LOCALISED OSTEOCHONDritis OF THE LUMBAR SPINE

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Osteochondritis affecting the thoracic spine (Scheuermann's disease) presents a characteristic and widely recognised clinical and radiographic picture. It usually produces symptoms between the ages of twelve and seventeen, and radiographs show a minimal anterior wedging of the bodies of adjacent vertebrae in the middle and lower regions of the thoracic spine. Considerable attention had been paid to this common condition, but there is little reference in the literature to an affection, which appears to be of the same nature, involving a small localised area of the lumbar spine and producing a characteristic defect of the vertebral body. Hafner (1952) drew attention to localised Scheuermann's disease affecting the lower thoracic spine in four patients aged between fourteen and seventeen, but said that localised bone destruction never occurred.

The purpose of this paper is to report cases in which a similar localised condition was found in the lumbar spine and to emphasise the importance of differentiation from tuberculosis, which it may resemble closely.

CASE REPORTS

Case 1—A girl aged fourteen was admitted to hospital complaining of pain in the lumbar spine. There was spasm of the lumbar paravertebral muscles with limitation of movement. Radiographs showed narrowing of the disc space between the first and second lumbar vertebrae, and a defect suggestive of necrosis at the upper anterior angle of the second vertebral body (Fig. 1). The
radiographic appearance, together with the local signs, strongly suggested a tuberculous infection. The erythrocyte sedimentation rate was 5 millimetres in the first hour; differential leucocyte count was normal; a chest radiograph showed no alteration from the normal. The Mantoux test 1/1000 was negative. There were no symptoms in the thoracic spine, but radiographs showed evidence of early epiphysitis of the lower thoracic vertebrae. In view of this and the negative tests for tuberculosis, the diagnosis of localised lumbar epiphysitis was made. She was treated by strict rest in bed for six weeks, and thereafter by postural exercises and a Taylor brace. In the past year there has been no return of symptoms. Radiographs fourteen months after the onset showed normal appearances in the bones, but there was persistent narrowing of the disc space and apparent calcification in the intervertebral disc (Fig. 2).

Case 2—A girl aged ten attended with faulty posture, and complained of pain in the lumbar spine. Radiographs showed narrowing of the disc space between the second and third lumbar vertebrae with a bony defect at the upper anterior angle of the third lumbar vertebra (Fig. 3). The erythrocyte sedimentation rate, differential leucocyte count and chest radiograph were normal.

Fig. 3—Initial radiograph. Figure 4—Six months later. Figure 5—Eighteen months after onset.

The Mantoux test 1/1000 was negative. Progress was observed for six months, during which postural exercises were encouraged. There was no deterioration clinically, but radiographs showed further narrowing of the disc space and extension of the defect with sclerosis of the surrounding bone (Fig. 4). A year later, however, healing had occurred and the narrowing of disc space was less marked (Fig. 5).

Case 3—A boy aged fifteen attended with pain in the left hip region for three weeks. On examination his posture was poor, but movements of the lumbar spine were normal. There was no complaint of pain in the back. Hip movements were normal. Radiographs showed irregularity of the upper border of the fourth lumbar vertebral body with a defect at the upper anterior corner (Fig. 6). The erythrocyte sedimentation rate, differential leucocyte counts and chest radiograph were normal. The spine was immobilised in a plaster shell for three months. Intermediate radiographs six weeks after the first showed a similar lesion of the anterior upper corner of the fifth lumbar vertebra with slight narrowing of the disc spaces and a central nuclear protrusion (Fig. 7). After three months there was reconstitution of the normal shape of the vertebral bodies (Fig. 8). The patient has remained free from symptoms.

Case 4—A boy aged fifteen was admitted to hospital complaining of low back pain. Radiographs showed a defect at the lower anterior corner of the second lumbar vertebral body with slight
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Fig. 6  
Case 3. Figure 6—Initial radiograph.  

Fig. 7  
Figure 7—Six weeks later.  

Fig. 8  
Figure 8—Three months after onset.  

Fig. 9  
Case 4. Figure 9—Initial radiograph.  

Fig. 10  
Figure 10—Six months later.  

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narrowing of adjacent disc space (Fig. 9). There were mild changes of vertebral epiphysitis in the thoracic region. He was treated by rest in bed for six months. Subsequent radiographs showed consolidation of the vertebral defect (Fig. 10). When he was last seen a year and a half after the onset he was free from symptoms.

