

managed at home. The influence of a nurse, and her manner of approach, will do much to assist the aged who decide to maintain their sturdy independence by continuing to live at home; and by her contact with home helps, and often by tracing relatives, will be able to give invaluable service in this direction.

A Changing Phase

The changing phase of general practice, in which the practitioner will work in and with local authority services, will make the health visitor an essential factor, but the practitioner cannot assess the value of this ancillary service unless he has the means to study it; in effect he must have access in one way or another to local authority services. The Birmingham plan, published in the *Lancet* of April 5, 1952, is based on the assumption that general practitioners will work in local authority clinics. My visit to Birmingham was amply repaid by the courtesy and help afforded by the medical officer of health. (All good general-practitioner members of the B.M.A. should make pilgrimage to Birmingham, for it provides the vast majority of their leaders.) Birmingham regards the present services of local authorities as outmoded because they were inaugurated at a time when it was their duty to provide such services for those who could not afford them, and because the passing of the 1946 Act, which gives full facilities to the whole population, alters the entire position. The time is approaching when the general practitioner will, in the first instance, be the person responsible for the treatment of the family unit, and when the employment of junior staff by the medical officer of health's department for clinical duties will cease. The success of the scheme in Birmingham is obvious; Croydon, too, has an excellent liaison which enables the general practitioner to work in clinics if he so desires.

In my own area all clinics are open to practitioners, so that they may use the clinic or staff for antenatal and post-natal care of patients, utilize the special services of the local authority such as physiotherapy for the pregnant mother, seek the help of the child guidance clinic, invoke the aid of the dental x-ray department, and have access to special departments for speech therapy, etc.; and this, combined with access to the chest clinic, gives great opportunities for further services to their patients. Thus practitioners will appreciate the value of the health visitor. Liaison of even the senior generation of doctors with the health visitors can be rapidly inaugurated by social contact, which will soon establish the happy relationship which always exists when doctor and nurse work together. But I feel it should be stressed that the practitioners must learn to regard the health visitor as an ancillary who has a highly specialized knowledge collateral with his own, not merely as a nurse acting under his official directions. So far as the younger generation of practitioners are concerned, they will come to regard health visitors as indispensable.

The student now sees them in the wards of hospitals, doing the rounds with him so as to assess the social after-care; but unless he meets them subsequently, the inestimable value of their knowledge is lost to him. Surely he will now enter practice, work when he so desires at adequately staffed clinics, and in the sphere of social medicine will have the advantage of calling upon the health visitor for the elucidation of his problem and of keeping contact, because he will meet her in the course of his work. His obstetric work will be immeasurably helped by meeting, through the offices of the health visitor, the midwife, either at the clinic or in his own surgery; and the present position will be improved, for only too often the general-practitioner obstetrician does perhaps two of the "antenatals" and the nurse the others—the two never meeting except in a possible emergency at a confinement.

Conclusion

Although enthusiastic about this subject, none of us would be so foolish as to suggest that health visitors are the complete solution to the many problems of practice, for history

teaches that enthusiasm is invariably followed by a stage of caution; but the most conservative would agree that in a large proportion of the cases which constitute our life's work and in which we need and would welcome assistance, this is waiting for us on our doorstep. May I say, too, that the use which is made, in certain areas, of open access to pathological services is so much less than was forecast that those in charge of administration in local authority need have no fear, in the first instance, that they would be overwhelmed by demands on their health-visitor services.

However, as the Minister said at Scarborough, it is the general practitioner who must captain the ship. It is not for him to evade his responsibilities but to increase them—because he has the necessary help. It is my belief that closer contact with the nursing profession must raise one's own standard; and I understand that, already, general practitioners who are working in clinics are becoming keen on postgraduate instruction that will keep them abreast of their subject when working side by side with health visitors.

So the doctor of the future, if he decides on general practice as a career, must realize that one of the most important factors in helping him to maintain personal contact with his patients, to understand their difficulties, and to guide those whose problems are not purely of disease but of social background, will be a firm liaison with the health visitor.

Finally, may I express my gratitude to the medical officer of health for East Ham, and his health visitors, past and present; for, without their invaluable help and co-operation and his advice to his authority to make liaison with general practitioners by offering the use of local authority services, this paper, however imperfect it may be, could never have been presented.

HYDROCORTONE AND SOFT-TISSUE LESIONS

BY

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The formation of painful scars in the moving parts of the body is a common cause of disablement. Non-specific inflammation of fibrous tissue follows injury or overuse and characterizes also the rheumatoid disorders.

