**Short reports**

Heaf test results after neonatal BCG

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**Summary**

Heaf testing was carried out on 98 preschool Asian children who had received a BCG vaccination. A strongly positive Heaf reaction (grade 3) occurred in only two children. Heaf testing can still be used in tuberculosis screening after neonatal BCG.

Most Asian children born in Britain have BCG vaccination in the neonatal period. A number subsequently present after contact with a case of tuberculosis. The interpretation of a positive tuberculin test in such children is difficult.

In an attempt to address this problem we have surveyed tuberculin positivity in previously vaccinated preschool British born Asian children.

**Patients and methods**

Asian children born in Derby have routine BCG vaccination given by specially trained health visitors using Dermo-jet (dose 0.1 ml). A routine check on conversion is made at three months by Heaf testing and infants with no response are revaccinated (about 2%). From the population vaccinated in the standardised manner 98 preschool children were entered into the study. This represents about 5% of the Asian preschool population of Derby. They were recruited from one child health clinic when they or a sibling were attending for routine developmental surveillance or immunisation. Children were excluded from the study if they were currently taking oral corticosteroids or if they had had measles illness or immunisation in the preceding two weeks. None was thought to be at risk from tuberculosis before entering the study.

All children had a standard Heaf test with a spring loaded multiple puncture Mark 6 Heaf gun set at 1 mm for those less than 2 years old and 2 mm for those over 2 years, administered by one operator (PAGC). Results were read three to seven days later by the same operator. Children found to be grade 3 or 4 positive were referred to the local chest clinic for chest radiography and further review.

**Results**

Forty seven boys and 51 girls entered the study. All had a visible BCG scar. Fifty one children were of Pakistani Muslim origin; 35 were Punjabi Sikhs; seven Punjabi Hindus, and five were from other Asian ethnic groups. Eighty six of the children were first generation United Kingdom citizens. Overall there were 14 children (14%) who showed a grade 0 response, 75 (76%) with grade 1, seven (7%) with grade 2, two (2%) with grade 3, and none with grade 4. There was no significant difference in the responses at different ages (table).

Nineteen children had a family history of tuberculosis (four grade 0, 14 grade 1, one grade 2) and eight were known to have been in contact with someone who had been treated for tuberculosis (two grade 0, six grade 1). The two children with grade 3 responses were siblings of Pakistani Muslim origin; there was no family history of tuberculosis, no history of contact, nor of travel abroad. They were seen at the chest clinic, found to have normal chest radiography and no further action was taken.

**Discussion**

British born Asian children are at a much higher risk.

<table>
<thead>
<tr>
<th>Table</th>
<th>Number of children in each age group with each Heaf grade result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (months)</td>
<td>Heaf grade result</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>6–18</td>
<td>4</td>
</tr>
<tr>
<td>&gt;18–30</td>
<td>4</td>
</tr>
<tr>
<td>&gt;30–42</td>
<td>3</td>
</tr>
<tr>
<td>&gt;42–60</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
</tr>
</tbody>
</table>
Heaf test results after neonatal BCG

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SUMMARY Of a total of 846 children of Indian subcontinent ethnic origin given neonatal BCG vaccination, 823 (97%) were tuberculin positive when tested six to nine weeks after vaccination. The results show an initial immunological response to the vaccination. The possible reasons for the disparity between these results and others are discussed.

BCG vaccination shortly after birth in children of Afro-Asian ethnic origin is recommended by the Joint Tuberculosis Committee.¹ It has been routine policy to offer neonatal BCG to children of Indian subcontinent ethnic origin in Blackburn since 1963. After the report of Grindulis et al that showed a poor immunological response at 22 months after such vaccination,² a prospective study of early response to BCG vaccination was undertaken.

Subjects and methods

A total of 863 neonates of Indian subcontinent ethnic origin received BCG vaccination by intradermal injection from the resident paediatric medical staff between August 1984 and July 1985 inclusive. Home visits were carried out by community nursing staff and a tuberculin test carried out and read...
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