

Department of Radiology, Municipal Hospital and Orthopaedic Hospital, Aarhus, Denmark.

EWING'S SARCOMA SIMULATING VERTEBRA PLANA

J. O. POULSEN, J. T. JENSEN & P. THOMMESEN

Accepted 16.xi.74

When found as an isolated phenomenon, vertebra plana is mostly regarded as eosinophilic granuloma (Compere et al. 1954, Ochsner 1966) and healing is expected spontaneously with almost complete regeneration.

Recently we had a typical case of vertebra plana caused by Ewing's sarcoma, and we have looked over cases and x-rays concerning three patients with spontaneously healed vertebra plana and one with Ewing's sarcoma localized in the spine with special reference to the symptoms which led to their seeking medical advice and the results of x-ray examinations at the first visit. The purpose has been to examine the possibilities of being able to distinguish between the two conditions.

CASE REPORTS

Case 1

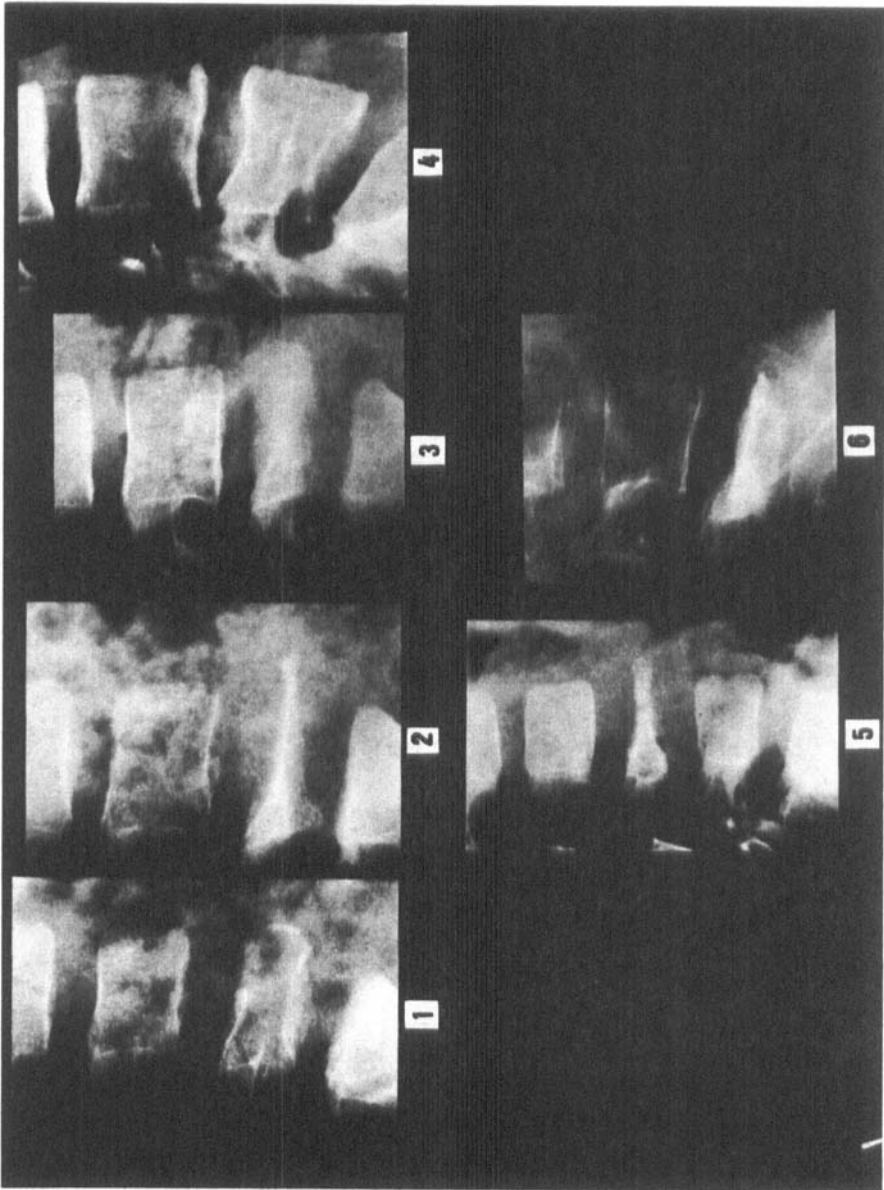
A 9-year-old boy was referred to hospital with low back pain. X-ray showed collapse of the fifth lumbar vertebral body with adjacent discs intact (above and below). No soft tissue swelling. A skeletal survey revealed no additional lesions (see Figure 1). E.S.R. 30 mm per hour. Diagnosis: eosinophilic granuloma. Ten years later the vertebral body was completely regenerated (Figures 1-4).