Though there had been no satisfactory way of dealing with rheumatoid trouble, the problem of the painful scar due to trauma had been largely solved by the elaboration of manual methods. By means of deep massage in some cases, in others manipulation, it has proved possible to restore painless mobility, but it is usually a laborious business. For example, we have hitherto been quite satisfied with cure of tendinitis at the shoulder in say six or eight sessions, or tennis elbow in four to six sessions, since the breaking down of fibrous tissue in strong deep-seated tissue demands time and considerable ability and experience on the part of qualified personnel.

The fact of painful treatment, obtainable only from a minority of physiotherapists who have had special training in these techniques, naturally calls for constant exploration of alternative measures for dealing with

lesions of muscle, tendon, ligament, and joint-capsule. Fifteen years ago therapeutic local analgesia was extensively tried, but in the end we found it suited to only a few muscle lesions, to ligamentous injuries during the first day only of their occurrence, and, introduced epidurally, to some cases of low lumbar disk lesion. More recently we have experimented with short-wave diathermy and ultrasonic waves, and found they afforded no benefit in these disorders. When cortisone became available this was tried for its systemic anti-inflammatory effect, but it proved useless in non-rheumatoid conditions. However, hydrocortone, applied locally, has given excellent results.

Hydrocortone Acetate

This is supplied by Merck in 5-ml. phials containing in sterile suspension 125 mg. of the hormone. Hydrocortone has the same anti-inflammatory effect as cortisone, but exerts a local action. Hence it can be injected in small amount at infrequent intervals. It seems that no more need be injected than is required adequately to reach the whole affected tissue.

We were anxious to find out if hydrocortone could be used as effectively in traumatic as in rheumatoid inflammation. Since the reaction to aseptic injury is always excessive, we sought to control it by topical application of the hormone. We have found 25 mg. injected into the joint adequate for the shoulder, hip, and knee; 10 to 15 mg. for a tennis-elbow. After injury the cause of the inflammation is not, as in rheumatoid conditions, a continuing state; once the inflammation has been abolished there is nothing to reactivate it. Hence one or two injections suffice for those traumatic disorders in which hydrocortone is effective.

Since scarcity, expense, and possible toxicity with large doses all dictate that only small amounts of hydrocortone should be used, the importance of deciding on the exact site of the lesion is obvious. Hence the same system of diagnosis that originally enabled us to prescribe deep massage to one small point becomes more important than ever; for the 0.5 to 1 ml. of hydrocortone has to be injected into one precisely defined spot.

Diagnosis by Selective Tension

Tension brings on or aggravates pain in lesions of the moving parts. The approach is indirect and depends on assessment of function. Hence the diagnosis is arrived at by applying selective tension on each of the moving tissues in turn. From these responses a pattern emerges that identifies the precise tissue at fault. Search for tenderness is avoided so far as is possible, and, if it proves necessary, is confined to the structure already identified by this study of function as containing the lesion. When a number of movements are tested, some are found to be painful, weak, or limited, others normal. The negative side of the examination is as important as the positive, since, if one movement indicates that a lesion lies in a certain position, it follows that all movements that do not affect that part of that tissue must be of full range, painless, and strong. Hence interpretation is based on the pattern—that is, positive findings at one point balanced by negative findings elsewhere.

The main distinction when the moving parts are examined is between the contractile structures (muscle and tendon) and inert structures (capsule, ligament, bursa, dura mater, nerve-root, or nerve-trunk). Resisted contraction applies strong tension on muscle and tendon; stretching in the opposite direction may hurt too. Pain arising from inert structures appears on stretching only.

Examination of Function

Five different sets of data are correlated, as follows:

1. *Active Movements.*—These give a combined indication of the range of movement, muscle power, and state of volun-

tary control. Since range and power are assessed separately later, their chief virtue is to indicate willingness. Marked discrepancy between the range of active movement on the one hand and, on the other, the range of movement and muscular strength indicates psychogenic disorder.

2. *Passive Movements.*—These indicate the state of the inert structures without introducing complications due to muscle power and willingness. *Capsular pattern.*—If the entire fibrous cuff about any joint is found contracted, arthritis is present. The limitation of movement found corresponds to the capsular pattern. This is different for different joints, but maintains constant proportions at any one joint. For example, in arthritis at the shoulder, if abduction is, say, 45 degrees limited, lateral rotation will be 60 degrees limited but medial rotation only 15 degrees limited. *Non-capsular pattern.*—If the known proportions are not found, ligamentous sprain, internal derangement, bursitis, neoplasm, contracture of an extra-articular structure, or hysteria is present.

