KIRNER’S DEFORMITY OF THE LITTLE FINGER

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Twelve cases of Kirner’s deformity of the terminal segment of the little finger are described, with observations on the progress of the condition over periods of up to ten years. Four cases were in one family, all of them being more severely affected in the right hand.

In 1927 Kirner described a condition of the little finger characterised by palmar and radial curving of the terminal phalanx. A number of papers since then have recorded further cases. Staheli, Clawson and Capps (1966) gave a summary of twenty-four cases reported up to that time and added two of their own. Kaufmann and Taillard (1961) reported the biopsy findings in one case, and Carstam and Eiken (1970) described correction of the deformity by osteotomy, but no observations on the natural progress of the condition for more than a few months have been found.

The present paper aims to go some way in filling this gap and also to record twelve further cases, in eight of which the patients have been followed up for periods of from three to thirteen years. The only treatment was splinting during periods of pain in two cases. No patient had an operation.

The usual feature of the condition, as described in published series, is bilateral palmar and radial curvature of the tip of the little finger, developing spontaneously just before puberty without pain or other abnormalities. No family history is reported in the majority. Sex incidence in the twenty-eight reported cases shows a slight female dominance (16 to 12). Radiographs show that the deformity is the result of tilting of the terminal diaphysis, which, for a period, is thin and dense.

PATIENTS

The present series (Table I) consists of twelve cases, ten female and two male. Four cases were bilateral and symmetrical, three bilateral but asymmetrical. The deformity was first noticed at ages from 8 to 12 years in ten cases. In the other two (both asymmetrical) it was thought to have been present at birth, although both patients were over forty years of age when questioned, so there must be room for doubt about the accuracy of this observation.

Four of the patients were sisters, and two more said that others in the family had been affected, though they have not been examined to confirm this. The four from one family, who had two unaffected sisters, showed bilateral features, although all were more marked on the right and the more severely affected fingers were painful for some months. This family provided an opportunity to observe the condition over some years, in one case from 10 to 20 years of age, and progress radiographs of two of them, Cases 4 and 6, are presented, as well as Case 8, which is an example of symmetrical changes.

Table I. Cases in this series

<table>
<thead>
<tr>
<th>Case number</th>
<th>Sex</th>
<th>Age at onset (years)</th>
<th>Side</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>10</td>
<td>L&gt;R</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>12</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>9</td>
<td>L=R</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>9</td>
<td>R&gt;L</td>
<td>Red and painful for six months at age 12</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>9</td>
<td>R</td>
<td>Red at age 10, painful at age 11</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>9</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>F</td>
<td>8</td>
<td>R</td>
<td>Cases 4, 5, 6 and 7 were sisters</td>
</tr>
<tr>
<td>8</td>
<td>F</td>
<td>11</td>
<td>L=R</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>F</td>
<td>Birth</td>
<td>L=R</td>
<td>Some others in family said to be affected</td>
</tr>
<tr>
<td>10</td>
<td>F</td>
<td>Birth</td>
<td>L=R</td>
<td>Father’s mother and her sister affected</td>
</tr>
<tr>
<td>11</td>
<td>M</td>
<td>11</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>F</td>
<td>9</td>
<td>R</td>
<td></td>
</tr>
</tbody>
</table>

ILLUSTRATIVE CASE REPORTS

Case 4. This patient was one of twin girls who both presented at the age of 10 complaining of curving and thickening of the tip of the right little finger, which had developed a year earlier and increased. Examination confirmed obvious thickening of the finger proximal to the base of the nail on the right, and to a lesser extent also on the left. Radiographs at this time showed narrowing and increased density of the terminal diaphysis, which was tilted in a palmar and radial direction (Fig. 1). At the age of 11 (Figs. 4 and 5) the base of the diaphysis was even narrower in the lateral view, and a more definite curve forward within the diaphysis was evident in addition to its overall forward tilt. At the age of 12 the more severely affected finger became quite painful with redness and increase of swelling, so that she was happy to use a straight night splint for six months until the pain

Case 4. Figure 1—Radiograph of right little finger at the age of 10 years: terminal diaphysis narrow at the base and tilted forward. Figures 2 and 3—Left finger at the age of 11 for comparison, almost normal. Figures 4 and 5—Right finger at the age of 11, tilted radially and forward, together with an increase of forward bow within the diaphysis. Figure 6—Right finger at the age of 13, recalcification of the diaphysis commencing. Figure 7—At the age of 15, complete reconstitution with deformity. Figure 8—At the age of 20, growth has not corrected the deformity.

