greater extent than does atheroma, but produces very similar pathological effects.⁴

Heubner is quoted by Cornil⁵ as attributing the somnolency to the narrowing of a number of arteries, in consequence of which there is congestion and defective oxidation of the brain substance. Motor aphasia would be produced by occlusion of the first cortical branch of the middle cerebral artery.

According to Osler,⁶ transient aphasia with perfect recovery may occur in advanced arterio-sclerosis, but the explanation of this fact is not easy.

Convulsions are very frequently caused by cerebral syphilis, and both Fournier and H. C. Wood⁷ have laid great stress on the value of this symptom in diagnosis when occurring in persons over 30. They may be caused, like aphasia, by advanced arterio-sclerosis,⁸ but are decidedly rare in atheroma, being more often due to meningeal growth or chronic inflammation.⁹ This may, of course, have been present in the above case, in addition to the more obvious endarteritis, but had it been I do not think the patient would have been so completely free from headache of some kind or another.

I am therefore inclined to think, from the foregoing considerations, that the lesion in the above case was extensive syphilitic endarteritis of the cerebral arteries, without thrombosis or embolism, but possibly with spasm of the arteries.

The most interesting feature about this case is, of course, the preceding somnolence, but the entire absence of the more common symptoms—for example, headache and hemiplegia—together with the apparently complete recovery of the patient, is not without interest.

REFERENCES.

- ¹ Gowers's *Diseases of the Nervous System*, 2nd edition, vol. ii, p. 432.
² Clifford Allbutt's *System of Medicine*, vol. vii, p. 682. ³ *Lancet*, June 7th, 1879. ⁴ Gowers, vol. ii, p. 429. ⁵ Cornil's *Syphilis*, p. 317. ⁶ Osler's *Principles and Practice of Medicine*, 4th edition, p. 775. ⁷ *Ibid.*, p. 246.
⁸ Gowers, vol. ii, p. 734.

BILATERAL NEURITIS OF FIFTH AND SIXTH CERVICAL NERVES.

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THE following case, while presenting some interesting points in etiology and localization, also shows that the results of brachial neuritis are not always so favourable as in the cases recently reported by Dr. Simon.¹ For the notes I am indebted to Mr. Edwards, House-Physician at the Nottingham General Hospital.

E. S., a coal miner, aged 29, was sent to me by Dr. Nesbitt, of Sutton-in-Ashfield, and was admitted into hospital on July 16th, 1903, having previously attended for about a month as an out-patient. He was a steady, industrious man, non-smoker, and almost a total abstainer. No evidence or history of syphilis. His previous health had been good and the family history was unimportant. For a few weeks before the illness began he had been extra hard worked, and worried about business and family matters. His appetite failed and he slept badly. He persisted in working, although his wife begged him to take rest.

Since May 25th he had complained of very severe pain in the root of neck on both sides, spreading over the shoulders and down the arms. This still continued when I first saw him, about a fortnight later. There was much tenderness on pressure over the cervical nerves on each side of the spine. Power of abduction of the left arm was lost; the other movements of the shoulder and elbow on both sides could be performed, but feebly. Flexion of the elbow was impaired, but not lost. The loss of power was greatest on the left side, and this has been the case throughout. (He is left-handed.) Tenderness was not marked over the main nerves in the limbs. Sensation was distinctly blunted over the cutaneous supply of the left circumflex nerve (both to pain and tactile sense), and later on there was a slighter amount of impairment on the right side. The pupils were equal and reacted normally. At no time have there been symptoms pointing to disease of the brain, cord, or membranes.

After admission on July 16th pain rapidly diminished in the right arm, and power of movement returned. In the left, also, the pains gradually diminished, and sensation on the outer side of both arms became normal. Both deltoids were wasted, the left being the worst. This ultimately became extremely atrophic. The left supra-spinati and infra-spinati were somewhat atrophied. At this time all the upper arm muscles, except the left deltoid, were stated to react to faradism. In the left deltoid there was absolutely no voluntary power, and with galvanism the muscle gave reaction of degeneration. He remained in hospital about a month, and spent about a fortnight at the Cedars Convalescent Home, galvanism being persevered with the whole time.

On September 5th the right deltoid had quite recovered, while the left remained powerless, and the horizontal measurement round the body

of the muscle was $1\frac{1}{2}$ in. less than on the right side. The left spinati muscles were also atrophied.

On December 16th the deltoid had recovered a certain amount of voluntary power, and the difference in measurement was less than before—namely, $\frac{1}{2}$ in. The muscular wasting, however, was now more extensive than had hitherto been noted. Besides the two spinati on left side, the right serratus magnus and infra-spinatus were completely atrophied. None of these reacted with either current. The left deltoid, notwithstanding improved nutrition and return of voluntary power, still gave the degenerative reaction, and did not react to faradism.

