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THE MANUBRIO-STERNAL JOINT IN RHEUMATOID ARTHRITIS

BY

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[WITH SPECIAL PLATE]

Examination of the manubrio-sternal joint in a series of patients has shown that rheumatoid involvement of this joint is not uncommon. Five examples are outlined here to indicate the clinical and radiological features.

Case Reports

Case 1.—A married woman aged 55 gave a five-year history of rheumatoid arthritis, still active, and showing typical clinical and radiological involvement of feet, wrists, fingers, and right elbow. The manubrio-sternal joint became painful two years after the onset of the disease, and the patient noticed that there was swelling and tenderness over the joint. The pain came in bouts lasting two to three days; between the bouts there was a residual ache. During the bouts the pain was aggravated by coughing and sneezing, and inhibited deep respiratory movement. Examination of the joint confirmed the presence of soft-tissue swelling and tenderness (Fig. A). Radiographs showed irregular destruction of the articular margins of the joint (Plate, Fig. 1). The sedimentation rate was 31 mm. (Wintrobe corrected) at the end of one hour.

Case 2.—A married woman aged 52, who gave a twenty-two year history of rheumatoid arthritis, starting with pain, swelling, and tenderness over the manubrio-sternal joint, showed clinical and radiological evidence of active disease in almost all the peripheral joints. The manubrio-sternal pain had lasted for

one month only, and had not recurred. Examination showed no clinical abnormality of the joint, but a radiograph revealed gross narrowing and irregularity of the joint space, with marked irregular expansion of the articulating ends of the bones (Fig. 2). The sedimentation rate was 30 mm. (Wintrobe corrected) at the end of one hour.

Case 3.—A girl aged 16 gave a one-year history of swelling, aching, and stiffness of the proximal interphalangeal joints of the right index and middle fingers and of the left index finger. Examination of these joints showed soft-tissue swelling and tenderness, with tenderness of some of the other proximal interphalangeal, metacarpo-phalangeal, and wrist joints. Radiographs of these showed only soft-tissue changes. For three weeks prior to attending the clinic she had experienced a constant tight sensation over the front of the chest, in the region of the manubrio-sternal joint, aggravated by deep inspiration and yawning. She had no cough or other chest symptoms. There was definite tenderness over the manubrio-sternal joint, which persisted for one month. A radiograph of the manubrio-sternal joint showed no abnormality.

Case 4.—A married woman aged 52 gave a nine-year history of rheumatoid arthritis affecting all the peripheral joints and the cervical spine. She was severely crippled. For the past two years she had had intermittent pain in the region of the manubrio-sternal joint aggravated by deep breathing, coughing, and yawning. Examination showed swelling and tenderness of the manubrio-sternal joint. Radiographs showed irregularity of the joint space, erosion of the joint margins, and irregular expansion of the articulating ends of the bones (Fig. 3).

Case 5.—A married woman aged 53 gave a twelve-year history of rheumatoid arthritis with involvement of the knees, shoulders, elbows, wrists, fingers, and ankles, with typical radiological changes. Pain in the region of the manubrio-sternal joint was first noticed six months before attending the clinic, and became her chief symptom. The pain occurred in attacks lasting up to twenty-four hours, and was aggravated by yawning and coughing. A striking feature of the pain was its tendency to occur on exertion, especially on walking uphill, after which it often lasted several hours. When severe, she found difficulty in taking a deep breath. This pain, which had the same quality as her arthritic pains elsewhere, was relieved by aspirin. There was marked tenderness over the manubrio-sternal joint. A radiograph of the joint showed no abnormality. Examination of the cardiovascular system, cardioscopy, and the electrocardiogram were normal. Blood Wassermann and Kahn reactions were negative. The sedimentation rate was 31 mm. (Wintrobe corrected) at the end of one hour.

Anatomy

The manubrio-sternal joint is of the cartilaginous type, the articular surfaces being covered by a layer of hyaline cartilage and connected by a disk of fibro-cartilage. A limited amount of movement is permitted, and occurs with each thoracic respiratory movement. It is stated that in rather more than 30% of people conversion into a synovial

FIG. A.—Swelling over the manubrio-sternal joint (Case 1).

joint takes place by absorption of the central part of the disk (Johnston and Whillis, 1949). The incidence of ossification of the disk was found to average 10% and was commoner in women than in men. There was no correlation between incidence of ossification and age (Trotter, 1934).

Discussion

The above cases are examples of the effect of rheumatoid arthritis on the manubrio-sternal joint. In the early stages there is pain, swelling, and tenderness at the joint site, and in more advanced cases radiological changes. It may be the first manifestation of rheumatoid arthritis (Case 2). The pain may be constant or may show periodicity. In all the above cases it was aggravated by respiratory movements, and in particular by coughing, sneezing, yawning, and deep inspiration, and hence may occur on exertion. It may be severe enough to inhibit full inspiration. The pain has to be distinguished from other causes of chest pain. In Case 5 its precipitation by exertion simulated angina of effort.

