

essential to correct diagnosis. The same holds true of *fracture of the head of the radius*, for absence of rotation of the head in pronation and supination is a very deceptive symptom, especially if the dislocation is slight. As a rule, displacement is marked, and the upper fragment lies almost transversely with its sharp fractured end toward the ulna.

Let us now briefly review the question of *fracture versus dislocation*. The preceding paragraphs have shown that several of these injuries are to be recognised at the first glance, while others require careful examination. In this examination, the discovery of an exposed joint surface or of a protruding process—i. e., recognition of the head of the radius, the edge of the sigmoid fossa of the ulna, exposed trochlea, or capitellum—prove that a dislocation has occurred. In determining whether the commonest variety—namely, backward dislocation of both bones of the forearm—has taken place or not, the depression on the head of the radius can always be felt, no matter how great the swelling, and the sigmoid fossa is found empty, even if its whole articular surface can not be explored.

Finally, there is a condition which can be demonstrated with the aid of the X-ray. This is the ossification of isolated structures in the neighbourhood, after fracture in the vicinity of the elbow-joint. For instance, the insertion of the brachialis anticus or the biceps may become ossified. Formerly these were mistaken for bony fragments.

CHAPTER XVII

INFLAMMATORY PROCESSES OF THE ELBOW

WHEN the elbow-joint is distended by a fluid exudate, it assumes a position of flexion at an angle of about 120° . The anteroposterior diameter, measured from the crease of the elbow to the tip of the olecranon, is the only one which is noticeably increased. This is due to the fluid which raises the anterior part of the capsule from the trochlea and capitellum. The most marked changes in outline take place posteriorly. Normally furrows are to be seen on either side of the olecranon; these are now not only obliterated, but replaced by swellings. The capsule in this situation is thin and not tense; it can, therefore, be distended by the effusion, and in chronic cases is stretched. A sharp eye will notice that the bony outline in the vicinity of the radio-humeral articulation (a finger's breadth below the external epicondyle) is masked by the effusion which surrounds the head of the radius. All these signs can be studied on the cadaver by boring through the olecranon, and distending the joint through this opening by means of a cannula.

The *fluid* nature of the exudate is recognised by the fluctuation, which can be felt in the swellings found on either side of the olecranon. In those cases in which the effusion is considerable, direct communication be-

tween the two may be demonstrated by pressing upon one swelling and finding that the other grows more tense. This is proof positive that the effusion is in the joint, because the sole communication must be anterior to the olecranon, and the anterior surface of this process helps to form part of the joint cavity.

This is the ordinary picture of a SEROUS EFFUSION due to trauma or rheumatism. In cases in which a tubercular habitus, heredity, or tubercular foci elsewhere, attract our attention, we must not forget that a *serous tubercular synovitis* is not an impossibility, even as a sequel to trauma. The prognosis must accordingly be guarded. The further course of the trouble will decide, as other more characteristic signs of joint tuberculosis are sure to appear. If circumscribed spots, tender to pressure, develop early in the bones, it should be regarded as an ominous sign, which points to tubercular foci.

TUBERCULOSIS of the elbow-joint does not, however, usually present the picture of a fluid exudate, but rather that of a proliferation of the capsular tissues (fungus). The symptoms are identical with those mentioned above, except for the *absence* of fluctuation in the swellings on either side of the olecranon. The joint appears to be full, but the contents is not fluid; it follows that the capsule must be thickened by the development of new tissue—the soft, elastic tissue of fungus, as it was formerly called.

As a rule, patients do not seek advice until the disease has reached a more advanced stage. The extensor surface of the joint is found spherically rounded; the olecranon with its two welts has disappeared in the general change in contour, which has obliterated all the

landmarks. The skin has a dull lustre, and the swelling is doughy to the touch. At this time some lateral mobility may already be present, and consequently the patient supports the affected arm.

The process is even more strikingly developed if the swelling has become *spindle-shaped*, and merges into the tissues of the arm and forearm. The bone has been widely attacked, the ligaments destroyed, and crepitus, if present, shows that the cartilaginous surfaces have become eroded. Sharply circumscribed spots of fluctuation point to breaking down of part of the fungous mass, or, in more advanced cases, such abscesses have pointed and discharged. They leave a characteristic tubercular ulcer, with thin, sharp, undermined violet edges. In children, this picture may develop with great rapidity.

When tuberculosis of the elbow-joint begins in the bones forming the articulation, a cold abscess is apt to develop early within the area of general infiltration. The position of the abscess often indicates the site of the bony focus. This is particularly true of abscesses on the back of the olecranon, which positively point to a tubercular focus in this bony prominence. The outer side of the lower end of the humerus is more often affected than the inner, and not infrequently the head of the radius is the starting-point of the disease.

Occasionally tubercular arthritis of the elbow-joint runs a very chronic course. After one or two years, nothing more than non-fluctuating swellings to either side of the olecranon and limited range of motion may be found. If the process has developed spontaneously, only one of two conditions need be considered—tuberculosis and *arthritis deformans*. High degree of tension

in the swellings to the side of the olecranon, marked grating crepitus, tumefaction of the head of the radius, hard, uneven bodies at the insertion of the capsule posteriorly, speak in favour of arthritis deformans.

In acute inflammations of the elbow-joint a differential diagnosis between articular rheumatism and *diffuse osteomyelitis* of the lower end of the humerus may be difficult. The condition is more obscure if, in addition to a periarticular inflammation, an intra-articular effusion has occurred, for osteomyelitis occasionally begins with an effusion into a neighbouring joint cavity. Since we know that osteomyelitis is not limited to patients below the age of twenty-five, more advanced age does not exclude the presence of this affection. Doubt can only last a short time, for as soon as evidence of suppuration is noticed, rheumatism is out of the question. Even previous to this, œdema spreading over the whole forearm and great sensitiveness of the bone to pressure favour osteomyelitis. If elsewhere in the body bony swelling appears at some distance from a joint, the case is clearly one of multiple osteomyelitis.

It must be kept in mind that *trophic* disease of the elbow-joint occurs, but does not follow the type of an arthritis deformans. In all cases in which the picture does not agree with the tubercular or other typical forms, some lesion of the central nervous system (even in young subjects) should be suspected.

Inflammatory *extra-articular swellings* of this region require but little discussion. Inflammation of the *olecranon bursa* is readily recognised by the circumscribed fluctuation, which is exactly limited to the extent of the bursa. This process may become serious, as it frequently shows a marked tendency to suppuration and

rapid extension down the forearm. *Chronic bursitis* can not be mistaken; the grating, due to the excrescences on the surface of the bursa and to the free rice bodies, is characteristic. Contusions at the back of the elbow may cause a *hæmatoma* of the bursa. The clotting blood often gives rise to a soft, fine fibrin crepitus.

Acute and chronic abscesses may be found at the lower end of the *bicipital sulcus* along the inner side of the joint. They will pass unrecognised by those who are ignorant of the position of the cubital glands. The abscess may reach the size of a hen's egg, but never endangers the joint.

In the course of general metastases, abscesses may develop outside the capsule, especially on the flexor surface. If, in a patient suffering with pyæmia, the joint cavity is uninfected, the sudden pain, the slight swelling over the flexors, with absence of swelling posteriorly, will point to the diagnosis.