

Case reports

Traumatic cervical disc herniation—tetraparesis in a patient kicked by a horse

Esa M Kotilainen¹, Tauno Kärki² and Outi K Satomaa³

¹Department of Neurosurgery and Surgery, Turku University Central Hospital, Kiinamylynkatu 4–8, FIN-20520 Turku, Finland. Tel +358 21-2611611. Fax -2612284, ²Department of Diagnostic Radiology, Satakunta Central Hospital, Pori, ³Department of Neurology, Satakunta Central Hospital, Pori, Finland
Submitted 96-11-06. Accepted 97-01-25

A 51-year-old farmer was kicked by a horse on his forehead and immediately developed tetraparesis dominating on the right side. Physical examination showed significant weakness of his arms and legs and he could not walk. Bilateral Babinski signs were present and the deep tendon reflexes were increased. In addition, sensory deficits were detected in both his arms. MRI of the cervical spine showed a disc herniation at the CIII/CIV level, with spinal cord compression and contusion. He was treated with peroral dexamethasone 16 mg daily and a cervical collar. After slight improvement, the condition of the patient deteriorated. 6 weeks after the accident, an an-

terior cervical discectomy with interbody fusion (Cloward's operation) was performed. During the operation, we noted extrusion of disc material into the spinal canal through a rupture in the posterior longitudinal ligament. The herniation caused compression of the spinal cord. Within a few days after the operation, the muscle strength of the extremities started to improve and 2 months later, the patient was able to walk short distances. At re-examination with MRI 5 months after surgery, no disc herniation was seen (Figure). Today, 9 months after surgery, the gait of the patient is nearly normal but he suffers from numbness on the right side



Preoperative T2-weighted image (left) demonstrates a disc prolapse (arrow) causing compression and contusion of the spinal cord at the level CIII–CIV. Postoperative (right) image demonstrates the disappearance of the disc herniation (arrow). The bone graft is seen at the operated level CIII–CIV.

Discussion

Intervertebral disc herniation is generally regarded as a consequence of a long-term degenerative process in the disc tissue. Over the years, the annulus fibrosus is exposed to increasing stress as the nucleus pulposus loses volume and elasticity. The integrity of the annular ring may then be lost, rendering possible the extrusion of disc material. The contribution of traumatic events as potential causes of intervertebral disc herniation is debatable. Only in a few cases of disc herniation has a preceding traumatic episode been identified (Ando and Mimatsu 1993).

Based on *in vitro* experiments, disc extrusions can be caused by hyperflexion or hyperextension injuries of the intervertebral disc (Adams and Hutton 1982). Harrington et al. (1991) have shown that cervical disc herniations are common in patients with cervical fracture subluxations. In their series of 37 consecutive patients with cervical fracture subluxation, disc herniation was demonstrated at the level of the injury in one third of the cases. Herniated disc was seen most frequently in flexion fracture dislocation and flexion compression injuries. Our patient provides further evidence of the role of mechanical trauma as one potential cause of cervical disc herniation. This case also shows that a traumatic herniation may develop even

in the absence of fracture subluxation. Alternatively, the impingement in our patient could have been present before the accident, with or without minor symptoms. In that case the symptoms may have been aggravated by the retroflexion injury. In accordance with previous findings (Hall et al. 1993), the value of MRI proved most useful here in distinguishing cervical disc herniation from other causes of spinal cord compression and contusion. We recommend that all patients suffering from neurological symptoms after a cervical trauma, who have no evidence of a fracture or luxation on routine radiological examinations, should also be examined by MRI in order to detect soft tissue injuries.

References

- Adams M A, Hutton W C. Prolapsed intervertebral disc. A hyperflexion injury. *Spine* 1982; 7: 184-91.
- Ando T, Mimatsu K. Traumatic lumbar disc herniation. A case report. *Spine* 1993; 18: 2355-7.
- Hall A J, Wagle V G, Raycroft J, Goldman R L, Butler A R. Magnetic resonance imaging in cervical spine trauma. *J Trauma* 1993; 34: 21-6.
- Harrington J F, Likavec M J, Smith A S. Disc herniation in cervical fracture subluxation. *Neurosurgery* 1991; 29: 374-9.

Spontaneous premature closure of the tibial tubercle—report on 2 boys with a new disorder?

Lars G Danielsson

Department of Orthopedics, Malmö University Hospital, S-205 02 Malmö, Sweden. Tel +46 40-33 10 00. Fax -33 62 00
Submitted 96-08-26. Accepted 96-12-23

Case 1

A boy, aged 13.5 years, had for 6 months noticed an increasing deformity of his left knee. He had no history of trauma or infection. The normal eminence of the tibial tubercle had disappeared and the knee had the appearance of a posterior cruciate ligament injury, but was stable with normal flexion and a hyperextension of 25°. There was a tibial shortening of 0.5 cm. The right knee was normal.

Radiographs showed fusion of the distal part of the tibial tubercle, which was atrophic. The rest of the proximal tibial physis was normal. The proximal tibial joint surface was angulated anteriorly 12°. MRI revealed closure of the distal part of the tibial tubercle,

whereas the rest of the proximal tibial physis remained open. The closure was located more laterally than medially. The anterior slope of the tibial joint surface was steeper centrally than medially and laterally, and was steeper laterally than medially. The right knee was normal.

3 months later, a slight atrophy of the right tibial tubercle was noticed. Radiographs and MRI at age 14 years and 2 months showed the same type of fusion as on the left side. The anterior slope, however, was only 2°.

The axis of the left tibia at age 14 years and 9 months was displaced posteriorly in relation to the femur and the slope of the tibial physis had increased.