Letters to the editor

‘Improved hand function remains after upper-limb tendon transfer and muscle release in children with hemiplegia’

SIR–In the article by Eliasson et al., an improvement in hand function was reported in a group of 32 children with band dysfunction due to cerebral palsy (CP) 9 months after tendon transfer and muscle release. Range of motion and grasping as well as dexterity and grip strength were also improved. The aim of this study was to assess the same cohort to see whether the improvements remain 5 years after surgery.

Ten of the 32 subjects in the initial study were reexamined. The inclusion criteria were as follows: the subjects had spastic hemiplegia; they had been attending mainstream school at the time of surgery; and surgery had taken place at least 5 years previously. Starting 5 years back in time, the first 10 subjects to have surgery who met these criteria were selected. The subjects were aged between 12 and 24 years at the time of follow-up. The time between surgery and follow-up ranged from 5 to 7 years. Due to the random selection method, the 10 subjects studied were not representative of the clinical characteristics of the whole sample. However, these 10 subjects were representative of the previous sample in terms of values before and 9 months after surgery, except for a slight difference in supination before surgery (Table I).

The subjects were reexamined with the procedure used in the previous study; the same occupational therapist studied all subjects on all occasions.

The assessment was performed on the hemiplegic hand only. Joint motion was tested with a goniometer; grip ability was measured using nine tasks requiring different grips (score 0 to 4 for each task; maximum score, 36); dexterity was measured using the time taken to move 10 cubes (score 0 to 4 for each task; maximum score, 36); dexterity and grip strength were also measured. The aim of this study was to assess the same cohort to see whether the improvements remain 5 years after surgery.

The improvements in active wrist extension and supination were maintained 5 years after surgery. The improvement in ability to grip objects also remained the same (Table II). The median value for dexterity and strength were also assessed for the non-hemiplegic hand. The non-hemiplegic hand improved less than the hemiplegic hand, suggesting that the improvement was a result of surgery (Table II).

The median value for the patient satisfaction was 10 (out of 10), ranging from 6 to 10. This shows that the subjects found the result of surgery well worth the inconvenience.

In conclusion, we have seen that hand function has improved after surgery and the improvements remained at about the same level after 5 years. Furthermore, the subjects and their parents have found that the results of the treatment were well worth the inconvenience. This is valuable information for therapists and surgeons considering surgery in upper extremities for children with CP. Improvement of mobility and hand function after upper-extremity surgery has commonly been reported. However, to our knowledge, this is the first study in which the same children have been investigated at follow-up, thus allowing conclusions to be drawn regarding changes over time.

### Table I: Comparison between the samples

<table>
<thead>
<tr>
<th></th>
<th>Preop1</th>
<th>9 mo1</th>
<th>5 y1</th>
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<tbody>
<tr>
<td><strong>N=32</strong></td>
<td></td>
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<tr>
<td>Wrist extension (º)</td>
<td>25</td>
<td>55</td>
<td>20</td>
</tr>
<tr>
<td>Supination (º)</td>
<td>5</td>
<td>38</td>
<td>35</td>
</tr>
<tr>
<td>Grip scores (max. 36)</td>
<td>15.5</td>
<td>20</td>
<td>15.5</td>
</tr>
<tr>
<td>Speed (s)</td>
<td>35</td>
<td>23.5</td>
<td>35</td>
</tr>
<tr>
<td>Strength (kPa)</td>
<td>10</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td><strong>N=10</strong></td>
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</tr>
<tr>
<td>Supination (º)</td>
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<tr>
<td>Strength (kPa)</td>
<td>10</td>
<td>15</td>
<td>14</td>
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### Table II: Functional changes in hemiplegic hand

<table>
<thead>
<tr>
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<th>5 y1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wrist extension (º)</td>
<td>20 (–45 – 60)</td>
<td>57.5 (40 – 65)*</td>
<td>60 (30 – 78)*</td>
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<tr>
<td>Supination (º)</td>
<td>35 (–90 – 85)</td>
<td>60 (0 – 90)*</td>
<td>60 (0 – 90)*</td>
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<tr>
<td>Grip scores (max. 36)</td>
<td>15.5 (12 – 25)</td>
<td>20 (16 – 30)*</td>
<td>20 (14 – 32)*</td>
</tr>
<tr>
<td>Speed (s)</td>
<td>35 (13 – 49)</td>
<td>24 (11 – 37)*</td>
<td>20 (11 – 95), ns</td>
</tr>
<tr>
<td>Non-hemiplegic hand</td>
<td>8 (5 – 16)</td>
<td>7.5 (5 – 12)*</td>
<td>6 (4 – 15)</td>
</tr>
<tr>
<td>Strength (kPa)</td>
<td>10 (0 – 50)</td>
<td>14 (0 – 40) ns</td>
<td>20 (0 – 58) ns</td>
</tr>
<tr>
<td>Non-hemiplegic hand</td>
<td>59.5 (13.5 – 105)</td>
<td>64 (14.5 – 120)</td>
<td>66 (12 – 128)</td>
</tr>
</tbody>
</table>

1 scores are given as median (min – max)
* significant difference (P<0.05) in comparison to preoperation
ns, non-significant difference in comparison to preoperation

1N=4, 3N=7.
Paresis of facial and abducens nerves in a patient with growth-hormone receptor deficiency treated with insulin-like growth factor I

SIR—Benign intracranial hypertension, papilloedema, and cranial nerve involvement have been reported as rare complications in patients treated with growth hormone (GH) or insulin-like growth factor I (IGF-I). Transient left-side paresis of the facial nerve and partial paresis of the left abducens nerve is described in a 9-year-old girl with GH-insensitivity syndrome treated for 3 years 6 months with IGF-I. As borreliosis is frequently the aetiology of transient facial nerve palsy in southern Norway, this posed an important differential diagnostic problem.

A Cambodian girl with Laron syndrome, diagnosed at 6 years of age, was enrolled on an IGF-I treatment study (Pharmacia and Upjohn), starting with a dose of 40μg/kg body weight (1.6 mg) twice daily for 1 year 6 months. Serum IGF-I levels at 2, 4, and 6 hours after IGF injection were 37.9, 32.1, and 21.6 nmol/L (reference value 14 to 74 nmol/L). The child tolerated the treatment well until she was unable to close her left eye and also developed a moderate squint. Bell’s sign was positive. There was no history of tick bite. IGF-I therapy was discontinued and all symptoms of cranial nerve paresis disappeared after 14 days. Therapy was restarted 4 weeks later with IGF-I 40μg/kg twice daily. The dose was increased to 80μg/kg twice daily after 6 weeks, without side effects. Fundoscopy findings were identical to pretreatment status; there was no papilloedema. Lumbar puncture was performed on admission and after 10 days. Cytology and chemistry in spinal fluid and cerebrospinal fluid pressure were normal. Blood pressure was normal. There were no antibodies to Borrelia burgdorferi in serum or in the spinal fluid. No evidence of viral infection was found. Results from cerebral CT, cerebral MRI, and EEG were normal.

Benign intracranial hypertension can occur in the absence of papilloedema, and a ‘normal resting’ cerebrospinal fluid pressure does not exclude the diagnosis in the presence of suggestive symptoms and signs. Sixth nerve palsy has been reported in children treated with GH and developed intracranial hypertension. Benign intracranial hypertension and facial nerve palsy have been described in children with GH receptor deficiency treated with IGF-I. It seems that aggressive dosing of GH or IGF-I may be associated with such adverse events. To our knowledge, simultaneous involvement of both the facial and the abducens nerve has not been reported in a patient treated with IGF-I. A causal relation with IGF-I therapy cannot be excluded.

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References