Remarks
ON
**BRACHIAL "NEURITIS" AND ITS
TREATMENT.**

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THE term primary brachial "neuritis" may, I think, be fairly applied to certain cases in which the chief symptom is severe aching pain in one arm. Paralysis and well marked anaesthesia never occur; generally sooner or later the patient recovers. No signs of organic disease can be detected, and no organic disease of the nervous system follows. The symptoms are subjective, but we can have no doubt as to their severity in many cases.

No paralysis or atrophy of the muscles of the arm can be detected. The wrist jerk and other arm reflexes are obtained. The patient can recognize sensations of touch, pain, temperature, and the vibrating sensation (tested with a large tuning-fork) on the affected arm. The pupils, the legs, and the reflexes are all normal. Usually only one arm is affected. Occasionally both suffer, but not usually at the same time.

The nerve roots in the posterior triangle of the neck are often tender on pressure. The pain is of an aching character and often severe; acute attacks of great severity often occur, but the pain is not of the completely intermittent character of neuralgia. Sometimes it keeps the patient awake at night; in exceptional cases it is so severe that morphine is required. It may affect the whole arm down to the fingers, often chiefly the upper arm; it is usually not strictly localized to the distribution of a single nerve or nerve root. It is not localized to the joints. Often it is more severe when the arm hangs down by the side, and is less when the arm is supported by a sling so arranged that the elbow is supported and slightly raised. Movement, especially elevating the arm very high, increases the pain.

Paraesthesia in the arm is a symptom in some cases, and the patient may complain of "pins and needles" sensation when the hand is placed in water.

The symptoms of brachial neuritis are described in detail in the larger textbooks. Briefly stated, it is an affection of the arm somewhat similar to sciatica in the leg, but differs in that the pain is usually diffuse. The opportunities for pathological examination are exceedingly rare, but neuritis is the most probable lesion to account for the symptoms.

In this note I desire especially to draw attention (1) to the etiology of the affection, and especially to pressure on the nerve trunks of the brachial plexus in the posterior triangle of the neck as one exciting cause; and (2) to the value of supporting the arm in a suitably arranged sling.

The causes of brachial neuritis are (1) general, (2) local, (3) probably in most cases a combination of both.

The most common general causes are: Diabetes, gout, alcoholic excess, (?) influenza, (?) rheumatism, (?) neurasthenia.

Often we have a local cause, which in many cases probably would not have produced the neuritis without the combination of some general morbid condition. The chief local causes noted in cases coming under my own observation have been: Pressure on the nerve roots of the brachial plexus in the posterior triangle of the neck by a tight brace; sleeping with the arm raised so that the clavicle presses on the nerve roots in the posterior triangle; carrying a heavy weight on the shoulder which compresses the nerve roots just named; injury causing the shoulder to be suddenly forced backwards and contusion of the nerve roots; exposure of the side of the neck and shoulder to a cold draught or to damp.

The following abstracts of notes indicate some of the causes of this affection. To save repetition I may add that the symptoms in each case corresponded to those just described. They were entirely subjective; no paresis or anaesthesia was detected. No signs of organic disease of the nervous system or thorax ever developed.

CASE I.

A middle-aged gentleman whilst travelling by railway fell asleep with his left elbow raised and supported on the lower edge of the window of the compartment and his head resting on

the left hand, the elbow being flexed. In this position the clavicle would be raised and pressed on the nerve roots of the brachial plexus in the posterior triangle of the neck.

On awaking he felt pain in the left arm which increased rapidly, and became so intense that he was unable to sleep, and injections of morphine were necessary. The pain was diffuse, all over the arm, and the symptoms were those of brachial neuritis as just described. No anaesthesia and no paresis or signs of organic disease of the nervous system could be detected. Early organic intrathoracic disease was feared, but no signs could be detected. The pain continued for about a week. The patient was kept in bed, and the arm placed in an easy position on a pillow. Complete recovery ensued. He had suffered from similar symptoms many years previously, which had also been due to the same cause—falling asleep in a railway carriage with his elbow raised and resting on the edge of the carriage window, the elbow being flexed and the head resting on the hand.

Fifteen years after the second attack the patient was alive and doing active work.

