

## CHAPTER XV

### INFLAMMATIONS AND TUMOURS IN THE VICINITY OF THE SHOULDER-JOINT

It is of paramount importance, in inflammatory processes occurring about a joint, to determine whether the inflammation is taking place *within* or *without* the joint cavity. As the tissues which surround the shoulder-joint and form its support are of manifold kind, a variety of extra-articular or periarticular swellings are possible. Abscess of a muscle is rare as a primary complaint; therefore the muscles are not among those structures which, by their inflammation, give rise to periarticular abscess. Between the capsule and the muscles are *bursæ*; they and the cellular tissue, found on the outside of the capsule, give rise to periarticular abscesses upon suppuration. The *bursæ* which must be considered are the subdeltoid, the subacromial, and the subscapular, of which the last may be regarded as a diverticulum of the capsule because of its constant communication with the joint cavity. A second diverticulum is formed by the bursa, which accompanies the long tendon of the biceps along the bicipital groove. In addition, Gruber has described a number of small *bursæ* about the coracoid process, which not infrequently are affected. Acute and chronic serous effusions take place, and, by preference, suppurative processes. More frequently tubercular caries occurs at the upper end

of the humerus, the pus pointing extra-articularly beneath the deltoid. The resulting cold abscess will present the symptoms of a subdeltoid bursitis.

Exudation into the subdeltoid bursa, or a cold abscess beneath that muscle, makes the deltoid more prominent. Effusion into the subacromial bursa causes a small swelling, which can be seen and felt directly below the acromion. Effusion into the subscapular bursa, not communicating with the joint, produces a swelling in the axillary region which is best seen when the arm is raised. It would not seem improbable that an effusion into the large joint cavity would give a more complicated picture than effusions limited to smaller regions. And yet, as a matter of fact, this is not strictly true. Serous or purulent effusion into the subdeltoid bursa, or a cold abscess in this neighbourhood, changes the outline of the shoulder more perceptibly than does a considerable effusion into the joint itself. A collection of fluid beneath the deltoid raises the entire muscle from the capsule and increases the size and roundness of the shoulder to a marked degree (Fig. 7). Fluid in the joint never bulges out the deltoid region, because the strong re-enforcing band of the capsule, which is situated here, does not yield. The capsule first bulges posteriorly, fluctuation being most readily demonstrated behind, below the spine of the scapula. It is at this same spot that tuberculosis of the shoulder-joint is most apt to come to the surface. Prominence of the deltoid region is misleading, and if not corroborated by other symptoms, is insufficient to confirm the diagnosis of arthritis.

As in other joints, we would expect to find a pathognomonic position. Experimental and anatomical

data would point to abduction, rotation outward, and a slight forward inclination of the arm as the position of rest. Clinical experience teaches that this position of rest is not found in inflammations of the shoulder-joint, even if considerable fluid has accumulated. I have seen it at the onset of severe traumatic inflamma-

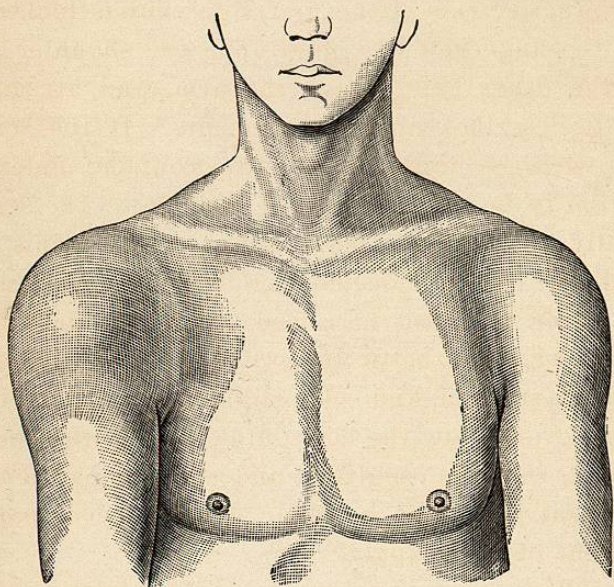


FIG. 7.

tions, but masked by the inclination of the body—i. e., concavity of the spinal column directed toward the injured side. In the dependent position of the arm the fibres of the capsule are not twisted, but merely somewhat folded upon each other, so that this posture is borne as well, and more often found, than the experimentally determined position of rest.

