TWO CASES OF OSTEOCHONDRITIS DISSECANS AFFECTING SEVERAL JOINTS

B. M. HAY, AUCKLAND, NEW ZEALAND

From the Institute of Orthopaedics, Royal National Orthopaedic Hospital, London

Osteochondritis dissecans affecting a single joint has been widely studied since the term was first introduced by König in 1887. Multiple lesions are comparatively uncommon; those most often reported are lesions of both medial femoral condyles (Hermanson 1946, King 1932). Other combinations reported are: the medial femoral condyle and opposite patella (Archer and Peterson 1930); both patellae (*ibid.*); both knees and both elbows (Watson-Jones 1943); and both knees and one elbow (King 1935, quoting Walter). It is here proposed to describe two cases of multiple lesions, and to examine in the light of these cases some of the hypotheses of etiology.

CASE REPORTS

Case 1—(Figs. 1 to 6.) A gardener, aged eighteen years, gave a history of seven months' pain in the left buttock, experienced on walking. The left knee was sometimes swollen. For four years he had been unable to extend either of his elbows fully, and the left one ached at times. He could remember no severe injury, but was a keen player of football and cricket and had been one of the best athletes at his school. There was no record of any joint trouble in other members of his family.

Examination—The patient was short and wiry, and showed no evidence of endocrine disorder. In each elbow there were ten degrees of limitation of flexion, extension and supination; rotation caused crepitus over the radial head. In the left hip there was slight limitation of abduction and medial rotation. An effusion was present in the left knee with pain on full flexion. The other joints were clinically normal.

Radiographs revealed osteochondritis dissecans of each patella. In each elbow the capitellum showed an area of osteoporosis and the radial heads showed some irregularity suggesting osteochondritis dissecans, but much less than was disclosed at operation. Control radiographs of the hands revealed no osteoporosis.

Biochemistry and haematology—Blood count, normal; serum calcium, 10.9 milligrammes per cent; inorganic phosphorus, 4.6 milligrammes per cent; serum alkaline phosphatase, 11.4 King-Armstrong units; serum acid phosphatase, 2.4 King-Armstrong units; blood urea, 21 milligrammes per cent; urinary calcium, 250 milligrammes in twenty-four hours; urea clearance, 96.5 per cent of average function; faecal fat, normal; Wassermann reaction, negative.

Operations—Left elbow: A loose body was removed from between the humerus and the radius; it corresponded closely with the shape of an eroded area on the outer side of the radial head, which was excised. Right elbow: Two loose bodies were removed from in front of the lower end of the humerus. The cartilage of the capitellum was softened centrally and that of the radial head showed similar but more pronounced changes. It seemed likely that the loose bodies had originated from these lesions. Right knee: The medial articular surface of the patella was grossly degenerated, the cartilage being heaped up and softened in parts, and eroded elsewhere. The patella was excised. The femoral surfaces were intact and no loose body was found. Left knee: An eroded area on the postero-medial aspect of the patella extending centrally into the bone was curetted and the edges were bevelled. The femoral surfaces were intact and no loose body was found.

Follow-up—Six months after the last operation the knees had fully recovered but both

FIG. 1

FIG. 2

FIG. 3

Case 1—Radiographs of elbows and patellae showing lesions of the articular surfaces and loose bodies in the elbow joints.

FIG. 4

FIG. 5

FIG. 6

Case 1—Left radial head at operation (Fig. 4) and after excision, with the loose body found in the joint (Fig. 5). The right patella, showing the erosion and heaped-up cartilage (Fig. 6).

elbows showed thirty degrees of limitation of extension. Other movements were normal and the patient was free from pain.

Pathological report (Dr H. A. Sissons): 1. The eroded area of the head of the left radius showed a grossly abnormal extension into the underlying tissue of partly necrotic, partly calcified cartilage. 2. The loose bodies from the right elbow joint consisted partly of bone and partly of cartilage. Having been entirely detached from the synovial surface, one of them had no vasculature. 3. The lesion of the right patella presented the characteristic changes of osteochondritis dissecans. A large area of articular cartilage was separated and a slab radiograph showed extensive degenerative calcification in its deep part. Although separated, most of the cartilage was still living.

The histology of the specimens was essentially the same as that previously reported in the literature and provided no fresh evidence about the origin of the loose bodies or the nature of the process whereby they become separated.