By observation in the dissecting room (placing the finger in the position of the nerve roots in the posterior triangle of the neck) we can easily demonstrate that the nerve roots are liable to be compressed by the posterior surface of the clavicle when the elbow is raised very high, into the position just indicated.

CASE II.

A healthy middle-aged man had had severe pain for six weeks in the right arm; the nerve roots in the posterior triangle were tender on pressure; the symptoms of brachial neuritis were marked. No definite cause could at first be detected; there had been no injury. No signs of organic disease could be detected. The braces were tight, and the patient stated the symptoms had followed directly after commencing to wear a pair of new and tight braces. Considering that the tight braces had probably played some part in causing the neuritis, by pressure indirectly on the nerve trunks in the posterior triangle of the neck, I advised the braces to be removed, the trousers to be fixed by an abdominal belt, and the right arm to be placed in a sling, so arranged that the right elbow was supported and slightly raised—dragging of the weight of the arm on the nerve roots in the posterior triangle and pressure of the clavicle on these roots being thus prevented. Antipyrin gr. x three times a day was given. The pain very rapidly diminished, and in two days had entirely ceased. Four years later the patient was in good health; he had had no return of symptoms.

CASE III.

An elderly female. The symptoms followed a sudden heavy blow on the left shoulder in a street crowd; the shoulder was pushed backwards. The nerve roots in the left posterior triangle of the neck were tender, and the symptoms of brachial neuritis just described were present. The arm was placed in a sling, as in Case II, and antipyrin given. Recovery ensued in a few days, and there had been no return of symptoms ten years later.

CASE IV.

A middle-aged man presented the symptoms after a fall on the right shoulder; the nerve roots in the right posterior triangle of the neck were tender. All the other symptoms of brachial neuritis were present.

CASE V.

A middle-aged man, with symptoms of brachial neuritis in left arm, stated that the pain had commenced one evening (many weeks previously) just after he had carried a very heavy roll of carpet on the left shoulder and left side of the neck. Probably this had compressed the nerve roots in the posterior triangle of the neck, and caused the neuritis.

CASE VI.

A young man had symptoms of brachial neuritis in the right arm. He had long suffered also from various slight symptoms of neurasthenia. The pain in the arm was especially severe after walking for long distances with the right arm hanging down by the side. A strap over the right shoulder was tight. This was slackened and put off when not absolutely necessary, and the patient was advised to keep the arm in a sling as described. Recovery was rapid.

CASE VII.

A soldier, sent home from France on account of trench fever, had suffered during that illness from pain in both arms and legs. He had to discontinue the use of braces on account of pain caused by pressure of braces on the shoulders.

He was discharged from the army, improved, and returned to his work, in which he had to turn the handle of a machine with his right hand about twenty times a day for about fifteen minutes each time (thus using the right hand in turning the machine altogether for five hours daily). The work was a very heavy physical strain. In a short time (less than a month) he began to suffer from pain in the right arm which increased until he was unable to work further. All the symptoms of brachial neuritis developed.

CASE VIII.

A naval officer whilst stationed at a port on the south coast was suddenly called from his bed one night to answer a telephone. He had not time to dress, and whilst standing at the

telephone the left shoulder and left side of neck were exposed to a strong draught of cold air from an open window for a considerable time. He returned to bed and slept, but on awaking next morning found the left arm very painful. In a few days the pain was so severe he had to discontinue his duties. When I saw him at this time he presented all the symptoms of brachial neuritis just described. The pain continued for a few weeks and was often so severe as to prevent sleep. Then he gradually improved and recovered.

CASE IX.

A man slept on very damp ground, his left arm being in contact with the ground. The symptoms of brachial neuritis followed in the left arm.

CASE X.

A woman, aged 52, put on a very damp jacket and went out in the cold; within two hours pain and symptoms of brachial neuritis began in both arms and continued for many months. There were no signs of organic disease. She recovered.

In diabetes mellitus and in chronic alcoholism brachial neuritis, with symptoms similar to those just described, is occasionally observed. I have seen a number of such cases. Gowers and others consider that gout also is a common cause of the disease.

CASE XI.