Soft-tissue swelling was prominent in two cases. Tenderness over the joint was present in all the cases; as an isolated finding, however, it was not considered sufficient to justify the diagnosis, because this area may be sensitive in normal people, particularly those with a prominent sternal angle.

Radiological changes present in three cases included soft-tissue swelling, irregularity and narrowing of the joint space, erosion of the articular surfaces, and irregular expansion of the articulating ends of the manubrium and sternum. Progression to bony ankylosis was not observed in any of the cases. When bony ankylosis occurs in normal people the radiographs show that the continuity of the bony surfaces is quite smooth (Fig. 4). The joint was best visualized in coned lateral views; routine lateral chest films were usually not satisfactory. The joint picture may be obscured by superimposition of calcification in the second costal cartilage or in the presence of a depressed sternum.

Rheumatoid arthritis commonly affects synovial joints, especially those at the periphery, where considerable mobility is a feature. In contrast, the manubrio-sternal joint is usually cartilaginous and the site of very limited movement.

Involvement of the manubrio-sternal joint is well recognized in ankylosing spondylitis, and was noted in 7 out of 65 cases (Hart, Bogdanovitch, and Nichol, 1950). Osteoarthritis of this joint has been described (Rolleston, 1892-3). There is reference to two cases of osteochondritis (Brailsford, 1934).

Summary

Rheumatoid arthritis of the manubrio-sternal joint is described, with particular reference to five illustrative cases.

The pain may be the first symptom of rheumatoid arthritis. It is mainly related to respiratory movements, and has to be differentiated from other causes of chest pain.

The radiological changes, when present, are best seen in coned lateral views of the joint. The chief features are irregular narrowing of the joint space, with irregular expansion of the articulating bone ends.

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ERYTHEMA NODOSUM AS INITIAL MANIFESTATION OF BOECK'S SARCOIDOSIS

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[WITH SPECIAL PLATE]

In chest clinics there is increasing awareness of growing appreciation among the profession of the fact that erythema nodosum is often a manifestation of tuberculous infection, and the formerly widely held opinion that this disorder is of rheumatic origin is fast disappearing. It is less widely recognized that the determination of the cause often provides an intriguing exercise in diagnosis for the chest physician who is aware of the multiplicity of disorders with which erythema nodosum has associations, and which tend to be discussed in the more specialized journals to the loss of those whose reading is confined to the more widely circulating publications.

Consideration is primarily given to investigations of tuberculosis as the cause, for it is now commonly considered that the eruption occurs during primary infection at the time when the patient first develops hypersensitivity to tuberculin. In Scandinavia, Wallgren (1938) has shown that 95% of his series of 800 cases gave positive tuberculin skin reactions, though that high percentage is not generally found in this country, where 54% of the cases of Bruce Perry (1944) were tuberculin-positive. In Scandinavia, where primary infection occurs at a later average age than here, 30% of primary infections were associated with the eruption; but in Ireland, where the age of onset of primary infection is earlier, Dunlevy (1949) has shown an incidence of only 2.8%.

Causes other than tuberculosis appear, therefore, to be more frequent in this country than in many others. Collis (1932) revealed that some tuberculin-negative patients showed pronounced skin sensitivity to streptococcal nucleoprotein, and Rotnes (1936) recorded a case in which the eruption appeared on 14 occasions, mostly after attacks of tonsillitis.

Sulphonamide sensitivity is not infrequently a cause, and it may be difficult to decide whether a patient with streptococcal tonsillitis under treatment with sulphonamides has developed erythema nodosum as a result of the streptococcal infection or of the treatment. Similarly, in patients with pyrexia of unknown cause under treatment with sulphonamides, the eruption cannot be attributed to the drug without the exclusion of tuberculosis and other conditions. During the recent war it was commonly recognized that meningococcal septicaemia was a far from infrequent cause.

In California, infection with *Coccidioides immitis* has resulted in a considerable number of cases, but none seem to have been recognized in this country, and

F. E. CRAWLEY: ERYTHEMA NODOSUM
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FIG. 1.—Case 1.

FIG. 2.—Case 2.

FIG. 3.—Case 3.

FIG. 1.—Lateral radiograph of sternum, showing irregular destruction of the articular margins of the manubrio-sternal joint (Case 1).

FIG. 2.—Radiograph showing expansion of articulating bone ends with gross irregular narrowing of the joint space (Case 2).

FIG. 3.—Radiograph showing irregular bony expansion at the joint with erosion of joint margins and irregularity of the joint space (Case 3).

FIG. 4.—Radiograph in a normal woman aged 65 showing naturally occurring synostosis of the joint. Note the smooth continuity of the bony surfaces.