Case 2—(Figs. 7 to 14.) A schoolboy, aged fifteen years, had pain in both elbows for a year, noticed especially when boxing; there was limitation of flexion and extension. Recently the left knee had been slightly painful after a football "strain." No other member of his family had any joint trouble.

Examination—Both elbows showed thirty degrees of limitation of flexion and extension, slight limitation of supination, and marked crepitus over the radial heads on rotation. The left knee was painful on full flexion. No other abnormality was found.

Radiographs revealed osteochondritis dissecans of each capitellum, with a loose body present on the right side. An ill-defined area of osteochondritis dissecans was present in the right medial femoral condyle. The other joints were normal.

Biochemistry and haematology—Blood count, normal; serum calcium, 9.7 milligrammes per cent; inorganic phosphorus, 4.9 milligrammes per cent; serum alkaline phosphatase, 8.6 King-Armstrong units; serum acid phosphatase, 3.8 King-Armstrong units; blood urea, 57 milligrammes per cent; urinary calcium, 105 milligrammes in twenty-four hours; faecal fat, normal; Wassermann reaction, negative.

Operation—(Figs. 11 to 14.) From each elbow joint several loose bodies were removed and a large fragment of the capitellum lying almost loose was excised. The margin of the head of the radius in each elbow was eroded. The knee joint was not explored.

Pathological report (Dr H. A. Sissons)—The loose bodies consisted of cartilage, but bone was present in the larger attached specimens. In the smaller specimen the superficial cartilage was living and still growing but extensive necrosis of the deep tissue was present.

DISCUSSION

The individual lesions in these cases did not differ in appearance from many already reported and their interest lies in the bilateral and multiple distribution. The etiological factors which have to be considered are injury, developmental anomaly and constitutional disturbance.

Though a history of severe injury was lacking in both cases, it is clear that young athletic males meet with frequent minor injuries, affecting especially such exposed joints as the elbows and the knees. The similarity of the lesions on each side is, however, so striking that one cannot but agree with Bernstein (1925), Wagoner and Cohn (1931), Harbin and Zollinger (1930) in looking for some factor other than injury alone. In lesions of the medial femoral condyles a congenital anomaly within the joint, such as an unusually long tibial tubercle, has been suggested by Fairbank (1933). No mechanical cause of this kind was apparent in these cases. There was no evidence of congenital anomaly of the cartilage such as Kappis (1920) suggested might make it more liable to injury; the problem seems to be one of bone rather than of cartilage. Reiger (1920) spoke somewhat vaguely of a "predisposition," a

FIG. 7

FIG. 8

Case 2—A boy aged fifteen years—Photographs showing the pre-operative range of movement of the right elbow. The range of the left elbow was exactly similar.

FIG. 9

FIG. 10

Case 2—Figure 9—Radiographs of the elbows showing typical changes in each capitulum and complete epiphyseal fusion. Figure 10—Radiograph of the right knee, showing an extensive area of early osteochondritis of the medial femoral condyle.

FIG. 11

FIG. 12

Case 2—The right elbow joint at operation. Figure 11—A loose body is seen in the front of the joint. The narrow retractor points to the affected segment of the capitellum. Figure 12—The residual defect in the capitellum is well shown; deeper again is another loose body.

FIG. 13

FIG. 14

Case 2—The left elbow joint at operation. Figure 13—Numerous flakes of cartilage floating in the synovial fluid have been removed. A large segment of capitellum, almost completely separated, can be seen. Figure 14—The segment having been levered out is seen to be attached only by some strands of periosteum.

constitutional disturbance. Such an idea seems to gain support from the occurrence of multiple lesions in more than one member of a family, as in Wagoner and Cohn's three cases—a boy, his father and his uncle—each with bilateral osteochondritis of the knee arising between the ages of twelve and fifteen, and proved radiographically or by operation. There was no family history of similar affection in these cases, nor clinical evidence of endocrine or other constitutional disturbances; no pathological evidence of disturbed calcium or phosphorus metabolism was found, but balance investigations were not done.

SUMMARY

1. Two cases of osteochondritis dissecans affecting several joints are described.
2. There is no evidence that injury, congenital anomaly or constitutional disturbance played any part in the etiology of either case.

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