SERUM IMMUNOGLOBULIN IN PERTHES' DISEASE

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Serum immunoglobulin concentrations in 41 children with Perthes' disease and 82 age and sex matched controls were measured by radial immunodiffusion. Significant increases in IgG and IgM were seen in children with Perthes' disease.

Among 185 consecutive patients with Perthes' disease seen at this centre over 15 years, 10 children had profound restriction of hip movement (Chacko, Joseph and Seetharam 1986). Radiographs of two of these children showed gross narrowing of the joint space. This was regarded as evidence of chondrolysis (Joseph 1989). Idiopathic chondrolysis of the hip and chondrolysis following slipped capital femoral epiphysis are known to have an immunological basis (Eisenstein and Rothschild 1976) and raised immunoglobulin values have been noted in these conditions. This study was undertaken to evaluate whether serum immunoglobulin is altered in Perthes' disease.

PATIENTS AND METHODS

Serum samples were taken from 31 boys and 10 girls with Perthes' disease and from 62 male and 20 female age and sex matched controls. IgG, IgM, and IgA concentrations were measured by radial immunodiffusion with commercially available plates (Tri-Partigen, Germany).

RESULTS

Mean serum IgG and IgM concentrations were significantly higher in both boys and girls with Perthes' disease than in age and sex matched controls (Table I). No differences in IgA values were seen in either group. Figure 1 shows individual IgG and IgM values in the patient and control groups.

DISCUSSION

Matsoukas (1975) and Nevelos (1980) reported an increase in IgG in Perthes' disease, whereas in the present study both IgG and IgM levels were raised. The serum IgG and IgM values noted in Perthes' disease in our study were almost identical to those reported in slipped capital femoral epiphysis by Eisenstein and Rothschild (1976). They also noted that in patients with chondrolysis IgM was higher than in those with slipped capital femoral epiphysis uncomplicated by chondrolysis. They suggested that detection of raised IgM concentrations could serve as a biochemical indicator of impending chondrolysis. The raised IgM values noted in the present

Table I. Mean (±SD) serum immunoglobulin concentrations in children with Perthes' disease and healthy age and sex matched controls

<table>
<thead>
<tr>
<th>Immunoglobulin (mg/dl)</th>
<th>Boys</th>
<th>Girls</th>
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<tbody>
<tr>
<td></td>
<td>Perthes' (n = 31)</td>
<td>Normal (n = 62)</td>
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<tr>
<td>IgG</td>
<td>1526 ± 56</td>
<td>1100 ± 300*</td>
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<tr>
<td>IgM</td>
<td>178 ± 86 (n = 30)</td>
<td>114 ± 38* (n = 59)</td>
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<tr>
<td>IgA</td>
<td>165 ± 79</td>
<td>157 ± 58</td>
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* significance of difference, p < 0.001
study may indicate that there is a susceptibility to this complication.

Pronounced restriction of hip movement and fixed deformities have been recorded in a substantial number of children with Perthes’ disease from the south-west coastal plain of India (Chacko et al 1986). The mean ages at onset in these cases were 9.9 years for boys and 8.7 years for girls. These ages are high for the Western world where the mean age of onset of Perthes’ disease is around six years (Catterall 1982). The children with chondrolysis after Perthes’ disease seen at this centre and those reported by Dominguez et al (1987) were over 10 years of age. Thus, the propensity for a striking reduction of movement, fixed deformities and chondrolysis seems to be restricted to older children with this disease. The raised IgM concentrations noted in the present study may be related to these complications. This would explain the fact that no alteration in IgM was seen in the younger children reported by Nevelos (1980).

The results of our study suggest that immunological mechanisms may be implicated in the mediation of some of the changes in Perthes’ disease.

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REFERENCES