Case 4. Residual clinical deformity seen at the age of 20 years.

subsided. The splintage did not, however, lead to any reduction of deformity. At the age of 13 a radiograph showed the base of the diaphysis to be thickening again and returning towards normal texture (Fig. 6). At the age of 15 the diaphysis was fused with the epiphysis, with a residual deformity of the posterior projection of the base formed from the epiphysis, and a forward tilt of the terminal expansion (Fig. 7). At the age of 20 the deformity remained unchanged (Figs. 8 and 9). The only disability was weakness of the finger in typing.

Case 6. The younger sister of Case 4, having become aware of the condition, presented at the age of 9 as soon as the tip of the right little finger became tilted and thickened at the base of the nail. The radiograph (Fig. 10) showed the same diaphyseal changes seen in Case 4, one year after onset—tilting, narrowing and increase of density at the base. At the age of 10 the finger tip was more tilted and skin proximal to the nail was red, but still painless. At the age of 11 the finger was painful for several months, a night splint was used, and similar progress was shown on the radiograph (Fig. 11). At the age of 15 the residual deformity (Fig. 12) resembled that of her sister.

Case 8. A girl aged 11 presented complaining of difficulty with typing. Radiographs showed severe, symmetrical bilateral deformity (Figs. 13 and 14). At the age of 14 epiphysial fusion had occurred with deformity of the terminal phalanx before fusion in the middle phalanx (Figs. 15 and 16).

PATHOLOGY

The only biopsy results found are those of Kaufmann and Taillard (1961) who noted a definite lysis between diaphysis and epiphysis. This suggested a possible aetiology other than aseptic necrosis. Aseptic necrosis
in a finger has been described by Staples (1943) affecting the epiphysis and not the diaphysis, and without any deformity.

Only one patient in the present series was under observation at the onset of deformity and at that time her serum calcium, phosphate and alkaline phosphatase estimations were normal.

The suggestion of Carstam and Eiken (1970) that the bowing and radial deviation of the phalanx may be secondary to the epiphyseal defect caused by dominance of flexor digitorum profundus appears entirely reasonable.

DISCUSSION

In this series the abnormality was generally recognised about the age of 9 years when there was tilting of the terminal diaphysis of the little finger forward and radially with thinning of its base. Thinning progressed, a tilt or curve forming within the diaphysis about the time that some patients developed pain and redness of the skin. As reconsolidation commenced at the age of 13, inflammatory signs faded, fusion of the epiphysis occurred ahead of that in the middle phalanx, and by the age of 15 there was a residual deformity which persisted unchanged to the age of 20 and probably beyond.

A family history is unusual in this condition. Only three previously published families have presented multiple cases (two, two and seven cases respectively, the latter being spread over three generations). The present family group of four affected girls had two sisters unaffected. Their radiographic features appear similar to although less severe than those of the symmetrical cases. They were unusual, however, in that they had pain and the right side was regularly the more severely affected.

Treatment was found necessary in only two cases in the present series, and consisted of flat night splints for six months during periods of pain. This did not appear to influence the course or prevent deformity. The amount of disability was not sufficient to justify surgical treatment in this series, but Carstam and Eiken (1970) report good cosmetic results from osteotomy.

I wish to thank Mr Colin Fitzpatrick of Dunedin for allowing me to include three of his cases in this paper, and Mr D. Rillstone, Southland Hospital, for the photography.

REFERENCES