As a pathognomonic position does not occur, the diagnosis of an inflammation of the shoulder-joint is based upon another sign. In a single word, it is the

*fixation* of the joint. Just as the pelvis and thigh are held in a certain fixed position in inflammations of the hip-joint, the humerus and scapula are fixed in a definite position to each other. In coxitis the pelvis is said to move with the thigh, and in inflammations of the shoulder-joint *the scapula moves with the arm*.

In practice this is the first sign that is looked for. Place the fingers of one hand upon the shoulder-blade, with the other hand grasp the arm, and attempt to make it describe various movements. If the scapula moves with the limb in every direction, the underlying condition is an inflammation of the joint. The scapula normally takes part in certain movements. This is especially the case in movements in a sagittal and frontal plane after the arm is raised above the horizontal. These movements never take place without participation of the scapula, and some slight participation is apt to occur even below the horizontal. But with the scapula fixed, rotatory, sagittal, and slight movements in the frontal plane can be made without accompanying movement of the scapula.

In inflammatory processes in the vicinity of the joint, movement of the arm is somewhat limited in those directions which cause pain, but not in movements which may be painlessly executed. But if mobility is entirely abolished, a joint process must be the cause (ankylosis is included as a final outcome of arthritis). This, therefore, is the chief symptom.

Immobility of the shoulder-joint materially decreases the range of movement of the arm, but with the aid of the scapula the upper extremity still enjoys considerable mobility. A certain amount of abduction, some elevation in the sagittal plane, and a slight degree

of rotation, are still permitted. Greater elevation of the arm is possible by a combination of abduction with elevation in the frontal plane. These movements take place in the sternoclavicular joint of the diseased side, and are therefore limited by the range of mobility permitted by this articulation. In chronic, almost painless inflammations, usually the result of tubercular caries, the sternoclavicular articulation is called upon to perform more than its usual share of work, because, in spite of the caries, many movements can be performed without discomfort. In such cases the range of motion enjoyed by the joint becomes greater, and the clavicle stands out more prominently from the sternal articulation. This is a symptom regularly noticed in this variety of inflammation.

In the associated movement of the scapula we have an important symptom, the first one to be employed in differential diagnosis of inflammations in this region. In those cases in which there is a fluctuating swelling, the next question to decide is whether the fluid is extra-articular or intra-articular. A large intracapsular effusion can be felt posteriorly below the spine of the scapula, and internally in the axilla. Medium-sized exudates can be felt only behind, where suppurative processes likewise point. An acute effusion in the joint never causes the deltoid to bulge out; this can alone occur in chronic conditions.

Such marked distention of the capsule is, however, of rare occurrence. Tuberculous disease of the shoulder-joint with fungous degeneration of the capsule, which might give the signs of joint effusion, is also remarkably rare. In the shoulder-joint, most inflammations take place unaccompanied by much swelling. As

a rule, therefore, the inflammation is only recognised by the *complete fixation of the joint, and pain throughout its entire extent.*

In practice, large effusions into the joint are caused by:

1. Suppuration following open wounds penetrating the joint (sword and gunshot wounds).
2. Rupture of pus into the joint (especially in osteomyelitis and more rarely in deep cellulitis).

In these cases the fixation of the joint is the dominant symptom. As a rule, however, the whole neighbourhood is swollen, because not only the joint cavity, but also the adjacent supporting structures, are involved in the suppurative process.

If the suppuration continues for some length of time, sinuses leading in various directions may form. The cartilaginous surfaces are eroded, so that a rough crepitus is elicited by movement of the joint. The process may finally lead to extensive destruction of the capsule, and consequent abnormal mobility of the humerus within the glenoid cavity.

When the suppuration has healed, ankylosis of the joint results. Old cases of ankylosis at the shoulder-joint may be due to the following causes:

1. A healed traumatic suppurative arthritis.
2. A healed osteomyelitis of the upper end of the humerus.
3. A healed tubercular arthritis or synovitis.
4. A healed suppurative arthritis due to rupture of a deep phlegmonous focus into the joint.

At least one of these diseases is strongly characterized, namely, *osteomyelitis*. An acute initial disease, resembling typhoid, occurring during the period of

growth; multiple abscesses, and, eventually, discharge of sequestra spontaneously or by operation. Fistulæ, leading down to loose bone or scars attached to bone, have the same significance. *Thickening and deformity of the upper end of the humerus*, lengthening of the bone, and, as a final outcome, marked shortening.

These last-mentioned bone symptoms differentiate the condition from deep cellulitic inflammations.

*Tuberculosis* has no acute initial stage, no lengthening or thickening of the bone. The tubercular habitus and other local tubercular symptoms can usually be demonstrated. One variety—*Caries sicca*—is peculiar to the shoulder-joint. Complete immobility *without* swelling, but on the contrary with wasting of the muscles, shortening of the bone (due to destruction of the head), and severe pain, characterizes this process.

