Three children with partial trisomy 1q and partial monosomy 3p

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SUMMARY We report a kindred in which three children suffer from partial trisomy 1q and partial monosomy 3p, transmitted by a balanced translocation which is maternal in one family and paternal in the other. The clinical features of the three children are similar and include severe mental handicap and severe scoliosis in the older two.

Case reports

The family pedigree is shown in fig 1. Case 1 (III.4) was a girl, born in 1965. Case 2 (III.5) was a boy, born in 1966. Case 3 (III.2) was a girl, born in 1967. The clinical features of the three are shown in the table and illustrated in fig 2. The beaked nose and broad thumbs initially suggested a diagnosis of Rubinstein-Taybi syndrome.

CYTOGENETIC STUDIES

Cases 1 and 2 were karyotyped in 1968 and Case 3 in 1970, all using orcein stain. No abnormality was detected. In 1976, the children were reinvestigated using standard Giemsa banding. They were each found to have unbalanced chromosome complements giving rise to partial trisomy 1q and monosomy for the terminal part of 3p. The parents were investigated and the mother of cases 1 and 2 and the father of case 3 (who were themselves brother and sister) carried a balanced reciprocal translocation: 46,XX or XY,t(1;3)(q25;p23) (fig 3). The other parent in each family was chromosomally normal. Cases 1, 2, and 3 have the chromosome complement: 46,XX or XY,der(3)(1;3)(q25;p23).

* * *

FIG 1 Pedigree showing segregation of translocation.

FIG 2 Cases 1 (left) and 2 (right) aged 20 and 19 years respectively.
Three children with partial trisomy 1q and partial monosomy 3p

TABLE  Clinical features of three cases.

<table>
<thead>
<tr>
<th>Case</th>
<th>Birth weight (kg)</th>
<th>Pregnancy</th>
<th>Intercurrent illness</th>
<th>Mental retardation</th>
<th>Face</th>
<th>Testes</th>
<th>Adult height (cm)</th>
<th>Adolescent kyphoscoliosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.73</td>
<td>Normal</td>
<td>Pyloric stenosis, Ramstedt’s operation</td>
<td>Severe. Self care but no speech</td>
<td>Beaked nose +</td>
<td>+</td>
<td>135</td>
<td>+</td>
</tr>
<tr>
<td>2</td>
<td>3.01</td>
<td>Toxaemia</td>
<td>–</td>
<td>–</td>
<td>Low set ears +</td>
<td>+</td>
<td>135</td>
<td>+</td>
</tr>
<tr>
<td>3</td>
<td>2.84</td>
<td>Hypertension</td>
<td>Bloody diarrhoea. Rx gluten free diet</td>
<td>Severe</td>
<td>Brushfield spots –</td>
<td>–</td>
<td>NK</td>
<td>+</td>
</tr>
</tbody>
</table>

NK=not known.

FIG 3  Partial karyotype showing balanced translocation.

Discussion

The family is reported since they appear to be chromosomally unique, and the development of scoliosis in the two sibs is striking. There are two known cases with a similar chromosome abnormality, but with different though neighbouring breakpoints. In one, the unbalanced translocation appears to have arisen de novo, whereas in the other the mother carried the reciprocal translocation. The case described by Yunis et al shows little in common with our cases but was reported during infancy. The case of Schinzel was reported as an adult and showed severe mental handicap and a mild kyphoscoliosis, but otherwise had few similarities with our cases. He had striking hypertrichosis which is not a feature of the children described here. These three children appear to be the only ones described with their particular chromosome abnormality. The family have previously contributed to a study localising the gene for peptidase C to the distal end of 1q. Our report indicates how readily cytogenetic errors occurred before banding was available. Where sibs of those who were investigated in the pre-banding era request information as to their own risks of having an affected child, it is essential to reinvestigate the family using the best current techniques.

The family were originally under the care of Dr Leslie Scott, whom we thank for his help in the preparation of this report.

References


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