

TREATMENT OF PERIARTHRITIS OF THE SHOULDER WITH HYDROCORTISONE

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Periarthritis of the shoulder, first described by Duplay (1872), of Paris, is a chronic inflammation of the various soft tissues that form the shoulder-joint. Codman (1909) described it as a process essentially involving the rotator-cuff system of the muscles and subacromial bursa that surround the shoulder-joint, but pointed out that it was an extremely difficult condition to treat. It was also a generally held view that the prognosis was excellent and that there was nearly always complete recovery within a year (Codman, 1934; Wilson, 1943); but Simmonds (1949) showed that, in a series of cases followed up for three years, only 30% had regained normal function, a further 30% had some weakness or loss of movement, and as many as 40% had both weakness of the joint and persistent pain.

Heat, mobilization exercises, the injection of local analgesics, manipulation, arthroscopy for section of the adhesions, and excision of the acromion or even arthrodesis have been recommended in the past, and practised, usually with relatively poor results (Steindler and Marxer, 1946).

Pathology

The condition begins as an acute non-specific inflammation following major or minor trauma, and, when untreated, progresses in severe cases to the condition of "frozen shoulder" (see Fig. 1).

The microscopical appearances have been well described by Neviaser (1945) and by Simmonds (1949), the latter showing that the earliest lesion is an area of abnormal focal necrosis in a degenerative tendon. This is typified by the picture of extreme vascularity and round-cell infiltration. If unchecked it progresses to a generalized chronic inflammatory reaction of the whole rotator-cuff mechanism and the capsule of the shoulder-joint. At this stage the shoulder is immobilized by painful protective spasm and shows every sign of an acute inflammation. With rest this will subside, and as fibrosis ensues the "frozen shoulder" results.

Theoretically such a pathological condition should respond to the effect of cortisone or hydrocortisone. The

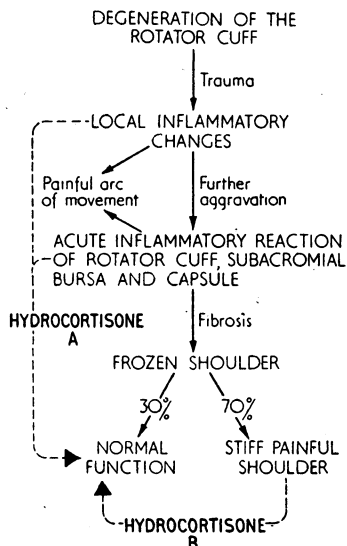


FIG. 1.—Diagram illustrating the pathology of periarthritis of the shoulder.

actions of the hormone are twofold: anti-inflammatory and fibrinolytic; the former action might well be expected to take effect in the earlier stages of the cycle (A in Fig. 1) when the inflammation is acute, and the latter action in the late stages (B in Fig. 1), where fibrosis is already progressing as in the typical "frozen shoulder."

The first reports, however, of the treatment of such lesions with the hormone showed widely varied results. Cyriax and Troisier (1953) stated that hydrocortisone was of no value in the treatment of "freezing arthritis," whereas Robecchi and Capra (1953) considered that their results indicated that it had a place in the treatment of such lesions.

Early experience in this hospital showed mixed results (Crisp and Kendall, 1955), but with the evolution of a new technique greater success has been attained.

Technique

It is clear from the pathology that any local inflammatory lesion of the cuff rapidly becomes generalized; thus it has been our policy not only to inject the point of maximum tenderness or maximum pain on resisted movement, but to introduce the hydrocortisone into several points around the shoulder-joint to ensure the greatest possible contact with all

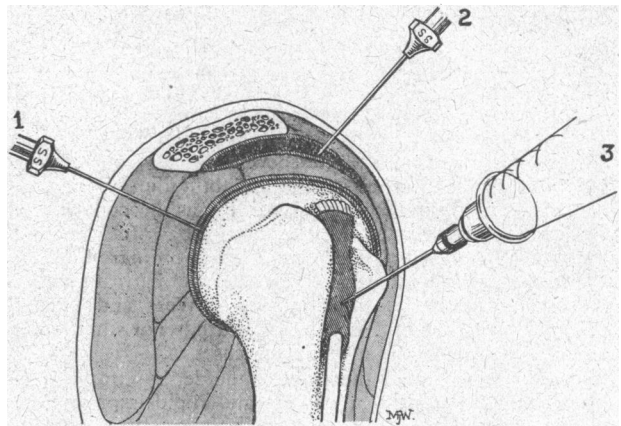


FIG. 2.—Showing injections of the shoulder-joint: (1) into the joint space, (2) into the subacromial bursa, and (3) into the region of the long head of the biceps.

layers of the rotator cuff and the capsule. The injections were therefore sited at three different points: anteriorly into the subacromial bursa; antero-laterally into the region of the long head of the biceps; and posteriorly into the joint capsule (see Fig. 2).

The injection itself comprised 50 mg. of hydrocortisone in a 2-ml. suspension, with the addition of 1,000 units of hyaluronidase to ensure maximum dispersion and contact. Also added to the injection was between 2 and 3 ml. of 2% procaine hydrochloride, which had the function of increasing the volume of the injection and which assisted the patient by temporarily relieving pain. Previous control experiments had already shown that procaine and hyaluronidase injected into the shoulder lesion gave little more than temporary relief; in fact, Simmonds (1949) attributes to it "all too frequently . . . a year or more of misery."

