CONGENITAL SHORT TENDO CALCANEUS*  
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It is common to see children who walk on their toes, and many different diseases are found to be the cause of this. During the past eight years we have recognised that some children, who appear to be otherwise normal, have a contracture of the calf muscles. We have not read of this condition in the literature and we call it congenital short tendon calcaneus. Between 1958 and 1964 twenty patients were treated by operation for this condition; fifteen were boys and in each case both legs were involved. The average age was seven and a half years.

The children had always walked in this manner and although some of them could put their heels down when asked to do so, they found it more comfortable to walk on their toes. The chief complaint of parents was that the tread of their children’s shoes wore out without any sign of wear on the heels. Two families had more than one child affected but no other family history was obtained. Two children had been born prematurely but neither of them showed evidence of cerebral palsy.

Examination did not reveal any deformity except equinus of both ankles from 30 to 60 degrees—with tightness of tendon calcaneus. The degree of deformity was not always symmetrical, and there was no muscle weakness or diminution of sensation; and there were no changes in tone of muscle or tendon reflexes, locally or elsewhere in the body. Unlike other forms of tight calcaneal tendons these children looked like normal children walking on their toes.

<table>
<thead>
<tr>
<th>TABLE I</th>
<th>PROVISIONAL INITIAL DIAGNOSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerebral palsy . . .</td>
<td>3 (1 born prematurely)</td>
</tr>
<tr>
<td>Muscular dystrophy . . .</td>
<td>2 (muscle later shown to be normal)</td>
</tr>
<tr>
<td>Spinal cord lesion . . .</td>
<td>1</td>
</tr>
<tr>
<td>Functional . . .</td>
<td>1</td>
</tr>
<tr>
<td>Congenital short tendon calcaneus</td>
<td>13</td>
</tr>
<tr>
<td>Total . . .</td>
<td>20</td>
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</tbody>
</table>

In some of these patients other diagnoses were considered and the differential diagnoses are shown in Table I. Two patients who were originally suspected of having muscular dystrophy had normal electromyographic studies and normal muscle biopsy examinations.

None of these patients had shown any evidence of other diseases in the follow-up period.

Once the diagnosis was made, the patients were observed for six months to two years before operation. When there was no appreciable change, operation was undertaken. All patients were treated in the same way by lengthening the calcaneal tendons. At operation it was found that the tendon was tight and that the other structures were normal. The foot

* This paper was read at the Twenty-second Annual Meeting of the Canadian Orthopaedic Association at Banff, Alberta, Canada, in June 1966.
FIG. 1
The characteristic position of the ankles that the child assumes usually during walking.

FIG. 2
The deformity is well corrected after operation.

FIG. 3
Range of ankle dorsiflexion before and after operation.
could be dorsiflexed after operation without posterior capsulotomy of the ankle. It was observed that the tendinous portion was shorter than normal, with the muscle bellies extending farther down than usual. In one patient an accessory gastrocnemius muscle was found, which was excised without any untoward effects. In no patient was further operation, such as lengthening of the flexor tendons of the toes, needed to correct the equinus.

Muscle biopsy was carried out on seven patients, including the two in whom muscular dystrophy had been suspected, and the muscle was found to be normal on histological examination.

A below-knee plaster was used for six weeks; three weeks without weight-bearing and three weeks weight-bearing. The patients required six to twelve weeks after the plaster was removed to walk normally and to regain calf strength.

Follow-up—The patients have been followed after operation for one and a half years to seven years, the average being about three years. All have done well and walk normally with heel-toe gait, and now wear shoes evenly. Some of the older children walked on their toes occasionally—mainly because of habit—but they had a normal range of dorsiflexion, both active and passive. During follow-up there was no evidence of recurrence or signs suggestive of cerebral palsy or muscular dystrophy.

COMMENT

We have described what we believe is a newly recognised clinical entity, "congenital short tendo calcaneus," and have presented twenty patients—with their clinical features, management and course up to seven years after operation. Although it is not a very disabling condition, it should be looked for and corrected early, as the treatment is simple and results are good.

It may be mentioned that many children walk on their toes when they first learn to walk but in congenital short tendo calcaneus this persists and the child continues to walk on the toes. One must exclude other diseases and, when in doubt, the patient should be observed for a time.

SUMMARY

1. Twenty patients with congenital short tendo calcaneus are described.
2. All were treated by tendon lengthening and followed up for one and a half to seven years.

Since the completion of this study thirteen more patients have had surgical correction for this condition at the Hospital for Sick Children, Toronto.