The etiology of the case appears to resemble that of Dr. Simon's first case, the only ascertainable causes being hard work, mental worry, and a low state of health. Possibly continued work with the arms raised above the head might cause injurious pressure on the nerves by exciting contractions in the scalenus medius muscle which they pierce. An interesting feature of the case is the bilateral distribution of the muscular paresis and wasting. In two of Dr. Simon's cases, and one of those reported by Drs. Harris and Low,² all like the present, spontaneous or non-traumatic cases, one limb only was involved. Falls on the shoulder, sprains, or other mechanical force are the commonest causes of neuritis of the cervical nerves. Carrying weights on the shoulder is a common cause of this affection, the nerve to the serratus being particularly exposed to pressure. Thus I lately had an out-patient under treatment with the interesting condition of bilateral wasting and paralysis of the serratus magnus, due to pressure on the nerve produced as above mentioned.

The muscular weakness at the commencement of the illness corresponded pretty closely with Erb's type of upper-arm palsy. This is dependent on lesion of the fifth cervical nerve, the muscles most commonly affected being the deltoid, supra-spinatus and infra-spinatus, biceps, brachialis anticus, and sometimes the supinator, longus and brevis.

In the case under notice the flexors of the elbow, though distinctly weakened in the first instance, rapidly regained their strength and tone, while the chief stress of the disease fell on some of the shoulder muscles. The sixth cervical nerve may also have been inflamed to a slighter extent, especially on the right side, on which the serratus magnus is atrophied. The nerve to the serratus comes from the fifth and sixth cervical before they unite to form a common trunk, and sometimes also in part from the seventh nerve. The distribution of the fifth cervical nerve has been pretty fully worked out by different observers, and a short recapitulation of what is known or surmised may prove useful. After receiving a branch from the fourth, the fifth cervical supplies the nerve to the rhomboids, probably deriving its filaments from the fourth, as these muscles were not affected on either side in this case. Then comes a branch which unites with a branch from the sixth cervical to form Bell's nerve (for the serratus). Lower down the nerve, according to Drs. Harris and Low,³ can be divided into an upper and lower fasciculus. The former, after giving off the supra-scapular nerve to the supra-spinati and infra-spinati, joins the posterior cord of the brachial plexus, and furnishes the circumflex nerve, which supplies the deltoid, the teres minor, and the skin on the outer side of the upper arm.

The lower fasciculus forms the greater part of the musculocutaneous nerve, from the outer cord of the plexus, supplying the biceps, brachialis anticus, and skin of the outer side of the forearm. It will be seen that the main incidence of the paralysis in this case corresponds on the left side with the assumption that the upper fasciculus of the fifth cervical nerve was the portion chiefly affected. On the right side the only portion of this bundle of fibres which has not recovered is the nerve to the infra-spinatus, while the paralysis of the serratus magnus shows a picking out of some of the fibres of the nerve immediately after its emergence from the spinal foramen.

Paralysis of the serratus magnus gives rise to a characteristic deformity, for when the arm is moved forward the lower angle of the scapula is rotated inwards, and its posterior edge projects like a wing. As the scapula is rotated and fixed by the serratus when the arm is raised above the horizontal position, its paralysis considerably weakens this movement. This man, notwithstanding wasting of the serratus on one side and only partial recovery of the deltoid on the other, has no difficulty in elevating the arms above the head. The trapezius normally co-operates with the other elevators of the arm, and can to some extent supply their place when paralysed. The spine of the left scapula in the patient under consideration is prominent, and the supra-spinous and infra-spinous fossae unduly hollowed from wasting of the spinati

muscles; but their loss appears to occasion only trifling inconvenience.

Since the above was written two further articles on the subject have appeared in the BRITISH MEDICAL JOURNAL for January 16th, 1904, by Dr. Distin and Dr. Charles. The latter points out the frequency of brachial neuritis among miners, and confirms my own impressions that a confined posture at work is an important factor in etiology.

REFERENCES.

¹ BRITISH MEDICAL JOURNAL, July 11th, 1903, p. 71. ² Ibid., October 24th, 1903, p. 1035. ³ Loc. cit.

DEEP ULNAR NERVE PARALYSIS AND FUNCTIONAL POWERS.

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It is rarely that we see isolated paralysis limited to the deep palmar branch of the ulnar nerve, hence the following is interesting:

J. H., aged about 27, a carpenter, was struck by a heavy hammer over the left lower radial region, whilst the ulnar edge of the hand sustained a counter-blow through being forced against some hard body. There was a wound over the pisiform and unciform bones.

He worked from the date of accident (September 17th, 1903) at his trade for about three months, just managing to do his work with difficulty. About two weeks after the accident he noticed that his two inner fingers were commencing to become "bent." About the beginning of December he found it impossible to continue his work properly, because, although he could grasp all larger objects, such as saw-handles, hammers, chisels, etc., with his left hand, he could not hold small objects, such as nails, brads, screws, etc.

On January 6th, 1904, I saw him in connexion with his claim under the Workmen's Compensation Act, and I found the following condition: The left hand was markedly smaller than the right, and the intermetacarpal spaces distinctly hollow; there was the usual wasting of thumb and small finger muscles, but it was more pronounced than usual. The two inner fingers were markedly "clawed," overextended at the metacarpo-phalangeal joint, and flexed at the more distal joints. The mid-finger was just commencing to show the same deformity. It was interesting to observe that, when I asked him to try to extend the deformed fingers "properly," he said, "I can, sir, if you just place your finger there," indicating the back of the first phalangeal joints, showing how he missed the steady support of the lumbricales at those joints. He had complete sensation in "ulnar" portions of the hand and fingers. The usual absence of adduction and abduction of the fingers was observed. He had strong grasp for any large object, but for pins and pens and pencils the co-ordination and power of grasp was undecided and so weak as to be relaxed by slight force on my part. In fact, he had no fine adjustment of fingers and thumb.