A woman, aged 45, had suffered from mild diabetes mellitus for four years. Without any apparent cause, beyond the diabetic condition, aching in the limbs became troublesome. In a short time the pain in the legs and right arm ceased to be troublesome. But the pain in the left arm became very severe, so severe that she was unable to sleep. It was most severe between the elbow and shoulder; it was diffuse, not limited to distribution of any nerve or nerve root. There was great tenderness on pressure at this part. There was no anaesthesia, paresis, or atrophy, and the reflexes were normal. The nerve roots of the brachial plexus in the left posterior triangle of the neck were more tender on pressure than those in the right posterior triangle. The other symptoms of brachial neuritis were noted. The arm was placed in a sling as already described, and antipyrin gr. x three times a day was prescribed. Rapid recovery ensued in a few days, and ten months later there had been no return of pain.

Prognosis.

Most cases I have seen recovered completely. In rare cases the symptoms have persisted, with periods of intermission and relapses, for months. Primary brachial neuritis is not followed by organic disease of the nervous system or thorax.

Diagnosis.

The description just given refers to "primary brachial neuritis"; but symptoms, which at first are somewhat similar, occur in cases of pressure on the brachial plexus by tumour in the thorax or neck, or by aneurysm, and in cases of meningeal spinal tumours and other organic affections. Later in such cases objective nervous or thoracic symptoms develop, which indicate clearly that the case is not one of primary brachial neuritis.

Considerable care is therefore needed in the diagnosis. A very thorough examination is necessary, and the diagnosis of primary brachial neuritis should only be made when all signs of organic disease of the nervous system, of aneurysm, or intrathoracic growth, and of other organic disease of heart, lungs, spine, or neck, are lacking, and when the symptoms are subjective. Anaesthesia, paralysis, changes in the reflexes, would all exclude the primary brachial neuritis I am considering.

As already stated, cases of primary brachial neuritis usually terminate in recovery, and clinically the diagnosis cannot be regarded as quite certain until recovery has occurred. Nevertheless, after careful examination, and exclusion of signs of organic disease, the diagnosis of primary brachial neuritis may often be given as strongly probable, and this opinion is often verified by the recovery of the patient. The longer the disease persists the more probable is it that the neuritis is secondary to some organic lesion.

In the diagnosis from neuralgia the character of the pain is helpful. In brachial neuritis the pain is less completely intermittent than is that of neuralgia, and the nerve roots in the posterior triangle are more tender on slight pressure at the early period.

Symptoms very similar to those of brachial neuritis may occur at the early stage of a spinal meningeal growth, but in such cases they do not clear up, and in course of time paralytic symptoms and other indications of organic disease develop.

In a case under my care (which proved to be a gumma of the cervical dura mater) the first symptoms were similar to those of brachial neuritis. They persisted in spite of all treatment (including antisyphilitic treatment) for over twelve months, and no other symptoms of affection of the nervous system could be detected. Then slight paresis developed in the affected arm and was rapidly followed by paralysis of both legs, both arms, and of the bladder and intercostal muscles, and by anaesthesia up to the second intercostal space.

In this case, at first, the symptoms were very similar to those of brachial neuritis, but the persistence of the pain without any improvement rendered primary brachial neuritis very improbable. The case shows the necessity for keeping a careful outlook for the development of signs of organic disease of the spinal cord in all cases of brachial neuritis.

The diagnosis from surgical affections in the region of the shoulder (fracture, partial or sub-dislocation, sprain, laceration of ligaments, arthritis, etc.) has also to be considered. Signs of these conditions should be searched for, if we have a history of injury; and in difficult cases x-ray examination may be helpful. Primary brachial neuritis can be excluded if the pain is felt only on movement, or if we find that on passive movements the scapula moves along with the humerus, if partial ankylosis or adhesions have formed at the shoulder-joint, or if we find signs of fluid in the joint.

A "cervical rib" may cause pain in the arm which may be at first regarded as brachial neuritis. But in cervical rib the pain is often chiefly in the distribution of the first dorsal nerve root in the arm, often sensation is diminished in this area, and the small muscles of the hand become wasted. The existence of a cervical rib is revealed by x-ray examination.

