child; that the labour was an easy one,

no instrument being used; and that he was a strong, healthy child, thriving well until he was just over a year old, when he took ill one night, and in the morning was found to have paralysis of the face, arm, and leg of the right side. He was treated at the New Town Dispensary for many months, and gradually regained power in the leg, but the face and arm remained paralysed. He was above 3 years old before he could walk.

On the right side of the neck a scar can be made out, about 1½ in. in length, a little in front of, and along the anterior border of the trapezius muscle at the level of the fifth, sixth, and seventh cervical spines. A bony mass can be felt under this scar, which appears to pass down towards the clavicle like a cervical rib. The exact nature of this bony mass it is difficult to make out. There is nothing corresponding to it on the left side of the neck. Neither the patient nor his father can give any account of this, and there is no history of any accident or discharge at the position of the scar. Apart from the atrophied muscles referred to, the patient is a healthy-looking and well-nourished man. He has always been strictly temperate; he enjoys his food, and has no discomfort after eating. The heart and lungs are healthy, and there are no abnormal constituents in the urine.

The entire interest of the case centres in the nervous system. On examining the sensory functions, sensibility to touch, temperature, and pain is unimpaired. The sight is good, and the pupils react normally on both sides. The hearing is acute, and equal on both sides with the watch test, although the patient is of opinion that he hears more easily with his left ear. Taste is entirely absent on the anterior two-thirds of the right half of the tongue, but salt and sugar can be distinguished on the posterior third and on all the opposite side. The sense of smell is defective.

With regard to the motor functions, there has been no difficulty in swallowing, within the patient's memory. The knee jerk is present on both sides, but it is somewhat diminished on the right. There is right-sided facial paralysis; tears overflow the lower eyelid, especially in windy weather;

the eyelid cannot be closed; the right half of the forehead shows no wrinkles as the left does, and takes no part in frowning. The orbicularis oris is paralysed; the patient fails in attempting to whistle, or to show his teeth. The buccinator has some power; the cheeks can be blown out on both sides, and food does not collect between the teeth and cheek. The tongue muscles are equally strong on both sides. There is no deflection or drooping of the soft palate, and the muscles of mastication work well.

The following muscles of the shoulder girdle and upper arm of the right side are markedly atrophied, namely, pectoralis major, deltoid, supra-spinatus, infra-spinatus, coraco-brachialis, biceps, brachialis anticus, and triceps. The supinator longus and forearm muscles are in good condition. The right hand is a little smaller than the left, and the grasp weaker—65 with the dynamometer as against 105 with the left hand; the muscles, however, are all active, and the thenar and hypothenar eminences are present. The patient can move the fingers and forearm, but has no movement at the shoulder joint unless by raising the arm with the other hand. When held up vertically, the upper part of the trapezius appears to act, bringing the arm nearer the head. The serratus magnus is not affected. The length of the arm is almost equal on both sides, the right being $12\frac{1}{2}$ in. and the left $12\frac{7}{8}$ in. in diameter; the measurement of the thickest part of the arm is on the right side 7 in., and on the left $11\frac{1}{2}$ in. The forearms are respectively 9 in. and 11 in. in circumference. There is little difference to be made out in the lower limbs; both are well nourished, and measure $21\frac{1}{4}$ in. round the thickest part of thigh, while the legs are $14\frac{1}{2}$ and 14 in. There is no reaction to the faradic or galvanic current in the paralysed muscles, but the leg muscles all react normally to both.

The paralysed muscles are flaccid. The patient states that when he laughs he has felt at times a twitching on the right side of the face, but we have never been able to elicit this. No spasm or contraction has been observed in the face. An occasional tremor is visible about the shoulder and scapula, especially in the deltoid fibres, and this can be

elicited by tapping the muscle. His right hand has cramp occasionally, but he attributes this to his trade—rope-spinning; his hand being firmly closed on the hemp, which runs out as he walks backward. Others in the trade also complain of this cramp.

The form and appearance of the spine present no peculiarity, and percussion is not painful. The appearance of the patient is well shown in the accompanying illustration. (Plate XVII.)

The diagnosis of the case presented several points of difficulty. The lesion appeared to be nervous rather than myopathic. It bore some resemblance in distribution to the facio-scapulo-humeral form of muscular atrophy in infancy first described by Duchenne,[1] but there had been no gradual development. The facial paralysis was complete. Fibrillary twitchings were present, and there was a total absence of any true or false hypertrophy of the deltoid or other muscles such as are usually found in this type. The possibility of idiopathic muscular atrophy had therefore to be negatived.

