History
10 year old boy with pain upon rotation of the head to the right for one month as well as decreased range of motion.

Diagnosis
Atlanto axial rotatory subluxation/fixation

Discussion
Atlantoaxial rotatory subluxation is a cause of torticollis and can occur either spontaneously, as a result of trauma, or in association with underlying congenital abnormalities. Atlantoaxial subluxation is a rotational disorder of the atlantoaxial joint that results in either limited rotation of the neck or, in rare cases, fixation.

The anterior facet of C1 becomes locked on the facet of C2, which causes impaired rotation at this joint, as is seen in this patients' images above.

To differentiate atlantoaxial rotatory fixation from rotatory subluxation or displacement without fixation, dynamic CT should be performed.

In dynamic CT, an initial study is obtained with the patient at rest, after which scanning is repeated with voluntary contralateral rotation of the patient's head. In fixation, C1 and C2 become a fixed unit and cannot rotate independently.

In this case, the patient did not retain independent movement of C1 relative to C2. Treatment is generally conservative.

The literature varies in terminology and at times atlantoaxial rotatory subluxation and fixation are used interchangeably, emphasizing the need for a good understanding of the disease and a descriptive radiology report. Additionally, the status of the atlantodental interval should be included.

Findings
Axial CT demonstrates asymmetry of the lateral atlantodental intervals (R>L) with a difference of 6-7 mm and anterior subluxation of the right C1 facet relative to C2. Coronal and sagittal images support these findings. Rotation of the head to the left demonstrates slightly reduced asymmetry in the lateral atlantodental intervals and no change in facet subluxation. Rotation to the right demonstrates accentuation of asymmetric LAD, and mild improvement in subluxation.

Normal atlantodental interval; note of remodelling of the posterior dens at the level of the transverse atlantal ligament(not shown).

Reference
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