*Neuropathic disease* of the shoulder-joint was formerly unrecognised; to-day it is often wrongly interpreted, although it is not difficult to distinguish. It is a chronic, deforming arthritis marked by great effusion into, and distention of, the capsule. The whole region is markedly swollen, and the capsule is weakened. The head is finally subluxated, and loud crepitus readily elicited. Formerly this symptom-complex sufficed to establish diagnosis of arthritis deformans.

Bearing trophic joint diseases in mind, each case should be examined for *tabes* and *syringomyelia*, and the patient tested for dissociation of sensation or trophic disturbances of various kinds. A joint trouble surprisingly often leads to the discovery of some central nervous disease.

*Axillary abscesses* are of importance in this connection because the more deep-seated ones are in close

relation to the structures of the shoulder. Just as in the hip-joint, periarticular inflammations may lead to fixation of the joint, and result in partial ankylosis. A still more important outcome, which has been previously referred to, is rupture of the abscess into the joint.

Velpeau classifies abscesses in the axilla into superficial or nodular abscess of the cellular tissue, phlegmonous erysipelas (suppuration of the subcutaneous tissue), suppurative lymphadenitis, and deep cellulitis.

The first variety is seen in the form of several small abscesses which appear in the hairy skin of the axilla as nodules, reaching the size of a pea or bean. Inflammation of the lymphatic glands is recognised by the occurrence of circumscribed nodular swellings, with isolated harder spots in the periphery. These harder portions represent the glands which have not yet broken down. Both varieties are characterized by the circumscribed form of the swelling. Superficial and deep cellulitis are *diffuse* processes, which may be distributed simultaneously on the inner side of the arms, the side of the breast, and the shoulder. It is only necessary to decide whether the process is superficial or deep-seated. As far as treatment is concerned, this is of little importance, as early incision is indicated in both; but from a prognostic standpoint the distinction is important. The deep axillary abscesses are notorious. The son of the famous J. L. Petit died as the result of such a process, and even the more ancient writers mention the destruction caused by the far and wide burrowing of the pus. Velpeau describes the directions taken by such abscesses. They may follow the course of the large vessels, and proceed along the

brachial plexus, either above or below the clavicle, burrow backward between the latissimus dorsi, the trapezius, the rhomboideus, and the serratus magnus; some spread in all three of these directions. When they point into the mediastinum or penetrate the pleura a fatal outcome is the rule. The fasciæ are considered as boundaries between superficial and deep axillary abscesses; the diagnosis of the two conditions is, therefore, made just as elsewhere in the body. Severe constitutional symptoms, œdema in the neighbourhood, late appearance of fluctuation, in spite of great swelling and tension of the parts, may be regarded as the marks of a deep suppurative process. Symptoms distinctive of this region also appear; these have already been indicated. If tension, and later fluctuation, can be demonstrated beneath the clavipectoral fascia, in the subclavian triangle, or in the supraspinous fossa, the abscess is surely deep-seated. Burrowing along the muscles of the arm occurs, but is rare.

Finally, I may refer to the so-called *scapular crepitus*. At times a loud, rough crepitus, accompanied by pain, will be heard at the lower border of the scapula on movement, although the shoulder-joint is intact. It is caused by contact of the scapula with the ribs, due to a chronic inflammation which has resulted in destruction of the interposing muscles and roughening of the bony surfaces.

## CHAPTER XVI

### DISLOCATIONS AND FRACTURES AT THE ELBOW

SUBCUTANEOUS injuries to the elbow-joint and the bones that aid in forming the articulation are both very numerous and of diagnostic interest. The following dislocations are found: both bones of the forearm may be dislocated, backward, outward, inward, or forward, either together or in opposite directions (as, radius forward, ulna backward—divergent dislocations). Both may be dislocated forward, but complicated by torsion, so that the concavity of the coronoid process of the ulna faces backward in moderate extension of the forearm (reversed dislocation—*Umkehrungsluxation*). To these may be added incomplete dislocation of both bones inward and outward, which swells the total to eight varieties. The radius may be dislocated in three directions—outward, backward, and forward. The ulna alone may be displaced backward. These increase the possible number of dislocations to twelve. The commonest of all is a backward dislocation of both bones; the luxations of the radius alone are also not infrequent, and incomplete lateral dislocations occur with greater frequency in children than is generally supposed. The other forms are rare.

Various fractures require consideration from the standpoint of differential diagnosis. Fracture of the