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Cervical spondylolysis in a child: a case with hypermobility

Jean Legaye, MD[a,*], Mariana Horduna, MD[b]

[a]*Department of Orthopaedic Surgery, University Hospital Mont-Godinne, Therasse Street, B-5530 Yvoir, Belgium*
[b]*Department of Anaesthesia, University Hospital of Amiens, F 80 000 Amiens, France*

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Abstract

BACKGROUND CONTEXT: Cervical spondylolysis (CS) is a rare disorder involving a cleft in the articular mass, at the junction of the superior and inferior facet joints, and often a complex malformation of the posterior elements of the vertebra. The most commonly affected level is the sixth cervical vertebra. Most of the cases are adults. Its origin, mechanical or embryological, is controversial.

PURPOSE: To report the case in a young boy and to outline the imaging findings related to the causal mechanism.

STUDY DESIGN: A case report.

PATIENT SAMPLE: A 7-year-old boy with CS of the sixth cervical vertebra discovered after a minimal trauma.

METHODS: Radiological observation and literature review.

RESULTS: A forward listhesis in extension is observed despite an intact disc on magnetic resonance imaging, expressing the loads applied to the dysplastic vertebra before the mechanical failure of the vertebral structures occurs.

CONCLUSIONS: A mixed origin, both mechanical and congenital is suggested. It is proposed that the CS results from microimpacts because of the cervical spine biomechanics affecting a posterior arch prone to develop a cleft as a result of associated malformations.

Keywords: Cervical spine; Spondylolysis; Spondylolisthesis; Radiography

Introduction

The cervical spondylolysis (CS) is an uncommon disorder, which rarely affects children. Early diagnosis and appropriate treatment are important to avoid inappropriate therapy. CS is described as a cleft in the articular mass of a cervical vertebra, at the junction of the superior and inferior facet joints, considered as the cervical equivalent of the pars interarticularis in the lumbar spine. Complex malformations of the posterior elements of the vertebra are often associated to it. Its origin remains unknown and controversial. We report such a bilateral case of CS in a 7-year-old boy with a hypermobility, despite an intact disc. It suggests the likelihood of a combined origin, both mechanical and congenital, for this abnormality.

Case report

QM, a 7-year-old boy, was rushed to the emergency ward of our hospital for a stiff neck, after he had fallen during gymnastics at school. He did not have any known case history. There was no previous injury in the head or neck. His mother had a normal pregnancy and delivery. However, the clinical examination of the neck revealed a painful and limited movement. Still, there was no neurological symptom. After the cervical spine X-ray, the junior radiologist diagnosed a ''potentially unstable fracture of the sixth cervical vertebra'' (Fig. 1). The emergency physician required the intervention of a surgeon. The careful examination of the X-rays confirmed a bilateral spondylolysis on the sixth cervical vertebra (C6). It showed a bilateral defect between the superior and inferior facet joints of the articular pillars of C6, with forward listhesis Stage 1. A spina bifida and

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* Corresponding author. Department of Orthopaedic Surgery, University Hospital Mont-Godinne, Therasse Street, B-5530 Yvoir, Belgium. Tel.: (32) 81-42-3091; Fax: (32) 81-42-3080.

E-mail address: jean.legaye@orto.ucl.ac.be (J. Legaye)

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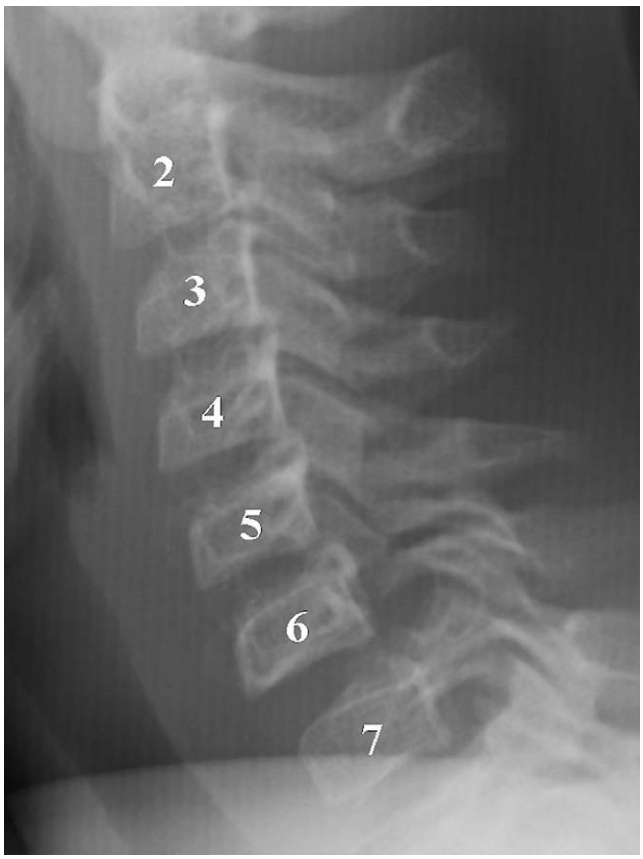