As in all cases of pain in various parts without objective signs, hysteria and malingering might present the greatest difficulty. In brachial neuritis often we can only exclude hysteria or malingering on general grounds. In nearly all of my cases of brachial neuritis I have had no hesitation in excluding hysteria or malingering. We have usually no indication of hysteria, the statements as to the pain are definite, and we are unable to detect any tendency to exaggerate. The onset is usually rapid. The patient is evidently most anxious to obtain relief, he is often unable to sleep on account of the pain. If we move the limb slightly when the patient's attention is directed elsewhere we find we are unable to do so without increasing the pain. The recovery is usually definite and no further trouble occurs, at least not for a long period, when a second attack may occur. We find no object for malingering, or a history of anything pointing to hysteria or malingering.

But the diagnosis can only be based on general considerations. We cannot put on paper these considerations definitely. We have to decide from such general considerations whether the pain be genuine or not, in just the same way as in other cases of neuralgia or pain without definite physical signs; usually from such general considerations we have no hesitation in brachial neuritis in deciding that the patient is suffering from severe pain. But if we have any indications of hysteria or malingering, the diagnosis may then be very difficult or impossible at first.

Rheumatic affections of the shoulder-joint should be carefully excluded, and the patient examined for swelling of the joint, grating on movement of the joint, or ankylosis, partial or complete, as detected by passive movements at the shoulder. These would be points against primary brachial neuritis, though joint affections may be associated with neuritis. In the rheumatic affections of the shoulder, though the pain may extend down the arm, it is usually greatest at the joint. Other joints are often affected afterwards, or have been affected previously, and we have often a history of various rheumatic affections.

Treatment.

A point of first importance is to relieve, by the position of the arm, pressure on the nerve trunks of the brachial plexus in the posterior triangle of the neck. The weight of the arm should not drag on the nerve trunks and the posterior surface of the clavicle should not press upon them at the lower part of the posterior triangle, nor should any strap or brace press on the posterior triangle. For many years I have treated cases of brachial neuritis by placing the affected arm in a sling. The sling should pass over the shoulder of the normal arm, and it should be so

arranged that it passes under the elbow of the affected arm and slightly raises it. The shoulder and the clavicle are thus slightly raised, and pressure on the nerve roots at the lower part of the posterior triangle of the neck (near the first rib) is prevented; also the weight of the arm is supported and dragging on these nerve trunks prevented. These I regard as points of much importance in the treatment of many cases. Very often the sling is of great service; in other cases it fails; but it is always worth trying, especially if we have a history of the local pressure causes already mentioned. The sling also keeps the arm at rest. All tight braces or shoulder straps should be removed at once, and a waist belt used in place of braces. If the patient is on military service all tight shoulder straps should be slackened or discontinued altogether when possible.

The arm should not be allowed to hang by the side. If the arm cannot well be kept all day in a sling, the hand should be placed in the pocket when the sling is not used, or the arm may be crossed over the front of the chest, the elbow being bent at a right angle, and the hand pushed under the edge of the coat just above one of the buttons. When the pain is very severe and the patient confined to bed, the sling should still be used. The arm may be also supported by pillows placed under the elbow, so arranged as to support the weight of the arm, or to raise the shoulder slightly; and the forearm should be crossed over the chest. In this way pressure by the clavicle on the nerve roots in the posterior triangle of the neck is avoided or diminished. When the neuritis is due to exposure of the neck and shoulders to cold and draught or damp, or when due to diabetes or toxic conditions, the sling may not be of much service, but in some of these cases also it is helpful.

The drugs which I have usually given, and which may be of service, are pyramidon, antipyrin, aspirin. General and dietetic treatment for diabetes or gout will be desirable when the patient suffers also from these diseases. It is always well to cut off alcohol.

Locally, liniment of belladonna, the fluid prepared by rubbing together equal parts of chloral and camphor in a mortar, or cocaine ointment, may be of some service. In very severe cases, opium, morphine, or codeia internally may be required, and, in exceptional cases, hypodermic injections of morphine. This was necessary in only one of my cases. Galvanism and many other methods of treatment have been employed.

Most of my cases, but not all, recovered promptly or improved markedly by the use of a sling, with pyramidon or antipyrin given internally.

FEBRILE URTICARIA.

