LOCALISED OSTEOCHONDRITIS (SCHEUERMANN'S DISEASE)

R. H. V. HAFNER, CHERTSEY, SURREY

From St Peter's Hospital, Botley's Park, Chertsey

The multiple form of Scheuermann's disease (adolescent kyphosis; osteochondritis vertebralis juvenilis) affecting the thoracic spine is well recognised, but there is a localised form occurring in the thoraco-lumbar region which, although no doubt well known, does not seem to have attracted so much attention. The only account of it that I have found is that of Wiles (1949) who refers to it as "dorso-lumbar kyphosis." It is important that this condition be distinguished from tuberculosis, with which it is easily confused in the early stages. The clinical similarity may indeed be close, but once the radiographic appearances are recognised the difficulty in distinguishing between the two conditions largely disappears.

This paper records four cases of localised osteochondritis, all in adolescents, their ages varying from fourteen to seventeen years at the time of onset of symptoms. All complained of pain in the thoraco-lumbar spine, and in one case the pain was referred to the loin. In three of the four patients a slight kyphosis could be seen and felt in the thoraco-lumbar region. There was tenderness on palpation over the affected vertebrae. Muscle spasm was slight or absent and there was no muscle wasting. Movements of the spine were limited, especially forward flexion. The symptoms subsided rapidly with immobilisation of the spine in bed or in a plaster jacket or brace.

Radiographic examination—The radiographic appearances are similar to those seen in adolescent kyphosis but confined to one region of the spine (Fig. 1). There is wedging of two adjacent vertebral bodies, often slight at first but well marked later. In patients seen before the secondary centres of ossification in the epiphysial rings have appeared the wedging is the only abnormality of the vertebral body. After ossification of the rings has begun the other features of osteochondritis, such as irregularity of the upper and lower epiphysial rings, Schmorl's nodes and sclerosis of the adjacent vertebral surfaces, appear. In all cases there is narrowing of the intervertebral disc space between the affected vertebrae, and it is this feature especially which suggests a diagnosis of tuberculosis. Bone destruction or rarefaction, either localised or generalised, is never seen, nor is there any evidence of abscess formation.

FIG. 1

Diagrammatic representation of the radiographic appearances in localised osteochondritis. The characteristic features are wedging of two adjacent bodies, Schmorl's nodes, diminution of the intervertebral disc space, fragmentation of the epiphysial rings, and sclerosis of the adjacent vertebral margins.

ETIOLOGY

The fact that the radiographic changes are like those seen in adolescent kyphosis suggests that the two conditions have a similar etiology. It may not be out of place, therefore, to review briefly the existing views concerning the bony deformity which occurs. The view most widely accepted is that there is primarily a lesion of the intervertebral discs resulting in herniation of disc material into the vertebral

bodies (Schmorl's nodes). This loss of substance results in increased pressure between adjacent vertebrae, the greater effect being anteriorly because the vertebrae are hinged behind at the intervertebral joint. When the secondary centres of ossification for the upper and lower epiphysial rings appear at about the time of puberty, they are subjected to pressure anteriorly and their growth is interfered with. This retardation of growth from pressure results in the wedging which is characteristically limited to the anterior part of the vertebral body.

An alternative view was suggested by Ferguson (1949), who considered that the condition can be traced to early infancy and is caused by exaggeration or persistence of the vascular pit and groove on the anterior and lateral surfaces of the vertebral body which normally are obliterated by the age of five or six years. Ferguson stated that in adolescent kyphosis the vascular groove persists into puberty or adolescence and is responsible for the wedging, the epiphysial changes being a secondary manifestation.

CASE REPORTS

Case 1—Boy aged sixteen years. Three months before he was first seen the patient experienced a sudden severe pain in the thoraco-lumbar spine after lifting a heavy weight. The pain had subsided with rest but had recurred when he returned to work. *On examination* there was a slight kyphosis in the thoraco-lumbar region. This area of the spine was slightly tender on palpation and there was limitation of flexion of the spine but other movements were full. There was no pyrexia, blood sedimentation tests were normal, and the Mantoux test was negative. *Radiographs* showed localised osteochondritis affecting the twelfth thoracic and first lumbar vertebrae (Fig. 2), but this was at first erroneously considered to be tuberculosis and the patient was treated by immobilisation on a plaster bed for three months. Serial radiographs showed no change. In view of the rapid disappearance of symptoms, the persistently negative tests and the absence of deterioration in the radiographic appearances, the diagnosis of tuberculosis was corrected and the case was regarded as one of localised osteochondritis. Progress was uneventful, and when last seen one year after the onset he was free from symptoms and at work doing a heavy job.

FIG. 2

Case 1—Localised osteochondritis affecting the twelfth thoracic and first lumbar vertebrae.

Case 2—Boy aged seventeen years. The patient was at work carrying a large piece of wood when he stumbled and felt a "crack" in his back. This was followed by considerable pain. *On examination* all spinal movements were painful and there was tenderness over the lower thoracic vertebrae. *Radiographs* showed localised osteochondritis of T.11 and 12. The symptoms settled down rapidly with rest. He was free from symptoms and was allowed to return to work six weeks later, but suffered a severe recurrence of pain and was readmitted. He was fitted with a Robert Jones back brace. When last seen one year later he was doing heavy work and had no symptoms. There was a full range of painless movement of the spine.

Comment—In view of the possible association between this condition and "congenitally short hamstrings," it is interesting to note that this patient is now able to touch his toes, a feat he had been unable to accomplish as long as he could remember.

Case 3—Girl aged fourteen years. When first seen by a general surgeon the patient complained of intermittent pain in the right loin over a period of three months. *On examination* there was tenderness in the right loin and an intravenous pyelogram showed no excretion on the right side. Cystoscopy was normal, but a retrograde pyelogram showed absence of the renal pelvis on the right side. Exploratory operation was undertaken and disclosed congenital absence of the right kidney. *Radiographs* of the thoraco-lumbar spine showed localised osteochondritis affecting

T.10 and 11 (Fig. 3). *Treatment*—The patient was fitted with a plaster-of-Paris jacket with relief of symptoms. When last seen three months later she was still getting some pain but had a full range of movement of the spine.

FIG. 3

Case 3—Localised osteochondritis affecting the tenth and eleventh thoracic vertebrae.

FIG. 4

Case 4—Localised osteochondritis affecting the first and second lumbar vertebrae.

Case 4—Boy aged fourteen years. The patient, a schoolboy, complained of pain in the lower thoracic spine, made worse by violent exercise, especially flexion of the spine. No kyphosis was present but there was a loss of the normal lumbar lordosis. Forward flexion of the spine was limited to about half the normal range, but other movements were free. Radiographs showed localised osteochondritis affecting L.1 and 2 vertebrae (Fig. 4). A plaster-of-Paris jacket was applied with relief of symptoms after one month. The jacket was retained for two months and the patient was advised to avoid games for a further month. When last seen eighteen months from the onset of symptoms he was still free from pain.

DISCUSSION

The facts that the symptoms are intermittent, that the radiographic changes are often observed in the absence of symptoms, and that the onset is associated with vigorous exercise or heavy work, suggest the possibility that the symptoms may not be due to the bony changes shown in the radiographs and that they may in fact be due to a posterior protrusion of the intervertebral disc. This was particularly suggested by Case 3, in which there was root pain. The radiographic changes may be merely coincidental or they may be consequent upon the intervertebral disc lesion in the manner which has already been discussed. From the point of view of treatment this matters little; the important thing to realise is that these changes are not due to an infective lesion.

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