

Letter to editor

Cervical spine anomalies: A contraindication to sports?

Dear Editor-in-chief,

Cervical spine anomalies are a common cause of fixed torticollis in young patients. In 50% of cases, they are part of the Klippel-Feil syndrome, in which the anomalies lead to the clinical triad of short neck, low posterior hairline, and limitation of neck range of motion. The cervical spine anomalies can also be isolated, as e.g. in athletes. These anomalies are often asymptomatic, but can be associated with a number of conditions that may be lethal for athletes. Screening for these conditions will only be performed if sportphysicians are aware of this problem. In athletes with fixed torticollis orthopaedic, cardiac, ear-nose-throat and nephrologic examinations are mandatory.

Radiographs should include AP and lateral views to illustrate segmentation or formation defects of the cervical spine (Figure 1.).



Figure 1. AP and lateral view of the cervical spine with partial fusion of C2-3-4 and hemivertebra between C6 and C7.

In some cases, CT or MRI is needed. In upper cervical abnormalities, radiographs can be inconclusive or associated basilar abnormalities can be present. MRI can also demonstrate myelopathy, nerve root compression or stenosis (Smoker, 2000). Orthopaedic or neurosurgical advice should be obtained in those cases.

Three patterns of congenital anomalies carry a particularly high risk for neurologic injury or sequelae, even after minor trauma: (1) a fusion of the occiput to C1, C1 to C2 and C2 to C3; (2) a long cervical fusion with an abnormal occipitocervical junction, and (3) two fused segments with a single open interspace. The mechanism is

most probably an altered mechanical force transfer that makes the adjacent nonfused segments excessively mobile (Nagib, 1984). Proper guidance is necessary for athletes with congenital torticollis. In the presence of spinal stenosis they are at an increased risk of sustaining a neurologic deficit after minor trauma, which constitutes an absolute contraindication to participation in contact activities.

Fixed torticollis is associated with congenital thoracic or lumbar scoliosis in up to 50% of cases. Radiographs of the thoracic or lumbar spine are necessary to decide on conservative or surgical treatment.

Besides musculoskeletal abnormalities, a number of other conditions may coexist with fixed torticollis (Hensinger, 1991; 2009; Kirmo et al., 2007).

Thirty % of patients may experience hearing problems, necessitating referral to an ear-nose-throat specialist.

The incidence of associated congenital cardiac disease ranges from 4% to 29%, which should be kept in mind when dealing with athletes. Various lesions can occur, but ventricular septal defects are the most common (Nagib, 1984). Cardiac assessment (ECG and ultrasound) should be performed to identify contraindications to sports participation.

Renal abnormalities may also be a component of fixed torticollis (35%). Agenesis is most common, but malrotation, horseshoe kidney, or ectopic kidney may be present (Moore, 1975). No data exist on the relationship between unilateral renal agenesis and sports.

In conclusion, congenital cervical abnormalities are often asymptomatic in athletes and discovered incidentally. However, sports physicians must be aware of potentially life-threatening associated anomalies and referral to an orthopaedic surgeon, cardiologist, nephrologist and ear-nose-throat specialist is mandatory. Cardiac assessment is necessary to identify contraindications to sports participation. A careful evaluation of the cervical anomaly is essential to guide the sports physician in the decision process regarding the safety of engaging in athletic activities.

Adelheid Steyaert

Physical and Rehabilitation Medicine, Sports Medicine Centre, Ghent University Hospital, Belgium

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Adelheid Steyaert

Physical and Rehabilitation Medicine, Sports Medicine
Centre, Ghent University Hospital, Belgium

E-mail: Adelheid.steyaert@ugent.be