The acute cases received no other treatment except the advice to use the shoulder as normally as possible; the chronic "frozen shoulder" group were given vigorous actively assisted and manually resisted shoulder exercises regularly throughout the course of the injections, which were repeated at weekly intervals until recovery.

Results

For the purpose of analysing our results we have divided the cases treated into separate groups, the acute and the chronic. The former comprises all those in the earlier stages of activity, and includes such local conditions as supraspinatus and subscapularis tendinitis. The latter group refers to the long-standing cases in which fibrosis and

limitation of movements are the prime features and in which the symptoms of acute inflammation have subsided.

Of 50 acute cases treated (see Table), 36 obtained complete relief of symptoms from the injection of hydrocortisone alone within 7 to 14 days. Only three cases failed to improve at all.

Treatment of Periarthritis of the Shoulder with Hydrocortisone

	No. of Cases	Complete Recovery	Partial Improvement	No Change
Acute lesions	50	36	11	3
Chronic "	23	13	5	5

In the chronic group the results were not nearly so good, presumably as the inflammation had subsided and the fibrinolytic action was less powerful. Nevertheless 13 out of 23 cases progressed to a complete recovery with hydrocortisone injections and exercises over a period of four to six weeks.

Conclusions

In the treatment of the various acute and chronic soft-tissue lesions within and around the shoulder-joint hydrocortisone has led to a new method of approach to what was previously a most difficult therapeutic problem.

The majority of both local and generalized acute shoulder lesions showed a dramatic response to hydrocortisone injections into the various components of the rotator cuff.

Although we have had a lower percentage of cases with full relief of symptoms than Robecchi and Capra (1953), we nevertheless feel that the use of the hormone is indicated, at least for a trial period, in every acute case.

The results in the more chronic shoulder lesions, where fibrosis is a prominent feature, have not been so good. This would indeed be expected from consideration of the pathology. In association with routine physiotherapy, however, improvement of the condition has been obtained in a sufficiently high percentage of cases to warrant further trial of the method. Other forms of treatment are so notoriously unsuccessful in the experience of the majority of authors that we feel that hydrocortisone provides a marked advance in what Cyriax and Troisier call the "apparently endless search for effective treatment of 'freezing arthritis.'"

Summary

The pathology of periarthritis of the shoulder-joint and the theoretical effects of hydrocortisone in its various stages are discussed.

The technique of treatment by the injection of hydrocortisone, hyaluronidase, and procaine hydrochloride is described.

Of the acute cases treated by this method 72% progressed to complete recovery in 7 to 14 days and a further 22% were improved.

Of the "frozen shoulder" type of case 56% regained full function in four to six weeks, following hydrocortisone injections and shoulder exercises; 22% were improved.

We consider that the use of hydrocortisone is a notable advance in the treatment of soft-tissue shoulder lesions.

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LOCAL HYDROCORTISONE IN DE QUERVAIN'S DISEASE

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In 1895 Fritz de Quervain, a Swiss surgeon, described five cases of stenosing tenosynovitis at the radial styloid, the prominent symptom of which was pain in the region of the wrist-joint. Subsequent writers have observed that the pain may be referred up the arm as high as the elbow, or downwards to the dorsum of the thumb. The pain appears to be due to movements within the thickened and stenosed synovial sheath, containing the tendons of abductor pollicis longus and extensor pollicis brevis, as it passes under the extensor retinaculum of the wrist in the first dorsal compartment. The thickening of the sheath in some cases is so marked as to be easily visible, and in the majority is palpable. The condition is common, and often the cause of considerable disability to the housewife and worker. Analogous stenosis has been described in all the remaining five tunnels beneath the extensor retinaculum, in most of the sheaths of the flexor tendons, and in the tibialis anterior and peroneal tendons.

Most authorities agree that stenosing tenosynovitis is often due to mechanical factors or trauma, and that histologically the signs of inflammation in the sheaths or tendons are rare.

Since the original description many methods of treatment have been suggested, operation holding pride of place and having been suggested by de Quervain himself. Surgical treatment entails incision of the tendon sheath, or, if this is greatly thickened, excision of a portion. Other more conservative methods of treatment still in use are the inunction of various substances, immobilization of the wrist and thumb in a plaster or plastic splint (Thompson *et al.*, 1951), and the application of physiotherapeutic measures. Injection of the sheath with fluids and local analgesics had also been tried. Although strongly advocated by Ellis (1951), inunction rarely seems to give a lasting cure, and the same applies to physiotherapy. Immobilization often relieves the pain, only to be followed by a recurrence of the symptoms when activity is resumed. According to Wiles (1949) it is doubtful whether many cases recover without operation.

The recent reports of the value of local hydrocortisone in "tennis elbow" and soft-tissue lesions seemed to merit the controlled trial of its use in the present condition. Howard *et al.* (1953) describe its use in three cases of de Quervain's disease and 11 cases of tenosynovitis, and Cyriax and Troisier (1953) report a favourable result in one case of tenosynovitis of flexor carpi radialis following two injections of hydrocortisone. In view of these findings it was felt to be justifiable to treat a number of patients by this method and compare the results with cases treated by injection of local analgesic alone.

Material

The series consists of 20 consecutive cases of de Quervain's disease referred to the Department of Physical Medicine and Rheumatism of the Middlesex Hospital.