3. *Resisted Movements.*—One movement is tested for each group of muscles, and such a degree of resistance is applied that the joint itself does not move. The state of the muscles is thus assessed in isolation. If a full range of movement exists and only one resisted movement hurts, a muscle lesion is present. If several contradictory resisted movements hurt, the muscles are unaffected. Painless muscle weakness without increase of pain characterizes complete rupture or a neurological condition.

4. *Painful Arc.*—If a tender structure lies between two bony surfaces it can be painfully squeezed when they are approximated. A painful arc results—that is, pain at mid-range of a movement disappears as the extremes are approached. For example, in supraspinatus and infraspinatus tendinitis, and in subdeltoid bursitis, the lesion lies between the acromion and the greater tuberosity of the humerus. Therefore, tenderness of any of these three structures may give rise to a painful arc. In the case of the tendons, the arc is associated with pain on resisted abduction and lateral rotation respectively. If the bursa is at fault neither resisted movement hurts. Since the simplest anatomical considerations indicate clearly where the tissue, since it is pinchable, must lie, an arc is a valuable localizing sign.

5. *Palpation.*—This may reveal warmth; if so, the finding indicates an active lesion. It occurs with recent injury or operation, fracture, internal derangement, neoplasm eroding bone, blood in the joint, rheumatoid or gouty arthritis, and bacterial infection. Fluctuation indicates fluid. Synovial thickening, crepitus, loose bodies, cysts, osteophytes, and bony enlargement are detectable. Tenderness serves to indicate the exact site of a lesion only if palpation is confined to the tissue already singled out by study of the diagnostic movements as that affected.

6. *Confirmation.*—Radiography seldom clarifies a diagnosis in lesions of the soft tissues and may prove most misleading; hence the paramount importance of the clinical assessment of function. Local analgesia provides the only means of disproving or confirming a localization arrived at clinically, and in all cases of doubt should be induced at once. After the injection whatever movement had been found painful is tested again. If the right spot has been reached this movement remains painless for one to two hours. Once the right spot has been found—if necessary by repeated small infiltrations—the hydrocortone can be injected the next day.

Choice of Cases

Most soft-tissue lesions of the moving parts respond rapidly to the standard methods used in orthopaedic medicine—deep massage, manipulation, traction, and therapeutic local analgesia (Cyriax, 1950). Thus we have selected for treatment by hydrocortone patients who either had failed to respond to our normal procedures or lived too far away to attend for such treatment.

Technique

Intra-articular injection presents little difficulty except at the shoulder. At the smaller joints, traction is useful to form a gap into which the needle can pass.

Shoulder.—The patient lies prone, the forearm on the affected side under his abdomen. However arthritic a shoulder-joint, this position is not painful; and it secures fixation of the humerus in slight medial rotation. The operator identifies the posterior bony projection lying at the point where the acromion and the spine of the scapula meet at right angles. He selects a spot 1 cm. below this point and thrusts in a thin needle 5 cm. long. He identifies the coracoid process anteriorly and aims the needle directly at it. He feels nothing as the needle traverses the fleshy infraspinatus, but the capsule of the joint offers clear resistance. Once the capsule of the joint is pierced the needle becomes embedded in articular cartilage—another characteristic sensation, quite unlike the impenetrable surface offered by bone. If the operator wishes to be doubly sure that the needle lies intra-articularly, he can pierce the capsule in several adjacent spots until resistance to the needle suddenly ceases and it passes easily to its full length between humerus and glenoid. 25 mg. of hydrocortone (1 ml.) is now injected.

Results

Shoulder.—Between us we have treated 21 cases, as follows: freezing arthritis, 9; infective arthritis, 6; post-traumatic capsulitis, 3; post-operative adhesions, 1; immobilizational capsulitis, 3; subscapular tendinitis, 1. The hope that an effective treatment had at last been found for freezing arthritis was again disappointed. The results were largely negative, and in several patients seen when the arthritis was in the early part of the first stage the disorder was uninfluenced, and progressed in the usual way towards increasing pain and limitation of movement. In one case no less than 125 mg. of hydrocortone was injected in the course of a month without effect. By contrast, the six patients with infective arthritis reported immediate relief. The constant pain ceased by the same evening, and the patients were able to lie on that side at night for the first time for months. The range increased, and so far (maximum seven months later) there has been no return of symptoms.