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Two unusual cases of severe urticaria occurred in the British Station Hospital, Nowshera, N.W.P. India, within a week of each other, and were almost identical in the type and duration of the disease. Both were characterized by a severe and generalized urticarial eruption, five days' pyrexia, and the absence of any of the usual exciting causes of urticaria or inherent tendency to the disease.

CASE I.

A soldier, under treatment for right empyema by drainage of the pleural cavity. The discharge had practically ceased, and

CHART 1.—Rash appeared on the first day, was at its worst on the third day, and disappeared on the sixth.

The ankles and the dorsa of the feet were particularly red and swollen, and here the condition was more of the nature of

angioneurotic oedema than of discrete wheals, and the sensation one of tenseness and pain more than of itch. Pyrexia began on the second day, and reached its maximum when the eruption was worst. The pyrexia and the urticaria declined and disappeared *pari passu*.

Neither dietetic changes, drugs, vaccines, insects, nor any of the usual exciting causes could be traced in this case. No other symptoms nor signs of disease were present, except the almost cured empyema. He had never had an attack of urticaria before and felt quite well as soon as the eruption passed off. He was treated at first with calomel and salines and afterwards with cooling applications, sedatives, and hypnotics, but obtained little or no relief from the intolerable itch.

CASE II.

A medical officer, working in the same hospital, but not in attendance on Case I, was in perfect health when he noticed one morning, five days later, a small white wheal on his forehead, which rapidly grew to the size of a hen's egg; he also felt itching on the parts of his back and shoulders exposed to the friction of the clothing. By next day the eruption had broken out in patches over most of his body, but the size of the swellings and the intensity of the itch in any one part was not always the same. At one time his eyes were closed; at another his cheeks and lips were swollen to twice their normal size, or his hands and fingers were so tense and swollen that he could not close them. In the parts of the body where the skin is loose, the wheals varied in size from 2 to 3 centimetres. They appeared first as white wheals, mostly oval or roughly circular, but soon became deep red in colour and were surrounded by an erythematous area of congestion which was intensely sensitive and irritable. In the fingers, hands, feet, and scalp, where there is little loose skin, distinct wheals were not seen, but the whole area was tense, swollen, and of a rosy colour. On the fourth day of the eruption the temperature was 103° F. and the urticaria and swelling at its worst. After that it rapidly declined (see temperature chart).

CHART 2.—Rash appeared on the first day, was at its worst on the fourth day, and disappeared on the sixth.

The mucous membranes were not affected, nor was there any sign nor symptom of disease elsewhere. The pulse throughout was of a rate commensurate with the temperature. It was easily compressible and bounding, but not dirotic. The urine was normal; there was no jaundice and the blood count showed a slight polymorphocytosis of 77 per cent., but no eosinophilia.

Treatment was commenced with purgatives. Calcium lactate was given in full doses and adrenalin chloride hypodermically. Cool alkaline baths and sponging, $\frac{1}{2}$ grain doses of morphine, full doses of bromides, were all tried to allay the intolerable itch, but with no success. The patient was driven to walking about in pyjamas in the cold night air, and found that the best way to allay the itching was to keep himself almost shivering with cold.

Again in this case no exciting cause could be found. He had never suffered from such a condition before, but had noticed in the last six months one or two sudden transient attacks of oedema of the nasal mucous membrane with complete stoppage of nasal respiration. Apart from this he had never had any sign of vasomotor weakness or instability.

The symptoms in the two cases were practically identical, and were characterized by five days' pyrexia, by a diffuse eruption partly resembling urticaria and partly angioneurotic oedema, and by intolerable itch. They both occurred in the same hospital within a week of each other, but such cases have never been reported before in this district of India, as far as I know. None of the known causes of urticaria were present, and the questions arise whether it was not more than coincidence that these two uncommon cases appeared so close together in time and place, and whether there might not be some unknown specific infective agent to account for them both.

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THE Harvard Medical School has recently received two bequests. One is an anonymous gift of £10,000 for the establishment of the James Melvin Fund for Tropical Medicine; the income is to be applied for purposes of research in preventive medicine. The other is a residuary legacy from Horace Fletcher, the apostle of "Fletcherism," and the income is to be used to "foster knowledge of healthful nutrition."