IDIOPATHIC SCOLIOSIS IN IDENTICAL TWINS

RAFAEL ESTEVE, BARCELONA, SPAIN

From Camitas Blancas (Instituto Policlinico) and Hospital de San Juan de Dios, Barcelona
Formerly at the Nuffield Orthopaedic Centre, Oxford

The etiology and pathogenesis of "idiopathic" scoliosis are still to be elucidated. It is generally agreed that scoliosis is a condition related to growth, for it does not increase appreciably after the end of growth. Thus imbalance of the spinal muscles appearing after growth has ceased produces little or no lateral curvature. A primary disturbance of the vertebral growth centres has not yet been proven, but it is thought that, once a lateral curve has developed, the imbalance in the distribution of stress on the epiphysial plates increases the deformity following the laws of epiphysial growth (Hueter 1862, Volkmann 1872) and the recent studies of Trueta (1957). Steindler (1951) stated that "the fact that the deformity develops under gravitational influence implies that it is selective, and this again means that certain predisposing factors must be at work."

FIG. 1
Photographs of the twin girls showing the similarity of the spinal curves. The scoliosis is more marked in S (right).

The nature of that predisposing or primary factor is not known. A list of the possible local factors should include anatomical alterations in the growth nucleus or the epiphysial plates, in the pattern of vascularisation of the vertebrae, alterations in the spinal muscles or their innervation, and also metabolic or endocrine disturbances. Any of those disturbances...
might have a congenital origin and therefore be predetermined or present at birth, though only developing later in life like many other congenital abnormalities.

In this respect it is of interest to report this example of idiopathic scoliosis occurring in identical twins at the same time and with similar characteristics.

**CASE REPORT**

The twin girls are from a family of eight children. The parents are living and healthy. There is no consanguinity, and deformities, congenital or otherwise, are unknown in the family. Nothing abnormal is known to have occurred during the mother's pregnancy or at parturition.

The girls, to whom I shall refer as P and S, were seen by me at eleven years of age. At the age of six a curvature of the spine, with prominence of the right scapula, was noticed in both girls, being slightly less marked in P. Spinal supports have been worn since the age of seven.

On examination the twins were alike. The colour of the eyes (dark brown), of the hair (dark brown) and of the skin (light), the shape of the ears and the distribution of hair were identical. They were alike in build, but S was an inch and a half shorter than P because of the greater spinal curvature. The length of the upper and lower limbs was equal on both sides and in both girls. There was thoracic scoliosis convex to the right and lumbar scoliosis.
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convex to the left, more marked in S (Fig. 1). Neurological examination was negative. There was no café-au-lait marking.

Radiographic examination—In P there was a thoracic scoliosis of 46 degrees convex to the right, with the apex at T.7 and moderate rotation; there was moderate lumbar scoliosis to the left (Fig. 2). The only congenital anomaly seen in the spine was spina bifida of the first sacral segment. In S there was a thoracic scoliosis of 58 degrees convex to the right with the apex at T.7; there was lumbar scoliosis to the left; and there was marked rotation in both curves (Fig. 3). No congenital anomaly was seen in the spine except spina bifida in the fifth lumbar and first sacral segments.

DISCUSSION

This is an example of scoliosis in identical (uniovular) twins. The degree of scoliosis is different, being more severe in one of the patients, but the other characters of the curves are strikingly alike, both having the same pattern and the apex at the same level—T.7.

In the absence of visible congenital deformities at the level of the curves these two patients should be included in the group of so-called idiopathic scoliosis of the thoracic type (Ponseti and Friedman 1950) with a fairly early onset (juvenile variety of James (1954)). This indicates the presence of some other congenital factor influencing the production of scoliosis at a later stage in life, perhaps through the modification of the growth pattern in a limited spinal segment.

REFERENCES


