

## Atlantoaxial Rotatory Subluxation: An Uncommon Cause of Torticollis in Pediatric Age

Fábio Sousa<sup>1\*</sup>, Dr. João Nóbrega<sup>2</sup>, Dr. Bárbara Teles<sup>1</sup>, Dr. Pedro Jordão<sup>3</sup>

<sup>1</sup>Resident of Orthopedics of Hospital Prof. Doutor Fernando Fonseca

<sup>2</sup>Resident of Orthopedics of Hospital do Espírito Santo de Évora

<sup>3</sup>Specialist of Hospital Dona Estefânia – Centro Hospitalar Lisboa Central

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\*Corresponding author: Fábio Sousa

### Abstract

### Case Report

Atlantoaxial rotatory subluxation is a rare etiology of torticollis in the pediatric age that is frequently misdiagnosed or late-diagnosed. Subluxation maintained after 3 to 4 weeks causes bony erosion of the facets and ligament changes that make its correction complex and difficult by non-surgical methods, worsening the prognosis, making it paramount a correct and timely diagnosis of this rare entity. We present a case of a late-diagnosed atlantoaxial rotatory subluxation that was successfully treated by non-surgical methods.

**Keywords:** torticollis, atlantoaxial rotatory subluxation, cervical, spine, pediatric.

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## INTRODUCTION

Torticollis is a clinical entity that is characterized by a restriction of mobility, often painful, and the adoption of an anomalous and asymmetric position of the neck and head. Patients often present a tilt associated with flexion or extension of the neck and a rotational displacement of the head.

This entity is frequent in the pediatric age and has a wide spectrum of etiologies, some of which are severe or life-threatening and must be readily recognized in the emergency setting [1].

Atlantoaxial rotatory subluxation (AARS) is a rare etiology of torticollis. Because of its rarity and similar manifestation to other causes of torticollis, namely spasmodic torticollis that is much more common, AARS is often incorrectly or late-diagnosed conditioning the treatment [1, 2].

## CASE REPORT

We present a case of an 8-year-old child, with no relevant previous medical history, that was diagnosed 4 weeks earlier with spasmodic torticollis. He presented initially to the emergency department (ER) with a painful and restricted right tilt of the neck and a rotational head position with the chin directed to the opposite side, to the left, after a minor trauma while

playing. He didn't have fever, neurological deficits, or other symptoms.

With that diagnosis, he was treated with conservative measures, namely painkillers, muscle relaxants, rest, and a soft cervical collar.

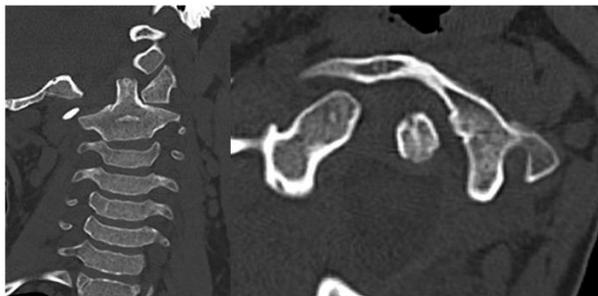
During 4 weeks the patient maintained the complaints without any improvement. He returned to the ER. On a new evaluation, the child maintained the painful asymmetrical and rigid position of the head and neck, without any neurological deficits. On this second evaluation, cervical spine radiography, AP, lateral and odontoid views, and a CT scan were ordered. Imaging tests revealed a Fielding and Hawkins type II AARS [3] (fig.1, 2, 3). To exclude a possible nontraumatic cause, such as inflammatory or infectious disease, a complete blood count with sedimentation rate, and C reactive protein level were performed that revealed no alterations.

Without resolution of the clinical picture with conservative measures, it was decided to perform a progressive gravitational cervical traction, 1kg/day, with a cephalic halo. Adjunctive analgesics and muscle relaxants were used and routine neurologic evaluations were made.

