VERTEBRA PLANA

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Since 1925, when Calvé first described the condition that bears his name, many other cases have been reported. But in each case the emphasis has been on the immediate radiological appearance, the diagnosis or the treatment.

Fairbank (1952) was the first to suggest a cause other than osteochondritis with his statement: "Personally I feel that eventually vertebra plana will be proved to be one manifestation of granulomatosis, and not a clinical entity"; and in 1954 Compere, Johnson and Coventry reported four cases in which biopsy revealed eosinophilic granuloma. In their cases treatment consisted either of deep x-ray therapy or of a combination of deep x-ray and bone grafting. Although partial regeneration of the affected vertebra had occurred in one case, no case was followed long enough to determine the final clinical condition or radiological appearance.

At an informal meeting I reported Case 1 of this series, which had been followed for twenty-two years; colleagues present were able to report similar cases and have kindly allowed me to include them in the series.

Case 1—A girl born in 1927 first attended hospital in October 1935 with pain in the back which dated from a fall on to her back six weeks before. She had lost weight and suffered from night sweats.

On examination there was a slight mid-thoracic kyphosis with a minimal right thoracic and left lumbar scoliosis. Extension and flexion were limited and painful. Radiographs showed complete collapse of the tenth thoracic vertebra with increased density (Fig. 1).
She was admitted to the country section of the Royal National Orthopaedic Hospital at Stanmore and was kept recumbent on a frame until April 1936. The Mantoux test was negative in November 1935 but faintly positive in January 1936. In July 1937 she complained of a slight transient ache in the back, but had no other symptoms up to 1939, when because of the war she moved out of London and was not seen again until she was examined recently, twenty-two years after her first attendance. She is now married and has had three confinements.
Clinically there is no abnormality in her back and she is free from symptoms.

The radiographs of 1939 show an intermediate stage in the regeneration (Fig.2). Recent radiographs show a regeneration of the affected vertebra, the depth being about three-quarters of the normal. There is a line of increased density visible in the centre corresponding to the original condensed area (Fig. 3). A complete skeletal survey was not carried out.

**Case 2 (Mr H. J. Seddon’s case)—** A boy born in 1928 first attended the Royal National Orthopaedic hospital in February 1935 at the age of seven and a half years, complaining of pain in the back. There had been a fall a few weeks before, but this does not appear to have been significant.

On examination there was a slight lower thoracic kyphosis with tenderness over the gibbus and some rigidity of the spine. Radiographs showed complete collapse of the ninth thoracic vertebra; the joint spaces above and below were normal (Fig. 4). The Mantoux and Wassermann tests were negative. He was treated on a frame until October 1935. He served in the Royal Navy in the second world war without disability or symptoms.
Fig. 6
Case 3—August 1945. Age twelve years. Four months after onset (Alexandra Hospital, Luton).

Fig. 7
Case 3—Twelve years after onset (St Bartholomew’s Hospital, London).
In May 1957 he was re-examined, twenty-two years after his first attendance. He was free from symptoms, there was no tenderness in the back and no deformity. Radiographs showed that the vertebral body had regenerated and was now two-thirds of the normal height. There was no line of increased density in the middle of the vertebra (Fig. 5).

Case 3 (Mr W. D. Coltart's case)—A boy born in June 1933 first complained of pain in the middle of the back in April 1945. He was later admitted to the Alexandra Hospital, Luton. Radiographs showed complete collapse of the front of the tenth thoracic vertebra, but the back had retained about two-thirds of its normal height (Fig. 6). He was treated first by bed rest and from September 1945 in a plaster bed. In July 1946 he started to get up in a plaster jacket, which was continued for one month.

In April 1957, twelve years after his first attendance, he was examined at St Bartholomew's Hospital. He was free from symptoms, and clinically the back was normal. Radiographs showed regeneration of the vertebra with a line of increased density in the centre of the body (Fig. 7).

Case 4 (Mr H. Jackson Burrows's case)—A girl born in January 1932 fell on her back in April 1935 with her "identical" twin sister on top of her. Thereafter she would wake up at night screaming. The tuberculin test carried out next month was negative, but a radiograph (May 1935) showed flattening of the greater part of the body of the eleventh thoracic vertebra, which looked very dense (Fig. 8). She was treated in Queen Mary's Hospital, Carshalton, for two years (May 1935 to May 1937), at first on a frame and then in a celluloid jacket, in which she was discharged. Seen six months later (November 1937) at the age of five years and eleven months, she had no deformity, but some stiffness of the back ascribed to prolonged immobilisation. Serial radiographs showed progressive restoration of the vertebra. She was last seen and radiographed as a child in June 1939 at the age of seven and a half (Fig. 9). The outbreak of war found her hop-picking; the jacket broke and she discarded it, without any obvious ill-effect. She remained out of London because of the war. At the age of fourteen (1945) she began sedentary work, dressmaking; at seventeen (1948) she changed to standing work as an inspector. At twenty-one (1952) she married, and she has had two children, now aged three years and two years. Seen twenty-two years after her first attendance, at the age of twenty-five, she reported no trouble referable to her thoracic spine. For three years she has had a mild low lumbar ache after standing an hour or an hour and a half, especially stooping as in ironing, but she does not consider that this discomfort warrants treatment. Her back appears normal on clinical examination. Radiographs (Fig. 10) show very slight narrowing of the front of the body of the eleventh thoracic vertebra. A horizontal dense line is visible behind its centre.

DISCUSSION

These four patients came under treatment between 1935 and 1945, and no biopsy was performed; therefore no fresh light is thrown upon diagnosis, but sufficient time has passed to show the end-result.

The cases were typical in their mode of onset, symptomatology and clinical findings. The early radiographic appearances were also typical. The patients were all treated by a period of recumbency but with no deep x-ray therapy, and the recent follow-up shows that in each case there was a complete relief of symptoms without any appreciable clinical abnormality. Only in Case 2 has a complete skeletal survey been carried out, and it shows no other bone lesion. In each case later radiographs show almost complete regeneration of the affected vertebra and in three of the cases there is a narrow line of sclerosis (the ghost vertebra) representing the original collapsed and dense vertebral body.

Clearly, a skeletal survey would now be carried out on any patient presenting with similar radiographic appearances, but it appears that solitary lesions of this type in the
Case 4. Figure 8—May 1935. Age three years and five months. One month after onset (Queen Mary’s Hospital, Carshalton). Figure 9—Four years later. Age seven years and six months (Miller General Hospital, Greenwich).

Case 4—Twenty-two years after onset. Age twenty-five (Royal National Orthopaedic Hospital).
vertebral column can be self-limiting. A review of these patients suggests that in solitary lesions deep x-ray treatment is not necessary, provided the patient can be kept under supervision with repeated radiological examination in order that the process of regeneration can be followed. In view of the possible after-effects of deep x-ray treatment it is desirable to limit this to cases in which it is proved to be necessary.

If there is radiological evidence of multiple lesions, a biopsy should be performed on one that is accessible, and appropriate deep x-ray treatment instituted. There is no suggestion of withholding treatment in this group of cases.

I wish to express my thanks to Mr H. Jackson Burrows, Mr W. D. Coltart and Mr H. J. Seddon for allowing me to include their patients in my series, and to the Medical Records Department of the Royal National Orthopaedic Hospital for tracing two of the patients who had married and moved away from London.

Figures 8 and 9 are from prints, discoloured and faded from subjection to heat and water, salvaged from the premises of Messrs John Wright & Sons which were destroyed in a night bombardment of Bristol.

REFERENCES

