



Case Report: Atlantoaxial Subluxation

Olgu Sunumu: Atlantoaksiyel Subluksasyon

Yağız AKYÜZ^{1*}, Caner ÇİÇEK², Ali Rıza GEZİCİ¹

¹Department of Neurosurgery, Abant İzzet Baysal University, Bolu, Türkiye

²Department of Neurosurgery, Zonguldak Atatürk State Hospital, Zonguldak, Türkiye

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Abstract

Rotational atlantoaxial subluxations are more common in pediatrics. It is associated with post-traumatic, rheumatoid arthritis and respiratory tract infection (Grisel syndrome). Cock-Robin head position is frequently seen. Neck pain and neck stiffness are other common presenting symptoms. In this case report, we aimed to present the clinical symptoms, diagnosis, imaging and treatment of rotational attoaxial subluxation in a pediatric age group patient who came to the emergency department after trauma with cock-robin head posture.

Keywords: Atlantoaxial Subluxation, Pediatrics, Sports Injury.

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Öz

Rotasyonel atlantoaksiyel subluksasyonlar pediatrik hastalarda daha fazla görülür. Travma sonrası, romatoid artrit ve solunum yolu enfeksiyonu (Grisel sendromu) ile ilişkilidir. Sıklıkla Cock-Robin baş pozisyonu görülür. Boyun ağrısı, ense sertliği, diğer sık başvuru semptomlarıdır. Bu vaka sunumuzda acil servise travma sonrası gelen pediatrik yaş grubunda Cock-Robin baş duruşu ile gelen hastada rotasyonel atlantoaksiyel subluksasyonun klinik semptom, tanı, görüntüleme ve tedavisini sunmayı amaçladık.

Anahtar Kelimeler: Atlantoaksiyel Subluksasyon, Pediatri, Spor Yaralanması.

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*Sorumlu Yazar (Corresponding Author): Yağız Akyüz, e-mail: akyuzctf@gmail.com



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Introduction

Rotational atlantoaxial subluxations are more common in pediatrics. It is associated with post-traumatic (the incidence of cervical spinal trauma varies between 1% and 4% of all pediatric traumas) (1), rheumatoid arthritis and respiratory tract infection (Grisel syndrome). Cock-Robin head position (57%) (20 degrees lateral flexion, 20 degrees rotation, 10 degrees flexion) is frequently seen. Neck pain (67%) and neck stiffness (53%) are other common presenting symptoms (2). Rotational atlantoaxial subluxations are the forward slippage of the C1 vertebra over the C2 vertebra. Incidence increases in syndromes with cervical ligament laxity. It tends to be more common after trauma, especially in pediatric patients. The most common trauma mechanisms are fall (36%), motor vehicle accident (11%), blunt trauma (11%) and sports injury (9%). Non-traumatic etiology includes syndromes that cause ligament laxity, such as Grisel syndrome, rheumatoid arthritis, and Down syndrome. The most common presenting symptoms are torticollis, neck stiffness, neck joint movement limitation, neck pain, and sternocleidomastoid muscle spasm. Depending on the severity of subluxation, transverse ligament damage may accompany it. Facet joint may be dislocated bilaterally or unilaterally. Classified by Field&Hawkins classification. Type I: rotation without anterior shift; The transverse ligament is intact and dense axis serves as a pivot point. Type II: There is rotation and anterior displacement between 3-5 mm, the transverse ligament is injured and the facet surface serves as the pivot point. Type III: Both lateral atlantoaxial joints are subluxed anteriorly, there is an anterior shift greater than 5 mm, and the transverse ligament and facet capsules are injured. Type IV: there is posterior subluxation of both lateral atlantoaxial joints. The treatment plan varies according to the field hawking classification (3). Accordingly, type I traumas can be treated with cervical spine immobilization after reduction. In type II lesions, if reduction is achieved within 14 days from luxation, immobilization with halo is recommended in children, but if the diagnosis is delayed more than 14 days, posterior atlantoaxial or occipitoatlantoaxial arthrodesis is recommended. Type III and IV lesions are all treated with posterior arthrodesis after reduction.