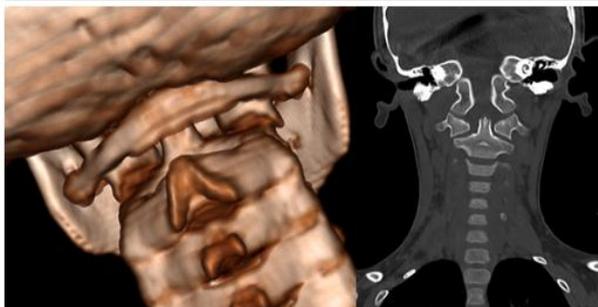
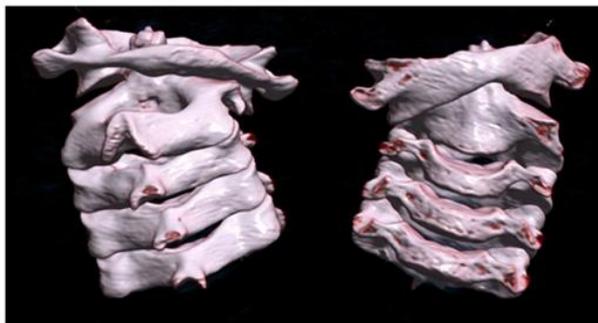
These measures proved to be effective, with the reduction of the subluxation after 5 days of traction with 3Kg (the traction was only initiated 2 days after the colocation of the cephalic halo). Cervical traction was maintained in an outpatient clinic with a halovest-type orthosis for 3 months, with the resolution of the clinical picture (fig.4) with no sequelae.



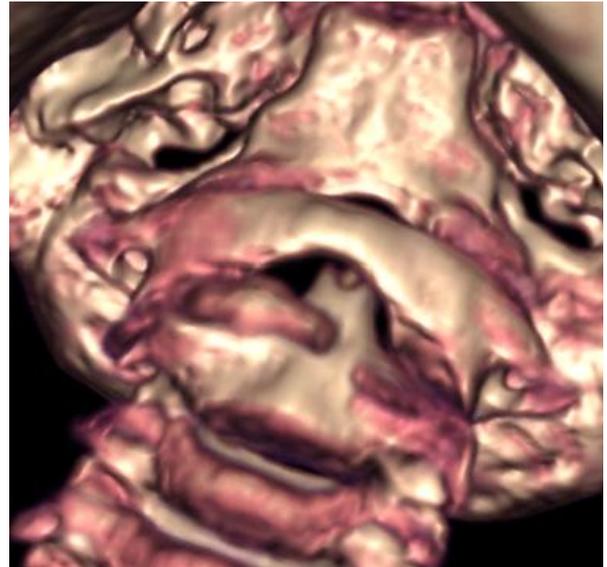
**Fig-1: Radiographic exams four weeks after the onset of symptoms: odontoid view and lateral cervical spine**



**Fig-2: CT scan four weeks after the onset of symptoms: coronal and axial cuts**



**Fig-3: CT scan four weeks after the onset of symptoms: three dimensional reconstruction showing subluxation**



**Fig-4: Control CT scan after reduction of the subluxation**

## DISCUSSION

The onset of AARS has been attributed to various pathologies that fall into the broad categories of trauma, infection or inflammation in the head and neck region.

AARS results from subluxation of the articular facets between the 1st and 2nd cervical vertebrae. The atlantoaxial joint is responsible for 60% of the rotational amplitude of the cervical spine. In children under the age of 8, it has a shallow conformation. This conformation associated with ligament laxity, characteristic of this age group, a proportionally larger head, and a lower muscle tone, allow the subluxation of the facets after a sudden movement or trauma [3].

The duration of symptoms before presentation is the most significant predictor of the type of treatment that will be required. Subluxation maintained after 3 to 4 weeks causes bony erosion of the facets and ligament changes that make its correction complex and difficult by non-surgical methods [4].

## CONCLUSION

We present a case of post traumatic AARS, a rare cause of torticollis in pediatric age that is frequently misdiagnosed or late-diagnosed.

Torticollis is a frequent cause of ER visits in the pediatric age. Because of its rarity and similar clinical manifestations to other causes of torticollis in this age, AARS is often incorrectly or late-diagnosed, conditioning the treatment.

A late diagnosis worsens the prognosis with the increasing need for surgical treatment. If diagnosed properly and timely, in acute cases nonsurgical management can be employed, beginning with the use

of a cervical collar and analgesics with very good results, evicting the need for surgical intervention.

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