The following struck me as most interesting; although he had his proper thumb adductors quite paralysed and wasted, and showing marked reaction of degeneration, still I found he could adduct his thumb powerfully, so that he held it firmly against the radial border of the index finger. On examining the apparent tenseness of tendons I saw that the extensor ossis secundi internodii was in strong action, and was performing this adductor function, the obliquity of its tendon's direction from inside to outside of radius becoming very evident, and itself demonstrating its mechanical adductor application, the short flexor and the long flexor and the opponens probably helped in this action, but its power was most marked.

The conclusions which struck me most about this instructive case were: With complete deep ulnar paralysis we have still remaining a good rough hand grasp; we have the thumb-opposing powers and flexion powers (derived from median innervation), and we have the lost adductors supplanted to a useful degree by extensor and flexor muscles. Of course, if the damaged nerve is not rehabilitated, and the degenerated muscles regenerated, in time we must look for a very far worse state of things, owing to tendon and joint adhesions; but even then we must remember that we shall have the thumb performing many most valuable duties in all of its five directions. It is important to differentiate "complete" destruction of function from "incomplete," although most serious, destruction of it.

I may add that this case is to be operated on with a hope of recovering the deep ulnar nerve's function.

REFLEX DISTURBANCES ASSOCIATED WITH ADHERENT PREPUCE.

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MALFORMATION and unusual condition of the penis practically never come under the notice of a physician, and it is, therefore, not remarkable that one's attention can only rarely be directed to such conditions as having a possible and an exciting influence in causing widely differing and remote disturbance of functions in other organs.

Within the last few years, however, I have seen three cases in which the symptoms were due to adherent prepuce or a narrowed urethral meatus. In not one of these cases was there any reason to associate the symptoms with any trouble about the penis, nor was such trouble suspected. It was only after every other possible cause had been considered, and the symptoms had been treated without the slightest benefit to the patient that a thorough examination revealed a condition of the penis which, if not the cause of the symptoms complained of, was, at any rate, so far from normal as to render local treatment desirable.

CASE I.

A boy, aged 18 months, well made and growing rapidly, suddenly became unable to walk. He dragged one leg, and complained of pain in the hip. Any attempt to make him walk caused severe pain, and, at any rate, was resisted with screams. He was under the care of one of the best known practitioners of this city who suspected, despite the absence of many signs, incipient hip mischief. One of our leading surgeons examined the child, and gave a positive opinion against the existence of hip disease but was not able to do or suggest anything which helped to restore the child's walking power or relieve the symptoms. When called in to see the child I thus had the advantage of the opinion of two doctors more familiar with the subject of hip disease than myself, and of their assurance that hip disease was not present, so *faute de mieux* I tried to find some cause of reflex irritation, and after irritation by worms had been considered and negatived we examined the penis.

The prepuce was found to be long and adherent. The child was circumcized and recovery was immediate and complete.

CASE II.

A boy, aged 14, was sent to me from a neighbouring town on account of obstinate and severe intestinal colic. No medicines had relieved him, and I advised that he should be treated as though the colic had been due to lead poisoning. More thorough examination, after this plan had been tried and failed, revealed an adherent prepuce. This was treated, no medicines being given, with complete disappearance of all symptoms.

CASE III.

A boy, aged 3, had been perfectly well during infancy, but when developing from an infant into a well-grown little boy, began to wake up at night screaming and complaining of pain in the abdomen. This occurred night after night with a regularity which resulted in great disturbance to the household, and loss of sleep to the little boy whose health began to suffer. I saw him several times and treated him unsuccessfully for night terrors and indigestion.

I found that advantage was taken of his being awake to get him to pass water, but though he went to sleep afterwards I failed to associate the fact with his symptoms. It was only after all efforts to help him had been futile that I examined the penis. The prepuce was found to be adherent and the meatus narrow. These conditions were treated surgically and immediate and permanent cessation of symptoms followed.

It is probable that in the third case the need to empty the bladder was the starting-point of the symptoms, and that the call to micturate was associated with some erection of the penis, any turgescence of which would be rendered painful by the adhesion of the prepuce. The boy was not old enough to describe his condition accurately, or locate the pain with certainty, so that both by his parents and myself he was considered to be suffering from indigestion. This explanation will not apply to the second case, which like the first must have been due to some reflex disturbance of the nervous system.

In the first case, that of inability to move the leg, it would appear that there must have been inhibition of spinal nerves, due to the peripheral irritation of an adherent prepuce. It is, of course, a truism that we ought to examine our patients thoroughly, but these cases show how great is the necessity to do so when the symptoms complained of are anomalous, and inconsistent with those generally accepted causes which underlie similar disturbances of function.