Case 2

A 4-year-old boy who 1 month previously had fallen down from a table with ensuing pain in the back. X-ray films showed collapse of the tenth thoracic vertebral body with adjacent discs intact. No soft tissue swelling. Skeletal survey showed no additional lesions. E.S.R. 8 mm per hour. Diagnosis: eosinophilic granuloma. Fourteen years later the x-ray films showed almost complete rebuilding of the vertebral body.

Case 3

A 12-year-old boy who six months before sustained an adequate trauma while diving. X-ray films showed some degree of collapse of the 4th thoracic vertebral



body. Constant back pain led to a new examination. X-ray film showed increased collapse of the vertebral body with adjacent discs intact. No soft tissue swelling. The skeletal survey revealed no additional lesions. E.S.R. 6 mm per hour. Diagnosis: eosinophilic granuloma. X-ray films 15 years later showed almost complete regeneration of the vertebral body.

Case 4

A 9-year-old girl who for 3 months had pain in the right leg. X-ray of the lumbar spine showed irregular collapse of the fifth lumbar vertebral body with soft tissue mass with scanty calcification. E.S.R. 30 mm per hour. Surgical biopsy established the diagnosis of Ewing's sarcoma. The patient died ten months later (Figure 6).

Case 5

A 2-year-old boy who for 1 month had pain in both legs and difficulty in walking. X-ray showed collapse of the 4th lumbar vertebral body with adjacent discs intact. No soft tissue swelling (Figure 5). Skeletal survey revealed no additional lesions. E.S.R. 19 mm per hour. Fine needle aspiration biopsy: atypical reticel cells but no sign of malignancy. Final diagnosis: eosinophilic granuloma. In spite of adequate treatment he developed paresis in both legs. Surgical biopsy established the diagnosis Ewing's sarcoma. Revision of aspiration biopsy showed no sign of malignancy.

DISCUSSION

These symptoms do not differ essentially from, and are very much like, earlier descriptions of vertebra plana. However in two cases it was a trauma that led the patients to the doctor. E.S.R. varied from 6–30 mm per hour. X-ray showed a varying degree of collapse (Figures 1, 5 and

Figure 1. The x-ray film shows vertebra plana in the fifth lumbar vertebra with partial collapse of the body.

Figure 2. X-ray film from the same patient (case 1) 6 months later. Complete collapse of the fifth lumbar vertebra.

Figure 3. X-ray film 1 year later (same patient). A considerable regeneration of the vertebral body has taken place.

Figure 4. X-ray film 8 years later (same patient). Complete regeneration of the vertebral body.

Figure 5. The x-ray film shows vertebra plana in the fourth lumbar vertebra (case 5), and at least three of Compere's four criteria are fulfilled (see text).

Figure 6. The x-ray film shows vertebra plana in the fifth lumbar vertebra with soft tissue swelling and scanty calcification (case 4).

6). The case primarily diagnosed as eosinophilic granuloma (Figure 5) fulfilled at least three or four of the criteria, on x-ray, which Calvé (1926) has laid down for vertebra plana. These criteria have later been used in the diagnosis of eosinophilic granuloma (Compere et al. 1954):

- 1) Only one vertebra involved.
- 2) Adjacent discs intact above and below the diseased vertebra.
- 3) Disc space about a third wider than the next space above and below.

4) The claim concerning homogenous density of the vertebral body was perhaps not quite fulfilled because retrospectively one has to acknowledge a certain irregular structure of the bone (cf. Figure 2 and Figure 5). On the other hand there was no soft tissue swelling around the vertebra as seen clearly on Figure 6. Fine needle aspiration biopsy did not contradict the diagnosis; even after revision and it was only aggravation of the condition that led to open surgical biopsy. Hereby the diagnosis Ewing's sarcoma was established. This malignant tumour is only localized primarily in the spine in 1-2 per cent of cases (Dahlin et al. 1961).

However a case of "a highly malignant undifferentiated sarcoma" in the tenth thoracic vertebra in an 8-year-old patient causing vertebra plana has been reported by Hillmann (1954), and this together with the present case emphasizes that the diagnosis eosinophilic granuloma as a cause of vertebra plana cannot be made on the history or by a characteristic x-ray but only by surgical biopsy (Fowles & Bobechko 1970).

SUMMARY

Five cases of vertebra plana have been reported, three with spontaneous regeneration and two caused by Ewing's sarcoma. It is emphasized that the diagnosis eosinophilic granuloma must rely on surgical biopsy.

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Key words: Calvé's disease; vertebra plana; eosinophilic granuloma; bone tumours, spine; Ewing's sarcoma

Correspondence to:

Jens O. Poulsen
Orthopaedic Hospital
Aarhus, Denmark