In the cases following trauma and immobilization the results were generally good and patients with lesions in the active stage (that is, unsuited to the physiotherapist's repeated gradual stretching) were brought within a fortnight to the point where this could be undertaken with success. Months of disablement were thus avoided. In the post-operative case (stiffness following operation for recurrent dislocation) no benefit resulted. The patient with subscapular tendinitis responded well. He had had two months' pain, and six days after injection of 1 ml. of hydrocortone had lost his symptoms; these have not returned.

Tennis and Golfer's Elbow.—These cases number 14: teno-periosteal tennis elbow, 9; tendinous tennis elbow, 3; golfer's elbow, 2. These disorders provided our most consistently spectacular results. We confined our treatment by hydrocortone to cases in which the lesion lay at the teno-periosteal junction or in the body of the common extensor tendon itself. Only 0.5 ml. of the suspension was used. Ten days after the injection 10 patients were playing tennis again painlessly. In the two remaining cases relief was incomplete, but cure followed a second injection. Two cases of golfer's elbow (strain of the common flexor tendon at the medial condyle) were fully relieved by one and two injections respectively. As a precaution (possibly unnecessary) patients were asked not to exert the wrist during the first few days after the injection, so as to give the anti-inflammatory action of the hormone a favourable environment for its action.

Knee.—Infective arthritis, 2 cases; sprained coronary ligament, 1 case. Infective arthritis of the knee had been present for two months in a woman of 26 years. After the

injection the heat, fluid, and synovial swelling almost disappeared for a week, and then returned rather more so than originally. By contrast, three fortnightly injections of 1 ml. suspension into a hot, swollen, painful knee of two years' standing had an excellent result, which has now lasted two months. The coronary sprain was of two months' standing. The ligament was infiltrated with 0.5 ml. of the suspension. Within a few days the symptoms ceased, but a small effusion remained. This was abolished by 1 ml. injected intra-articularly.

Miscellaneous.—One case of sprain of the deep aspect of the acromio-clavicular joint responded very well to two infiltrations; in another case it had no effect. A dancer who had been unable to dance for two months because of a sprained toe-joint was symptom-free after two injections. A tenosynovitis of the flexor carpi radialis which had responded indifferently to deep massage was cured by two infiltrations.

Other Uses.—Quite possibly, hydrocortone will have an important part to play in orthopaedic surgery. Introduced into the knee-joint after—for example, meniscectomy—it should serve to abort the traumatic arthritis and thus shorten convalescence materially. It may prove the treatment of choice in traumatic arthritis at the elbow-joint. Medical uses may include injection into the pleura and pericardium, and perhaps spraying the nasal mucosa in allergic conditions.

Conclusions

Hydrocortone exerts a strong anti-inflammatory action when in contact with fibrous tissue. Lesions of tendon, ligament, and joint-capsule caused by injury or overuse can apparently be cured outright within a week or two. Naturally, the smaller the area of tissue affected the more thoroughly it can be infiltrated. Precise diagnosis by means of the method of selective tension described is therefore an essential preliminary.

Tennis elbow and other tendinous disorders respond particularly well. However, another failure must be recorded in the apparently endless search for the effective treatment for freezing arthritis at the shoulder.

The indications for deep massage by the physiotherapist are narrowed, but those for manipulation remain unaltered.

REFERENCE

Cyriax, J. H. (1950). *Textbook of Orthopaedic Medicine*, 5th ed. Cassell, London.

Since the Scientific Film Association's *Catalogue of Medical Films* was published in 1952, many more films on medical and allied subjects have been brought to the association's notice, and details of these have been compiled and published as a supplement (Harvey and Blythe, London, price 6s.). Information about some 260 films is given in the supplement, and with the main catalogue short descriptive notes on over 1,200 medical films are now provided. The supplement is intended for use with the 1952 catalogue, in which abbreviations are interpreted and distributors listed. The films cover many aspects of medicine. Most of them have been made in Britain, but some films from the United States of America, Canada, New Zealand, and Russia are also listed. The new films include three on accident prevention, fifteen on health education and health services, several of which are especially suitable for showing to children, and eight on rehabilitation. There are more than twenty on general and specialist surgical subjects, ten on anatomy, several on diseases of the ear, nose, and throat; a large selection on gynaecology and obstetrics, paediatrics, industrial medicine, personal hygiene, and nursing. There are also films on neurology, orthopaedics, pharmacology, psychology and psychiatry, and anaesthetics, and a number on veterinary science.