CONGENITAL DISLOCATION OF THE HIP IN INFANTILE IDIOPATHIC SCOLIOSIS

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The incidence of congenital dislocation of the hip in 156 children with infantile idiopathic scoliosis was 6.4 per cent, approximately 10 times its frequency in the general population. In both of these deformities there was a predominance of girls (eight girls: two boys). In unilateral dislocation of the hip the convexity of the thoracic scoliosis was on the same side as the dislocation. Eight out of the 10 children with both deformities also had plagiocephaly.

Certain adverse genetic and environmental factors identified in congenital dislocation of the hip and infantile idiopathic scoliosis are common for both conditions. These two deformities occur more frequently in children with a history of breech presentation, but infantile idiopathic scoliosis is more common in boys and congenital dislocation of the hip is more common in girls (James 1951; Wynne-Davies 1972, 1975). Plagiocephalv is associated with both conditions and in infants with idiopathic scoliosis the recession of the brow is on the same side as the convexity of the curve (Wynne-Davies 1968; Watson 1971). As such associations may be relevant to the aetiology of infantile idiopathic scoliosis, a group of children who had both scoliosis and a congenital dislocation of the hip has been reviewed.

MATERIAL AND METHODS

The notes and radiographs of all children born between 1962 and 1975 who attended the Edinburgh Scoliosis Clinic with infantile idiopathic scoliosis were reviewed. There were 156 children (89 boys and 67 girls), 10 of whom (6.4 per cent) also had a dislocation of one or both hips. This group included three of the children noted by Wynne-Davies in 1975. Infantile idiopathic scoliosis was defined as a structural lateral curvature of the spine occurring in the first three years of life and for which there is no known cause. Congenital dislocation of the hip was diagnosed in the neonate by a positive “clunk” sign, with or without radiographic changes, and in the older children by typical clinical and radiographic features. Information from this study was compared with control figures from the Edinburgh Register of the Newborn (1964 to 1968), which gives details of 52 000 births.

RESULTS

Incidence. The incidence of congenital dislocation of the hip in infantile idiopathic scoliosis was 6.4 per cent, which is higher than the 3.5 per cent previously reported (Wynne-Davies 1975). The Edinburgh Register of the Newborn recorded the incidence of congenital dislocation of the hip presenting up to the age of three years as 5.1 per 1000 live births (female to male ratio 1:0.48). The incidence of congenital dislocation of the hip in children with infantile idiopathic scoliosis was therefore approximately 10 times that expected in the general population, although it must be stressed that these were children referred to a scoliosis clinic from a much wider area than Edinburgh. The predominance of girls in this group (eight girls to two boys) is higher than that usually seen in congenital dislocation of the hip and contrasts with the usual predominance of boys in infantile idiopathic scoliosis (James, Lloyd-Roberts and Pilcher 1959; Wynne-Davies 1975).

Presentation. Three of the 10 children had a history of breech presentation (Table I). The incidence of breech presentation in children with congenital dislocation of the hip was reported to be between 17 and 25 per cent in different series (Wynne-Davies 1972) and the incidence in children with infantile idiopathic scoliosis was reported to be 17.6 per cent (Wynne-Davies 1975). The incidence of breech presentation in the Edinburgh Register of the Newborn was 2.6 per cent.

Scoliosis. Eight curves were thoracic; the convexity was to the left in six of the nine single curves; seven of the 10 curves resolved (Table I). These proportions are similar to those reported in other groups of children with infantile idiopathic scoliosis (Lloyd-Roberts and Pilcher 1965; Wynne-Davies 1975).

Dislocation of the hip. There were six unilateral and four
Table I. Clinical details of the 10 children presenting with both infantile idiopathic scoliosis and congenital dislocation of the hip

