

Atloldo-Axoid Dislocation in Rheumatoid Arthritis

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Abstract

Case Report

Rheumatoid arthritis (RA) is the most common inflammatory rheumatism, with a prevalence of up to one percent worldwide. Indeed, the classical presentation of the disease is generally a bilateral and symmetrical polyarticular involvement affecting small joints of the hand as well as the forefoot. Spinal involvement could be observed in RA, particularly after an average of 10 years of disease duration. It is a common event with a prevalence of 14–88%. This involvement is the third most frequent after that of hands and feet; however it is a very unusual form of RA presentation. Atlantoaxial subluxations dominates damage of the upper cervical spine, mainly related to the C1–C2 pannus and the rupture of the transverse ligament. Silent forms are common, but the clinical resentation is very polymorphic and can range from neck pain neglected by the patient to spinal cord compression.

Keywords: Arthritis rheumatoid - Atlantoaxial dislocation - Case study - Imaging.

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INTRODUCTION

Rheumatoid arthritis (RA) is a predominantly synovial inflammatory disease of connective tissue. There is a tropism for the cervical spine and axial skeleton.

Atloldo-axoid involvement is most often clinically latent, and is discovered radiologically. The major risk of this clinical entity is spinal cord compression, which can be fatal.

Medical imaging, in particular cervical MRI, enables early diagnosis of asymptomatic lesions, but above all a precise lesion assessment, specifying the degree of impact on the spinal cord. This case study illustrates the role of imaging in this pathology.

OBSERVATION

43-year-old female patient, followed for seropositive RA under treatment, presenting with upper limb paresthasias and exquisite pain on head rotation.

Clinical suspicion of atlantoaxial dislocation prompted a lateral cervical X-ray showing a 09 mm diastasis of the posterior arch of C1 in relation to the odontoid process (Fig 1). In view of the clinical and radiological findings, an MRI was indicated to look for signs of spinal cord compression. The MRI protocol included T2 sequences in all three planes, T1 sagittal sequences and acquisitions in all three planes of space after injection of Gadolinium (Fig 2).

It showed straightness of the cervical root with anterior dislocation of the atlantoaxial joint by a synovial pannus (yellow arrow) pushing the anterior arch of C1 forward, taking contrast peripherally. There was no intramedullary T2 hypersignal suggesting medullary distress or erosion of the odontoid point. A diagnosis of anterior dislocation of the atlantoaxial joint was made, with no evidence of neural axis involvement.



Figure 1: Standard radiograph in profile (a) with magnification (b) Loss of cervical lordosis with alignment of posterior and anterior walls. Distance between posterior arch of C1 and odontoid process= 09 mm (purple line). Soft tissue hernia opposite C1 (blue line)