When the patient was first admitted, the distribution of the facial paralysis, and the statement that it had existed "all his life," rendered it possible that the case might be one of "birth paralysis" from obstetric interference. The scar before referred to might have been caused by badly applied forceps, which would also in that position have damaged the brachial plexus. We may cite a case curiously like this from Duchenne's works.[2] In this case the child, delivered with forceps, was born apparently dead, and was resuscitated by artificial respiration. Thirty-six hours after birth it was noticed that there was facial palsy and paralysis of the left arm. Movement of the left upper limb was absolutely abolished, but there was apparently some slight sensibility. On examining the left side of the neck, there was a linear slough 1 cm. in length, which separated and left a wound in the cellular tissue, penetrating along the edge of the trapezius. This had been caused by

[1] Selections from the clinical works of Dr. Duchenne, "New Sydenham Society," London, 1883, p. 61.

[2] *Ibid.*, p. 211.

the right blade of the forceps, which had penetrated the neck and injured the brachial plexus; it had also compressed (by the deflection and inclination of the head) the facial nerve issuing from the stylomastoid foramen. The child died in 8 days. On post-mortem examination, it was found that there was bruising and effusion of blood round the brachial plexus and facial nerve. Duchenne goes on to say that in cases of paralysis of the upper limb or of the facial nerve from the application of the forceps, the prognosis should be most guarded. He had seen not a few cases in which the paralysis had been permanent. He concludes thus[1]:—"Certain violent manipulations of the midwife, necessitated by the difficulty of bringing down the arms after the birth of the trunk, or the strong pulling on the shoulder by a finger hooked round the armpit after the birth of the head, sometimes cause paralysis of the upper limb, seated in the deltoid, infra-spinatus and flexors of the elbow, characterised by falling of the limb alongside the trunk, inward rotation of the arm, and extension of the elbow. The prognosis is usually grave. The paralysis may be cured by local faradisation, but if left to itself it becomes incurable, and causes wasting of the limb."

The history of our case, however, as given by the father, if true, is entirely opposed to this diagnosis. We have cross-examined him several times; he is an intelligent man, and is positive and precise in his account of the onset of the patient's illness. He was his first child, and he gave great attention to him. He smiled and moved all his limbs with vigour, as a healthy, thriving child would do. He was put to bed one night perfectly well, became feverish before morning, and next day was found to be paralysed in the face, arm, and leg of the right side. The leg and forearm gradually regained strength, the upper arm and face remaining paralysed. He gives, in short, the history of a case of acute anterior poliomyelitis. It is interesting to observe that the supinator longus, which is so generally involved in the upper-arm type of the disease, such as is present in this case, has escaped.

With regard to the paralysis of the facial muscles

[1] Selections from the clinical works of Dr. Duchenne, "New Sydenham Society," London, 1883, p. 212.

associated with that of the shoulder and arm, two alternatives presented themselves to us, and we had to make up our minds whether the facial paralysis was due to a lesion of the nucleus or of the trunk of the portio dura. Instances of cornual myelitis, in which the nucleus of the seventh nerve has been involved, are rare, but some are recorded; for such a diagnosis, however, there are still some points requiring elucidation. The orbicularis oris, which in a lesion of the facial nerve nucleus escapes (as the nuclear origin of the nerve of this muscle seems to be connected with that of the tongue), is in our case paralysed—a small electrode on the motor point on the sound side gives a reaction, but none can be got on the right side. Then, again, it is difficult to explain the impairment of taste in the anterior two-thirds of tongue from a nuclear lesion of the seventh, unless we are to take this case as supporting the recent embryological investigations of Dixon,[1] who holds that the chorda tympani has its origin in the primitive facial tract. As all clinical research supports the view that the chorda tympani arises from the trigeminal, this cannot yet be accepted as a valid explanation.

The diagnosis to which we were inevitably led by the consideration of all the facts which we have detailed, was that of acute anterior poliomyelitis occurring simultaneously with peripheral facial paralysis, due to a lesion in the aqueduct of Fallopius where the chorda tympani is connected with the portio dura. Into the causal possibilities of such a double lesion we will not enter.

[1] Dixon, *Proc. Roy. Soc. Dublin*, 1895, vol. lvii. p. 490.

DESCRIPTION OF PLATE XVII.

The illustration, reproduced from a photograph, shows the absence of the characteristic lines of the right side of the face and the drawing of the mouth to the left, as well as the atrophy of the muscles of the right shoulder and arm.