Meeting December 12 1962

Short Papers

Unilateral Sciatica with Neurological Signs [*Summary*]

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The syndrome of unilateral sciatica with weakness in the affected leg is due to root compression by a protruded intervertebral disc in more than 90% of cases (de Sèze *et al.* 1957, Arseni *et al.* 1959). Forty-eight patients with no evidence of systemic disease were studied to discover the course of this syndrome when treated conservatively and they were followed until either they recovered or their condition had remained static for more than a year. Serial electrodiagnostic (EMG) tests were made in 26 cases to detect signs of denervation in the weak muscles.

In 40 patients only one root (uniradicular) was affected and all made a complete spontaneous motor recovery but sensory and reflex changes often persisted. In 5 uniradicular cases no signs of denervation were detected in the weak muscles and complete recovery occurred within a mean interval of eleven weeks (S.E. $\pm$ 1·5). It is proposed that here the compression had produced a neurapraxia of the motor fibres in the root (Seddon 1943). Thirteen uniradicular cases in whom EMG signs of denervation were detected recovered within a mean interval of twenty-nine weeks (S.E. $\pm$ 3·9), and in 4 cases the EMG returned to normal indicating that active reinnervation had occurred. Since reinnervating fibres from the site of the lesion would take twice this time to reach the shin and calf muscles, this indicates that recovery occurs by peripheral reinnervation through branching of nerve fibres derived from other roots supplying the muscle. Such a process has been shown by Edds & Small (1951) to produce recovery from experimental uniradicular lesions in monkeys.

In contrast, 7 of 8 cases in whom more than one root (multiradicular) was involved showed persistent weakness and denervation throughout the follow-up, in some instances for more than two years. It appears that if more than one root supplying a muscle is interrupted there are too few surviving nerve fibres to achieve effective peripheral reinnervation.

From these findings it is concluded that uniradicular weakness complicating sciatica can be treated conservatively. The prognosis of multiradicular lesions is so poor that when the extent of the denervation has been confirmed by EMG, the relief of root compression by laminectomy should be urgently considered.

[A full report of this work has been submitted for publication in the *British Medical Journal.*]

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The Scope of Nerve Root Block in Physical Medicine

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Eight years ago we decided to investigate the possibilities of nerve root block for the treatment of pain which either did not respond to physiotherapy or else responded too slowly to be treated in a department short of physiotherapists.

Local injection of trigger points with benzyl salicylate (Heald 1951) and procaine had been used, and is still used, but it was felt that nerve root block, if successful, might eliminate the need for repeated injections.

These blocks are carried out in a special clinic directed by the consultants in physical medicine and anæsthetics. Patients are not referred direct but have a general medical examination previously. The majority of cases have had previous treatment by physiotherapy or drugs, and in a few cases by surgery.

Special points noted in the pain clinic are the nature and situation of the pain and special points of tenderness. Patients are not injected without a previous X-ray. Most referred pains treated in the physical medicine department are a mixture of dermatome pain and scleratome pain. Whereas a dermatome pain tends to be an acute pain felt over the known distribution of a nerve root and accompanied by neurological signs such as

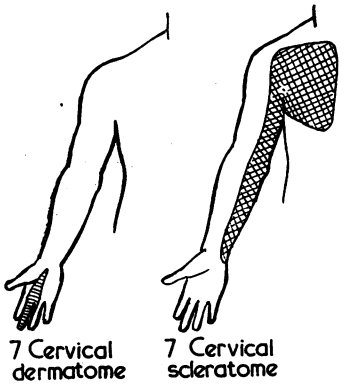

Fig 1 *Diagram to show distributions of 7th cervical dermatome and 7th cervical scleratome*

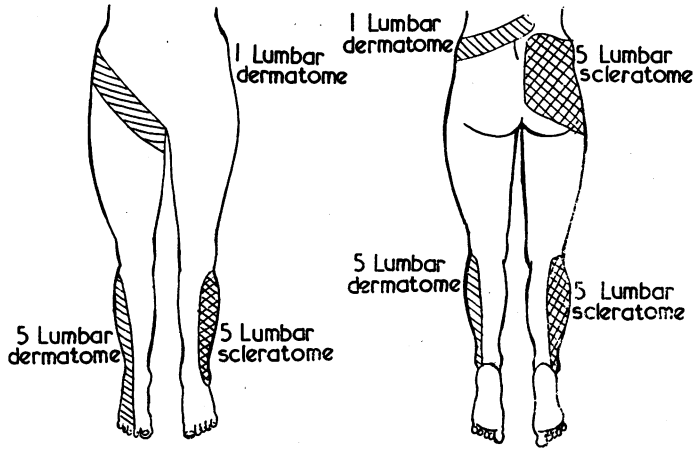

Fig 2 *Diagram to show differences and similarities in dermatome and scleratome innervation in the lower limbs*

wasting, alteration of sensation or of reflexes, scleratome pain is a duller and deeper pain, often continuous from the spine to the periphery, and accompanied by tenderness near the spine and in certain known trigger points. In pure scleratome pain more weight tends to be borne on the foot of the affected side, whereas when pain is due to genuine pressure from a disc more weight tends to be borne on the foot of the good side.

The dermatome and scleratome distribution does not correspond (Inman & Saunders 1944, Rose 1954). For example the 7th cervical dermatome supplies a small area of skin around the mid-finger and adjacent part of the hand (Fig 1), whereas the 7th cervical scleratome supplies an area of musculature which embraces the back and inner side of the arm and forearm, and the scapular and pectoral areas (Fig 1). On the other hand, in the lower leg both the 5th lumbar dermatome and 5th lumbar scleratome supply the outer side of the lower leg, whereas in the buttock the skin overlying the upper area is part of the 1st lumbar dermatome and the underlying musculature is part of the 5th lumbar scleratome (Fig 2).