Case 5—A boy aged fourteen, brother of the previous patient, was admitted to hospital with low back pain. Radiographs showed a defect of the upper anterior angle of the fourth lumbar vertebra (Fig. 11). The erythrocyte sedimentation rate and differential leucocyte count were normal, and a radiograph of the chest showed no abnormality. He was treated by rest in bed for three months. Radiographs a year later showed complete recovery (Fig. 12). When he was last seen nearly two years after the onset he was free from symptoms.

Fig. 11
Case 5. Figure 11—Initial radiograph. Figure 12—A year later.

Case 6—A girl aged fourteen was admitted to hospital with a complaint of low back pain. She gave a history of a fall on to the buttocks at gymnastics six months previously; pain had increased progressively thereafter. Radiographs showed erosion of the upper anterior angle of the second lumbar vertebral body with narrowing of the disc space above it (Fig. 13). The lesion was considered to be post-traumatic, and she was treated by one week’s strict rest in bed followed by a plaster jacket for three months. Later radiographs showed that the changes had become more pronounced. The true nature of this lesion was shown by subsequent radiographs a year after the first: these showed a similar but smaller defect at the upper anterior angle of the third lumbar vertebral body (Fig. 14.) Three months later there was almost complete regeneration (Fig. 15).

Case 7—A girl aged thirteen attended with low back pain. She had a poor posture with a mobile thoraco-lumbar scoliosis, but no other abnormality was shown radiographically. Treatment was by postural and spinal exercises. When seen again six months later she still complained of pain. Radiographs showed an area of bone destruction at the upper anterior angle of the body of the third lumbar vertebra (Fig. 16). The erythrocyte sedimentation rate and differential white blood count were normal, and, as there was also radiographic evidence of mild mid-thoracic epiphysitis, she was treated for localised lumbar osteochondritis of a non-infective nature. Fifteen months later she still had some back pain, and radiographs showed the defect well defined (Fig. 17). She continued to have aching pain for some months, but eventually, three years after her initial complaint, she became free from symptoms and had a good posture with a full range of spinal movements. Recent radiographs four years after the onset show the defect still present but in the healing phase (Fig. 18).
Case 6. Figure 13—Initial radiograph. Figure 14—A year later. Figure 15—Three months later still.

Case 7. Figure 16—Initial radiograph. Figure 17—Fifteen months later. Figure 18—Four years after onset.
DISCUSSION

These seven cases of localised lesions of the lumbar spine in children are considered to be examples of vertebral osteochondritis. All the patients complained of pain, six in the lumbar spine, the other in the region of the hip; in three there was considerable paravertebral muscle spasm with restriction of movement. The radiographic appearance was alike in each case: there was narrowing of a disc space with a characteristic defect of the upper or lower anterior corners of the adjacent vertebral bodies. In some, a central disc protrusion was present.

It seems likely that this condition is caused primarily by weakness of the intervertebral disc—either congenital or post-traumatic. The constant narrowing of the disc space and the occasional appearance of Schmorl's nodes are certainly suggestive of this hypothesis, which also offers a possible explanation of the characteristic defect at the upper or lower anterior corners of the vertebral bodies bounding the disc space. As the fluid nuclear material escapes from the disc, with resultant narrowing of the space, it may break the cartilage plate to form Schmorl's nodes, but may equally allow pressure anteriorly. The tough anterior longitudinal ligament resists this force, which is directed on to the upper or lower corner of the vertebral body with consequent pressure necrosis of bone and formation of the radiographic defect described.

It is important to distinguish this condition from spinal tuberculosis. All the lesions reported had been diagnosed by competent radiologists as probably being tuberculous. The following are important points in differentiation: 1) The erythrocyte sedimentation rate, differential leucocyte count and chest radiograph are normal. 2) The Mantoux test is often negative. 3) Schmorl's nodes or other radiographic evidence of vertebral epiphysitis are present (although asymptomatic) in the thoracic spine. 4) The defect of the vertebral body has a rather typical "punched-out" appearance. 5) There is never any suggestion of abscess formation.

Treatment—It has been noted in these cases that there has been a slow regeneration of the vertebral defect over a period of months. This return towards normality was achieved in three cases despite weight bearing and normal activity. In the remainder bed rest, with or without a plaster shell, for two to six months, was considered necessary.

It is suggested that the treatment required depends on the symptoms and signs. If they are mild, supervision in the out-patient clinic, with restricted activity, is adequate. If there are considerable pain and muscle spasm, complete rest on a firm bed should be ordered until the symptoms subside; thereafter a plaster jacket or spinal support should be worn for two to three months.

SUMMARY

1. Seven cases of localised lumbar spine defects in children associated with low back pain are described.
2. The importance is emphasised of the recognition and differentiation of the condition from tuberculosis, which it may resemble both clinically and radiographically.

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REFERENCE