Stub thumbs in Israel revisited

RICHARD M GOODMAN, ABRAHAM FEINSTEIN, AND MARJORIE Hertz

From the Departments of Medical Genetics, Dermatology, and Radiology, The Chaim Sheba Medical Center, Tel-Hashomer, and The Sackler School of Medicine, Tel-Aviv University, Ramat-Aviv, Israel.

SUMMARY A three generation family with stub thumbs and short fourth toes is reported. This combination of anomalies has been observed in the past and the question is raised whether this association could be genetically distinct from that of stub thumbs alone.

In 1965 one of us (RMG) called attention to the relative commonness of stub thumbs (brachydactyly type D) among the various Jewish ethnic communities in Israel. At that time it was noted that the most frequent anomaly associated with this trait was a short fourth toe resulting from brachydactyly of the fourth metatarsal. Recently, we had the opportunity to see a family with stub thumbs in which this associated malformation also occurred. Since three generations were affected the full range of expressivity became apparent. The purpose of this brief report is to emphasise this association and to comment upon its possible genetic significance.

Family studies

The proband (fig 1) was a 35 year old Sephardi Jewish woman who presented to our dermatology clinic because of a fungus infection of the feet. At the time of examination it was noted that she had bilateral brachydactyly of the fourth toes and stub thumbs. After treatment she was referred to the genetic clinic where she and all her available family members were invited for examination. A summary of their physical findings is shown in the table and selected anomalies can be seen in fig 2. No other physical abnormalities were noted. When possible x-ray studies of the hands and feet were done (fig 3).

<table>
<thead>
<tr>
<th>Pedigree No</th>
<th>Sex</th>
<th>Age</th>
<th>Examined</th>
<th>Not Examined</th>
</tr>
</thead>
<tbody>
<tr>
<td>II.12</td>
<td>F</td>
<td>72</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>III.2</td>
<td>M</td>
<td>42</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>III.3</td>
<td>M</td>
<td>45</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>III.5</td>
<td>F</td>
<td>38</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>IV.4</td>
<td>M</td>
<td>25</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>IV.13</td>
<td>F</td>
<td>13</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

+=involved, -=not involved, Hx=affected or unaffected by history.

Received for publication 16 February 1984.
Accepted for publication 25 April 1984.

FIG 1 Family pedigree.

TABLE Clinical findings in affected family members.
Discussion

Stub thumbs, which is a form of brachydactyly type D, is transmitted as an autosomal dominant trait. Among the various Jewish ethnic groups in Israel this trait occurs in approximately 1.6% of all Jews irrespective of their communal origin. Although a complete survey was not done in our original study, four of 29 (13.8%) unrelated Jewish persons were noted to have a short fourth toe. Stetcher, in his survey of thumbs among US whites (0.41% affected) and blacks (0.1% affected), observed that one in 95 had a short fourth toe. Despite these observations on the association of a short fourth toe
Richard M Goodman, Abraham Feinstein, and Marjorie Hertz

**FIG 3** X-rays showing brachydactyly of the fourth metatarsal bilaterally in II.12 and III.5 and unilateral involvement in IV.13. IV.13 shows brachydactyly of the distal phalanx of the thumb.

with stub thumbs, we believe that a proper survey on the incidence of this finding with stub thumbs should be done. It can be stated that such an association has been noted in several Jewish families from Israel. The wide range of expressivity observed in our family (table), varying from a single thumb affected (IV.4) to both thumbs and both fourth toes (III.5), is compatible with that seen in most autosomal dominant disorders. The question could be raised as to whether this combination of findings, stub thumbs and short fourth toes, is a distinct entity resulting from a different gene from that causing just stub thumbs. Linkage studies may be helpful in answering this question. In conclusion, from our clinical experience it would seem that there is a definite association between the trait of stub thumbs and short fourth toes, and whether this is a distinct genetic entity from that of stub thumbs alone remains to be answered. Population studies on the incidence of these two traits among Jews and other ethnic groups may be rewarding in terms of use as a genetic marker.

The authors are grateful to Mrs Ruth Grossman for her secretarial aid and to Mrs Irit Bechor for photography. This work was supported in part by grants (to RMG) from the National Foundation for Jewish Genetic Diseases, Lake Chemical Corporation, and The Roucher Foundation of the USA.

**References**

Correspondence and requests for reprints to Professor R M Goodman, Department of Medical Genetics, The Chaim Sheba Medical Center, Tel-Hashomer 52621, Israel.