<table>
<thead>
<tr>
<th>Case number</th>
<th>Sex</th>
<th>Presentation</th>
<th>Plagiocephaly</th>
<th>Side</th>
<th>Age at diagnosis</th>
<th>Treatment</th>
<th>Curve</th>
<th>Age at diagnosis</th>
<th>Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>Vertex</td>
<td>R</td>
<td>R</td>
<td>A few weeks</td>
<td>Open reduction</td>
<td>R Thoracic</td>
<td>A few weeks</td>
<td>Resolving</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>Breech</td>
<td>L</td>
<td>Bilateral</td>
<td>Birth</td>
<td>Splintage</td>
<td>L Thoracic</td>
<td>5 months</td>
<td>Resolving</td>
</tr>
<tr>
<td>3</td>
<td>F</td>
<td>Vertex</td>
<td>L</td>
<td>L</td>
<td>Birth</td>
<td>Splintage</td>
<td>L Thoracic</td>
<td>2 months</td>
<td>Resolving</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>Vertex</td>
<td>R</td>
<td>Bilateral</td>
<td>Birth</td>
<td>Splintage</td>
<td>R Thoracic</td>
<td>3 months</td>
<td>Resolving</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>Vertex</td>
<td>—</td>
<td>Bilateral</td>
<td>Birth</td>
<td>Frog plasters, Open reduction</td>
<td>L hip</td>
<td>R Thoracic</td>
<td>In third year</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>Vertex</td>
<td>L</td>
<td>L</td>
<td>1 year</td>
<td>Open reduction</td>
<td>L Thoracic</td>
<td>In third year</td>
<td>Slowly progressive</td>
</tr>
<tr>
<td>7</td>
<td>F</td>
<td>Breech</td>
<td>L</td>
<td>L</td>
<td>6 months</td>
<td>Open reduction</td>
<td>L Thoracic</td>
<td>11 months</td>
<td>Resolving</td>
</tr>
<tr>
<td>8</td>
<td>F</td>
<td>Vertex</td>
<td>L</td>
<td>Bilateral</td>
<td>Birth</td>
<td>Splintage</td>
<td>L Thoraco-lumbar</td>
<td>3 months</td>
<td>Resolving</td>
</tr>
<tr>
<td>9</td>
<td>F</td>
<td>Breech</td>
<td>L</td>
<td>L</td>
<td>Birth</td>
<td>Splintage</td>
<td>L Thoracic</td>
<td>4 months</td>
<td>Resolving</td>
</tr>
<tr>
<td>10</td>
<td>M</td>
<td>Vertex</td>
<td>—</td>
<td>L</td>
<td>Birth</td>
<td>Splintage</td>
<td>L Thoracic</td>
<td>In third year</td>
<td>Progressive</td>
</tr>
</tbody>
</table>

Figure 1 — Case 1. A girl aged nine months with a right thoracic curve extending from T6 to L1 measuring 28 degrees, with a rib-vertebra angle difference of 17 degrees. The pelvis appears to be asymmetrical. Figure 2 — Case 7. A girl aged six months with a left thoracic curve extending from T3 to T11 measuring 10 degrees, with no rib-vertebra angle difference. Slight asymmetry of the pelvis can be seen. The curve had increased to 20 degrees by the age of 11 months and later resolved.
bilateral dislocations. In the six children with unilateral dislocations the convexity of the thoracic scoliosis was on the same side.

Plagiocephaly. Plagiocephaly was present in eight of the children, always on the same side as the convexity of a thoracic curve and the unilateral dislocation of the hip. Other factors. The dates of birth and onset of scoliosis in these children were spread fairly evenly throughout the year. Information about other factors thought to be important in the aetiology of congenital dislocation of the hip and infantile idiopathic scoliosis including data on prematurity, birth weight, birth order of child, family history, parental age and occupation was either incomplete or inconclusive.

DISCUSSION

The aetiology of infantile idiopathic scoliosis is multifactorial and in any individual different factors may operate to “trigger off” the deformity (Wynne-Davies 1975). In nine of the children in this series, scoliosis was reported during or after treatment of congenital dislocation of the hips. Since the onset of infantile scoliosis usually occurs at the age when dislocations of the hip are treated, the possibility that this treatment is a causative factor in scoliosis remains speculative. A survey to find the incidence of infantile idiopathic scoliosis in children with congenital dislocation of the hip would clarify this point.

Dunn (1976) reported that in the neonate deformities such as dislocation of the hip, talipes, postural scoliosis and plagiocephaly were associated with each other and he believed that intra-uterine moulding was an important factor in their production. This explanation is not satisfactory for the association of deformities seen in children in the present series, since plagiocephaly and structural scoliosis both developed weeks or months after birth. Postural scoliosis was occasionally seen but only infants with structural curves have been included in this review. There is as yet no satisfactory explanation for the association between the side of plagiocephaly, unilateral dislocation of the hip and scoliosis, or their preponderance on the left. Hay (1971) suggested that plagiocephaly could be caused by gravity acting on a relatively immobile infant that persistently turned its head to one side. Even though splintage would immobilise an infant, it is difficult to see how a unilateral dislocation of the hip could produce such head turning. Lloyd-Roberts and Pilcher (1965) noted that some infants with idiopathic scoliosis had pelvic obliquity with the hip on the concavity of the curve higher than the hip on the convexity which was adducted. Although pelvic obliquity was not a feature of infants in this series, apparent pelvic asymmetry was occasionally seen (Figs 1 and 2). One wonders if this was due to a distortion of the pelvis analogous to the deformity of the skull in plagiocephaly.

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REFERENCES