These scleratome pains appear to be similar to the pains formerly known as 'fibrositis'. In practice most limb pains tend to be a mixture of dermatome and scleratome types of pain, and many of the residual cases of pain arising after bed rest in patients with prolapsed disc are due not so much to pressure on the nerve root as to referred pain from torn ligaments.

In this series of cases the anæsthetic used has been 1% lignocaine (Belam & Dobney 1957*a*). In general, patients are given a week's physiotherapy and if no or only slight improvement has occurred at the end of this time, root block is performed. In case of difficulty in deciding which root to block the more cephalad root is chosen. Except for patients with acute bilateral pain where caudal epidural block is performed, the injection is limited if possible to only one root.

It is not proposed to discuss techniques here, but the simplest technique compatible with maximum relief is invariably chosen.

Stellate blocks are performed for cases resembling Sudeck's atrophy and the shoulder/arm syndrome of Steinbrocher. Stellate block is performed by the anterior approach (Smith 1951). It is also performed in many cases of frozen shoulder following coronary thrombosis and hemiplegia, as well as cases showing Raynaud's phenomenon.

Lumbar sympathetic blocks have been performed mainly as a diagnostic procedure in circulatory deficiencies of the lower leg and in some cases of chronic pain in the lower limb accompanied by congestion, being especially useful in the post-traumatic limb with stasis and osteoporosis.

It is sometimes found necessary to inject trigger points in addition to blocking the appropriate nerve root. An interesting trigger point at the upper angle of the scapula may give rise to pain which sometimes radiates up to the head and at other times down the back of the arm, similar to the pain formerly described as musculospiral neuritis. It very commonly gives pain referred to the pectoral and axillary regions and is a frequent cause of pseudo-angina. This trigger point is in-

variably found in association with lesions of the C.6/C.7 disc. A trigger point in the infraspinatus is commonly associated with brachialgia, and trigger points around the gluteal region and posterior superior iliac spines are associated with sciatica. Cephalgia accompanied by tenderness over the third transverse cervical process responds very well to block of the third cervical root, as much as 80% success being attained.

Nerve root block of the sixth cervical root is used for many forms of brachialgia accompanied by lesions of the C.5/C.6 disc, certain cases of bicipital tenosynovitis and supraspinatus syndrome. Paravertebral block has been performed in cases of so-called intercostal neuralgia with 75% success. It is less successful in cases of post-herpetic neuralgia and should be undertaken with caution in patients suffering from emphysema.

Backache with referred pain to the groins and testicles responds very well to nerve block of the first and second lumbar roots. The common low back pains associated with faulty posture, and not responding to physiotherapy and exercises, are helped by blocking the third lumbar root. Pain down the back of the thigh spreading to the outer side of the calf is very commonly found in association with the L.5/S.1 disc and with lesions of the ligaments of the lumbosacral joint. For this a special approach was devised at the midpoint of a line through the 4th lumbar spine which bisects a line between the highest point of the iliac crest and the posterior superior iliac spine. The 5th lumbar root is approached by angling more caudally to this point (Belam & Dobney 1957*b*).

A feature of the series of cases treated has been the large percentage of success obtained from blocks of the stellate ganglion compared with those following lumbar sympathetic block. This latter is considered the most difficult and unsatisfactory block performed in our clinic. A caudal epidural block has been extensively used for acute cases of sciatica, particularly bilateral sciatica, either prior to admission or in those cases where admission could not be arranged and where attendance for daily physiotherapy was difficult or inadvisable.

These blocks are slightly more difficult to perform than the ordinary injection of trigger points, but provided normal sterile precautions are taken, and injections near the lung are avoided in cases of emphysema, it is not felt that they hold any special risk. Checking with X-ray will soon help the operator to acquire the necessary accuracy. It must be emphasized, however, that this mode of treatment is at present empirical in nature and is likely to remain so until more is understood about the action of local anæsthetics.

The main justification for nerve root block is the rapid relief of pain, usually after an initial reaction, ease of rehabilitation, the saving of time of medical and physiotherapeutic personnel, the saving of hospital beds, and the fact that relief may be expected to last for six months upwards.

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Mr G W Murray showed a film entitled **Applied Physical Education,** on aspects of work at Marlborough College, which he had produced in collaboration with Dr T A A Hunter. It was filmed and directed by Mr James Hall and was made possible by a grant from the Gulbenkian Foundation.

Meeting February 13 1963
at the Central Middlesex Hospital,
Park Royal, London

The following cases were shown:

Ehlers-Danlos Syndrome and Arthritis. ? Cause
Dr Roger Smith (for Dr Richard Asher)

(1) **Rheumatoid Arthritis, Rheumatoid Neuropathy, Arteritis and Myxœdema**
(2) **Erythema Nodosum with Polyarthritis and Erythema Multiforme Lesion**
Dr V L Steinberg

(1) **Abscess Right Thigh**
(2) **Behcet's Syndrome**
Dr D S Fareed (for Dr V L Steinberg)

Cervical Spondylotic Radiculopathy and Myelopathy
Dr V R Bloom (for Dr R J Porter)

An X-ray demonstration, illustrating a variety of arthritic and locomotor conditions, was given by Dr F Pygott

Dr M W McNicol read a paper entitled
The Place of Physiotherapy in the Treatment of Respiratory Failure