histologically the only definite change is a slight decrease in the size of the lobules.

3. Injections of androsterone, androstanediol, trans-dehydroandrosterone, testosterone, and testosterone propionate returned the liver of most castrated rats towards or to normal weight and structure, while testosterone and testosterone propionate had no appreciable effect upon the liver of normal rats.

4. The absence of pathological changes in the small "castration" liver and in this organ enlarged after injections of the above sexual hormones, as well as the nature of the changes observed, suggests a natural stimulating action of these hormones on the liver.

5. This might have a practical significance in therapy of the liver and some metabolic disturbances if the same effect of these hormones be found in the case of human liver.

6. Injections of oestrone or oestradiol into castrated rats in the doses used caused a decrease in weight of the liver to below that of the control rats but no definite histological changes. The changes in weight observed are probably due chiefly to the depressing effect of oestrogens on the appetite, with resulting decrease in gain of body weight and weight of different organs, including the liver.

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The Royal Prince Alfred Hospital, Sydney, N.S.W., derives its name from H.R.H. Prince Alfred, Duke of Edinburgh, who, when visiting Sydney as Captain of H.M.S. *Galatea* in 1868, was shot and severely wounded while attending a charitable function. As a mark of their gratitude for his recovery the people of New South Wales raised a fund, which was applied to the establishment of the hospital. The fifty-third annual report covers the year ended June 30, 1937. During this period the number of beds was increased from 568 to 762 by the opening of Gloucester House, an additional building which makes available to all classes of the community, at reasonable rates, the resources of a large university hospital. In the same year of expansion the nurses' home has been doubled, a complete psychiatry pavilion with its own operating theatre, x-ray room, and special investigation facilities, including a neurosurgical unit of 15 beds, has been constructed, and a new x-ray department with the most modern equipment has been completed. In the course of the year under review 10,352 in-patients and 222,272 out-patients were treated in the public hospital, in addition to 1,724 in-patients at Gloucester House.

SCAPULO-HUMERAL PERIARTHRITIS (DUPLAY'S DISEASE)

BY

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During the last three years I have seen thirty-seven patients (twenty-nine in private, eight in hospital practice) suffering from unilateral painful and stiff shoulder-joint associated with normal x-ray appearances. Although, as will be seen later, the antecedent factors leading to this state of affairs differ to some extent, yet the clinical picture is so constant and the treatment so well defined as to justify its description as a morbid entity. In searching the literature for evidence of earlier recognition of the disease, the first and most complete account was found to have been written by Duplay (1872), who recognized, however, only the post-traumatic forms. Mention of the rheumatic types has been made by Chaumet (1934), Douthwaite (1936), Tiegel (1936), and Sievers (1926).

Aetiology

Sex and Age.—There were fifteen males and twenty-two females. The average age was 60 years, and with the exception of two patients aged 33 and 34 they all fell into the fifth, sixth, and seventh decades.

Injury.—Trauma appeared to be the causative factor in twelve patients. In nearly every case it was the effect of a fall either upon the outstretched hands or upon the point of the shoulder. In one person a backward fall from a step-ladder resulted in bilateral disease. The lapse of time between the injury and the onset of typical symptoms—that is, those not simply due to bruising—varied from five days to three weeks.

Rheumatism.—Fibrositis either as simple stiff neck or more often in a widespread involvement of the shoulder-girdle preceded, or merged into, the symptoms of peri-arthritis in fourteen cases. Apart from the history it is quite impossible to distinguish between the two classes. Two patients had had recurrent gout, but whether this was aetiological related to the peri-arthritis is doubtful. In an elderly hemiplegic the disease developed in the shoulder of the paralysed side three months after the cerebral haemorrhage. In eight persons stiff, painful shoulder developed without any apparent cause.

Associated Diseases.—Two patients had diabetes mellitus, and two were subject to gout.

Symptoms and Signs

The outstanding symptom is pain, which with one exception was strictly unilateral. It is often spread diffusely over the shoulder-joint, but sometimes it is referred to the anterior aspect over the long head of the biceps or lower down over the belly of this muscle. In long-standing cases the pain may be much more widespread, even extending to the forearm and fingers. It is of the nature of a dull ache if the arm is kept still, but passes into acute agony in attempted shoulder movement. Often it is of neuritic type, shooting down the limb and partaking of a boring and burning character, and made worse by getting hot in bed at night. Limitation of movement as a symptom is of secondary importance owing to the mobility of the scapula masking the actual fixation. In women, however, it is often a source of complaint that

they cannot reach the back of the head to dress the hair, and both sexes have great difficulty in washing the back. The duration of symptoms before seeking advice was on the average 5.3 months; the minimum was 1 month and the maximum 1½ years. This is to be explained by the fact that the symptoms and signs develop insidiously, and it needs several weeks at the least for the initial discomfort to reach the level of distressing pain.