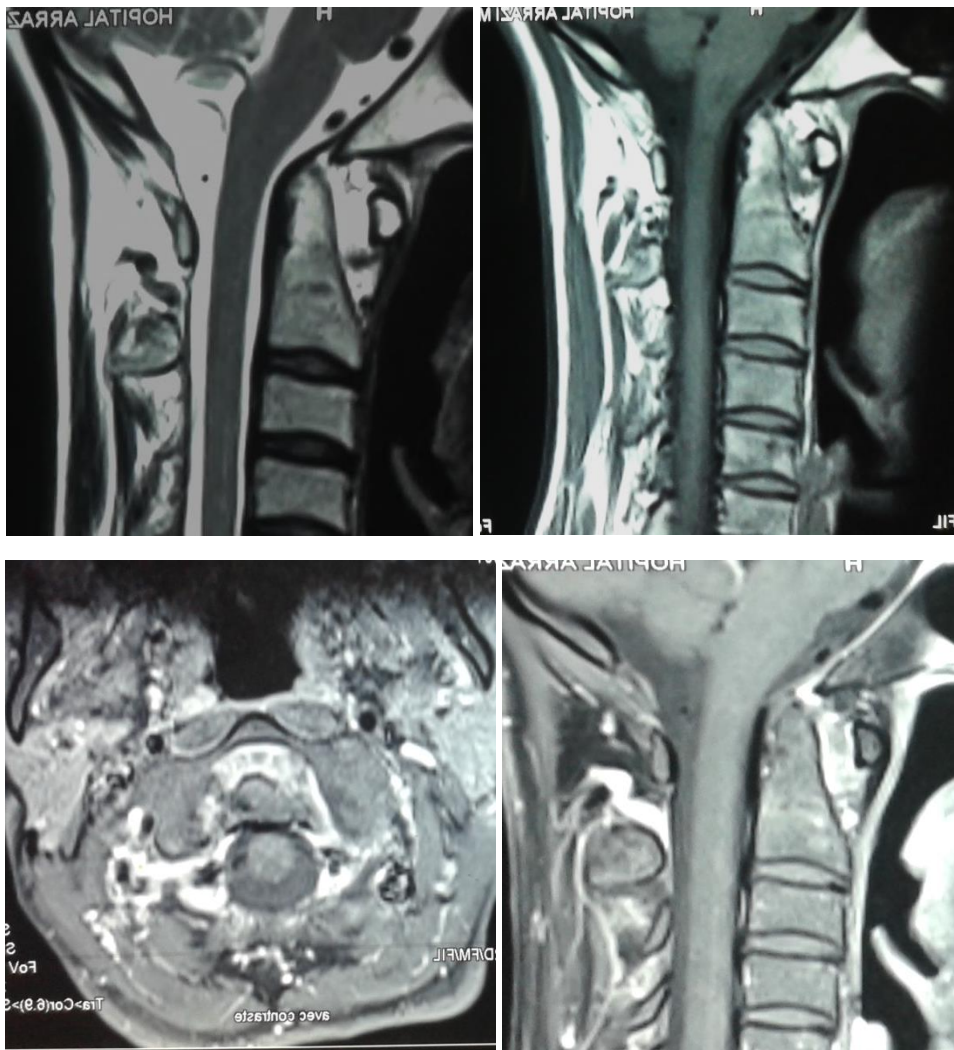


Figure 2: MRI in sagittal T2-weighted (a), T1-weighted (b) and gadolinium-injected sagittal (c) and axial (d) sections

Anterior dislocation of the atlanto-axial joint with synovial pannus (yellow arrow) pushing the anterior arch of C1 forward, taking contrast peripherally.

No signs of medullary distress. Respect for the cortex of the odontoid process. Straightness of spine with respect for spinal canal measurements.

DISCUSSION

RA is a predominantly synovial inflammatory connective tissue disease of multifactorial origin. Joint involvement is characterized by inflammation and pseudotumor cell proliferation in synovial tissue. There is a tropism for the cervical spine, due to the presence of numerous synovial joints [1].

Synovitis causes ligament laxity and bone destruction, as well as instability and subluxation, which are aggravated by mechanical stress [2].

Atlanto-axial dislocation is frequent, occurring in 80% of cases within the first 2 years of evolution [8]. It is all the more frequent in men and in seropositive and cortico-resistant forms [4].

It is most often clinically latent, discovered radiologically (50%). Clinical signs include neck pain and limitation of rotational range of motion [5]. They may also be signs associated with bulbous-medullary compression [6].

Imaging, in particular CT and MRI scans, can be used to establish the diagnosis, quantify the degree of severity and identify the various cervical spine lesions [5].

Standard X-rays are systematically taken from the front and in profile. It allows assessment of the distance between the posterior arch of C1 and the odontoid process, and evaluation of spinal statics. Dynamic profile views in flexion and extension are useful, but given the neurological risk, they must be performed with caution.

Cross-sectional imaging, in particular CT and MRI scans, can be used to identify types of subluxation and their impact on the neural axis.

Analysis of bony structures is best performed with CT scans, particularly of the odontoid process, in search of signs of erosion [8]. The study must be carried out in all three planes, with the sagittal plane used to detect anterior and vertical subluxations. The frontal plane is useful for lateral subluxations.

MRI is the examination of choice for diagnosis, identification of the type of dislocation, assessment of the thickness of the synovial pannus, and above all, analysis of the impact on the neural axis, including signs of suffering and the degree of compression on the bulbomedullary junction.

It includes sagittal sequences in T1 and T2, coronal sequences and T1 sequences after injection of gadolinium chelates in all three planes. Analysis of synovial pannus contrast uptake is assessed on 15-minute post-injection sequences [3].

The thickness of this pannus needs to be assessed, so when it exceeds 10 mm, spinal cord compression occurs in the neutral position.

There are several types of atlanto-axial dislocation [9]. Anterior dislocation is the most common (75%), with a distance of more than 3mm between the anterior arch of C1 and the odontoid. A displacement of more than 9mm carries a neurological risk.

Basilar impression, which can be fatal [10]. MRI can be used to assess the extent of bulbous-medullary compression.

Lateral dislocation (20%) and posterior dislocation (7%) generally do not result in spinal cord compression.

CONCLUSION

Atlanto-axial dislocation is a potentially serious clinical entity with neurological complications. It may be asymptomatic, hence the need for systematic investigation in RA.

Cervical MRI provides a complete and exhaustive assessment of the lesions, and can be used to diagnose lesions requiring urgent surgical treatment for spinal cord decompression.

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