Fig. 1. Plain lateral X-rays of the cervical spine with cleft in the articular mass at the junction of the superior and inferior facet joints of the sixth cervical vertebra and antelisthesis Stage I.

a hypoplasia of the articular processes were the associated dysplastic changes of the posterior arch (Fig. 2). A computed tomography scan established the diagnosis. A magnetic resonance imaging (MRI) was performed to check the spinal cord and the cervical roots. It showed the absence of canal narrowing and a normal configuration of the discs, except a slight dehydration of C6–C7 disc, indicating the start of a degenerative evolution (Fig. 3). The dynamic X-rays revealed an increase in the forward listhesis of more than 3 mm in extension, which was reduced while in flexion (Fig. 4).

Given the absence of any neurological sign, conservative treatment was administered and the patient was immobilized for a few days with a collar. The evolution was uncomplicated and the young boy did not feel pain any more. Nevertheless, surgery will be recommended in the event of an intensification of the radiographic instability or the recurrence of neck pain with neurological symptoms.

The patient and his parents have been informed of the use of this case for publication purposes and gave their consent.

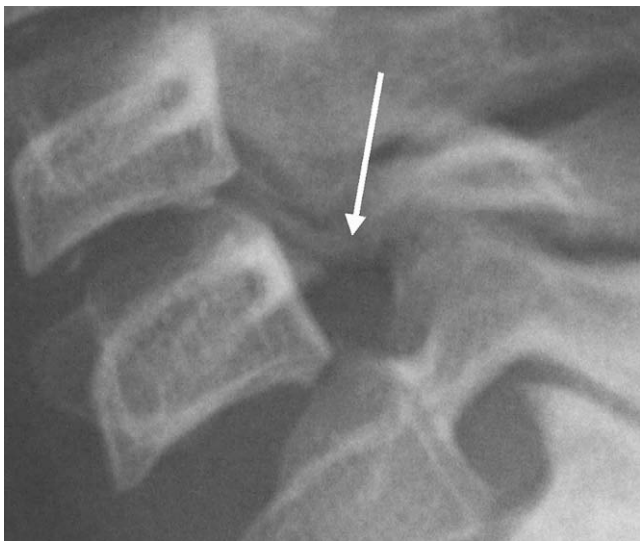

Fig. 2. Lateral X-rays of the sixth cervical vertebra showing the hypoplasia and the thin residual osseous bridge in the area of the lysis (arrow).

Discussion

Perlman and Hawes first described the CS in 1951 [1]. Only a hundred cases have been reported in literature, mainly in adults [2–12]. This kind of disorder is exceptional compared with the 5% of lumbar spondylolysis [7]. It is very well tolerated in the long term and usually diagnosed with adults [12]. An episode of minor trauma is only mentioned in one third of the cases [11,13]. The symptoms are markedly varied, ranging from a click during cervical movements to mild non-specific neck pain, neck stiffness, and radiculopathy. Only a quarter of the cases have been

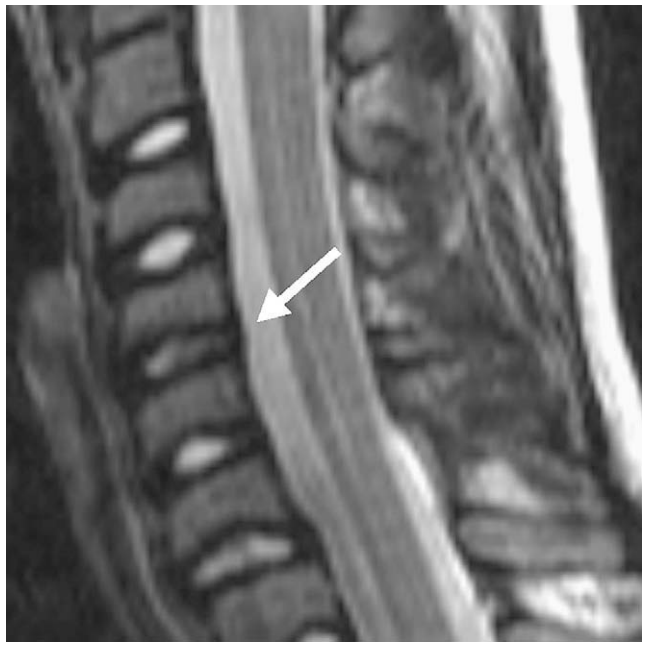

Fig. 3. T2-weighted magnetic resonance imaging of the cervical spine showing no cord compression and a C6–C7 disc with beginning degenerative discopathy.