Limitation of movement is the outstanding sign. The right side was involved in twenty-one persons, the left in fifteen, and both sides in one. Fixation of the joint is best observed from behind. If the patient be instructed to extend the arms the scapula on the affected side will be seen immediately to follow the humeral movement. In abduction this is also well seen, and if the scapula be held firmly to the chest wall and an attempt made to carry this out, acute pain will be experienced. Voluntary abduction is not very painful until the arm has passed through about 30 degrees; but rotation is very painful because the scapula cannot by its movement assist in this to any appreciable extent. A slight degree of muscular wasting is evident in the majority, and affects in particular the deltoid and supraspinatus and infraspinatus. In old-standing cases it is much more extensive, and involves the arm, forearm, and even the hand. In such patients skin atrophy of the fingers, tingling, and loss of peripheral sensation may be noted. The arm is held closely to the side, and the forearm may be flexed and give rise to pain if an attempt is made to straighten it. Tender points are usually to be found, especially over the acromion, deltoid insertion, and long head of the biceps. There is no swelling of the joint, neither is there crepitus.

RADIOGRAPHIC SIGNS

Both Chaumet and Tiegel refer to x-ray appearances suggestive of linear calcification in the capsule. When seen the opacity usually extends between the acromion process and the humeral neck. I am quite convinced, however, that such a finding is a rarity and represents a late effect of chronic inflammation. In this series it was seen in only one patient. Actually the characteristic feature of scapulo-humeral periartthritis is a completely normal radiograph, in spite of stiffness of the joint. In two further cases trivial osteo-arthritis of the humeral head was seen, and in two long-standing cases considerable decalcification of the bone was present.

Appearances at Necropsy

The only recorded case of post-mortem examination of the condition is given by Duplay. He treated with manipulation and massage a male aged 53 who developed periartthritis following injury to one shoulder-joint. The result was good and the man left hospital. Two months later he returned with pneumonia and died. On the affected side the deltoid was paler than normal; the subdeltoid tissue was fibrous, exhibiting dense bands running to the upper end of the humerus. The subacromial bursa was obliterated. The tendons of the supraspinati and infraspinati had lost their polish, as had also the inferior surface of the acromion. It was evident that *subacromial bursitis was the chief lesion, with extension to neighbouring structures*. There could be seen ruptured adhesions on the inferior surface of the deltoid. The articular capsule was somewhat thickened, but the articular surfaces were quite normal. Duplay concluded that the pain caused by straightening the elbow was due to tension on the biceps caught up in the subdeltoid alveolar inflammation.

Treatment

Chaumet advises treatment by means of radiant heat, diathermy, and *gentle* manipulations. In obstinate cases he claims to secure good results by the application of x rays thrice weekly. He states that even the linear calcification may disappear. Tiegel advises rest in abduction and the application of heat for acute cases. The chronic he treats with fruit juice, raw fruit and vegetables, baths, and exercises. He concludes by referring to the cure of one case. It should, however, be quite obvious from what has been written that only mechanical means can be effective in producing cure. Except in the earliest cases, where rest in abduction and heat followed later by massage may be sufficient, scapulo-humeral periartthritis should be treated by manipulation under anaesthesia. This has been my practice throughout, and has resulted in every case in complete restoration of movement. In all except two patients all the symptoms and signs have disappeared in a few weeks. In the two exceptions pain has persisted to some extent. Evipan or pentothal gives sufficient time for the work. The scapula should be immobilized so far as possible by a band passing around the chest and held on the opposite side by the assistant. Forced shoulder movements must be brisk, and should be carried out in all the normal planes of movement. At certain points resistance will be encountered, and with further effort loud snaps will be heard. If there are a great number of resistant points it is unwise to break down all the adhesions at one sitting.

After-treatment

Post-manipulative pain is usually severe for one to two days. Dilaudid, 1/12 grain thrice daily, should be given for this. The arm must be abducted from the start, but the use of a splint is seldom necessary. If hard pillows are well packed into the axilla the position will be held well enough. Massage to the shoulder muscles and passive movements must be given within six hours of manipulation even though they are painful. Twice daily this physical treatment should be continued, and within three days active exercises should be begun. The ultimate success depends entirely upon the work of the masseuse and the co-operation of the patient. The total duration of treatment varies from two to twelve weeks according to the chronicity of the lesion. Treatment with x rays, baths, and dieting is futile and wastes time.

Summary

1. Scapulo-humeral periartthritis probably arises as a subacromial bursitis, with extension of inflammation to subdeltoid tissue.
2. It is caused by trauma or by rheumatism (fibrositis).
3. It is characterized by a stiff painful joint and a normal x-ray picture.
4. It should be treated by manipulation.
5. It has no tendency to spontaneous recovery.
6. The prognosis is extremely good (95 per cent. complete recovery; 5 per cent. partial recovery) provided that treatment and after-treatment are properly carried out.

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