Case

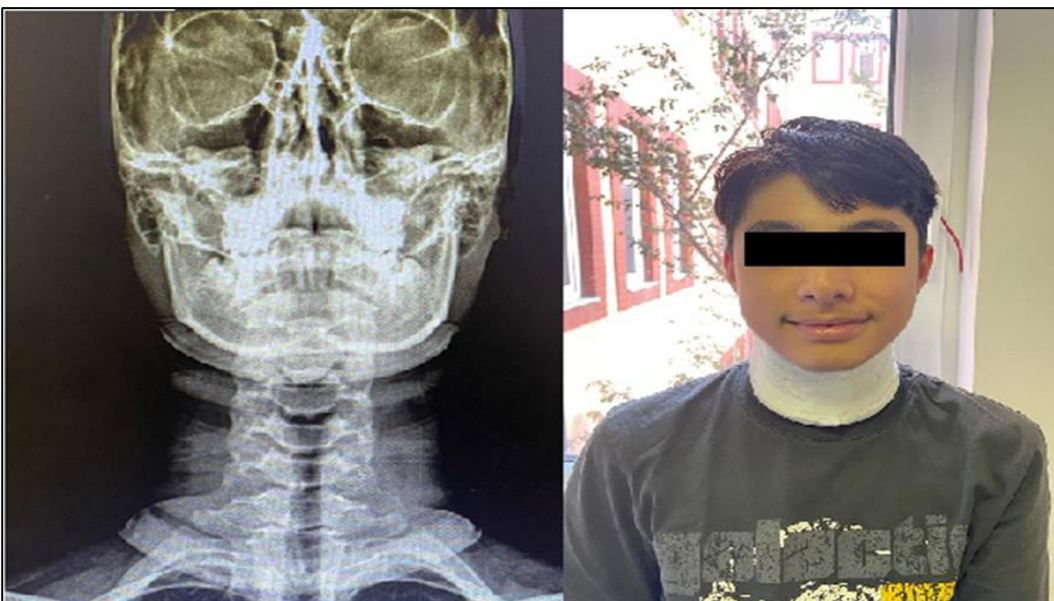
A 13-year-old male patient suffered rotational trauma after a fall while playing volleyball at school. He quit sports after he developed a stiff neck complaint that developed 1 hour after the trauma. Oral myorelaxant treatment is applied at home. Patients complaints persists at home for 2 days, then applied to the emergency service when he developed pain in the left arm. Patient has no history of upper respiratory tract infection, no fever, no known history of rheumatological disease. There is a complaint of pain in the left arm while standing, which is relieved by lying down on emergency admission. In the physical examination, it was observed that the neck was in right 30 degrees of lateral flexion, 20 degrees of flexion and 20 degrees of left rotation (cock-robin posture). No significant neuromotor deficit was found on neurological examination. On Computed Tomography Scan images there was dense asymmetry (deviation to the left) and the anterior atlantodentil distance was shorter than 3 mm. He was admitted to the service with the initial diagnosis of Field & Hawkins type 1 rotational atlantoaxial subluxation. NSAIDs and muscle relaxant medications were ordered for the patient, who was monitored in traction with rigid collar. On cervical MRI images, it was seen that the transverse ligament was intact (Picture 1). During the 3-day service follow-up and outpatient clinic follow-ups, it was seen that the patient's neck deformity and radiculopathic pain improved and the neck joint range of motion was within normal limits. It was observed that there was no recurrence in the outpatient clinic follow-ups (Picture 2).

Discussion

Patients diagnosed with rotational atlantoaxial subluxation without receiving treatment, deformity may be permanent. Diagnosis can be made with plain radiographs or with computed tomography images MRI imaging is required specifically to evaluate the transverse ligament (4). Rotasyonal atlantoaksiyel subluksasyon tedavi algoritmalarında konsensus bulunmamaktadır. There is no consensus on rotational atlantoaxial subluxation treatment. It becomes difficult to create a treatment algorithm because there is no strong correlation between the Fielding & Hawkings classification and the severity of trauma, the time to admission to the clinic after trauma affects the prognosis, and the severity and etiology of the trauma that creates the pathology directs the prognosis Rotational atlantoaxial subluxation, whose pathophysiology is not fully understood, is divided into 4 subtypes by the Fielding Hawkings classification Accordingly, radiological



Picture 1. Displaying transverse ligament



Picture 2. Outpatient clinic follow-ups

studies show that the transverse ligament is intact in type 1 lesions It has been observed that fielding hawkings type 1 patients respond to conservative treatment with NSAID, myorelaxant treatment, soft collar, but especially in the early period (diagnosed and reduced within 1 month), rigid collar and occipitontal traction are treatment options. Field&Hawkings type 3-4 patients require arthrodesis surgery. In patients with late diagnosis or recurrent subluxations, arthrodesis surgery is planned if there is no response to conservative treatment. However, apart from the approaches based on this radiological classification, there are also stepwise treatment algorithms that prioritize clinical features According to this treatment algorithm, patients are followed under a neck collar and analgesic medication for the first 3 days until their complaints disappear. If there is no regression in symptoms, patients are followed with closed reduction for 3 days and rigid collar for 4 weeks. In case of recurrent subluxation, it is recommended to follow up with halo traction for 6 weeks. For patients who persisted subluxation, it is recommended to be treated with open reduction and posterior stabilization surgery. Additionally, there are clinical algorithms based on patients diagnose time period with rotational atlantoaxial subluxation. According to this algorithm, it is recommended to follow up with nsaid and collar for acute-onset patients diagnosed within 2 weeks. If there is no response to the treatment for 2 weeks or if the diagnosis is already 2 weeks late, NSAID, Halter traction and benzodiazepine treatment is planned. If there is no response to treatment for 2 weeks, skeletal traction, NSAID and benzodiazepine treatment are recommended. If there is no response to treatment for another 2 weeks, surgical treatment (posterior arthrodesis) is planned. (5) In the case we presented, it was observed that the symptoms of our patient, who was diagnosed early and diagnosed with Fielding Hawkings classification type 1, improved only after 3 days of follow-up with myorelaxant medication and rigid collar. Cure was achieved with conservative treatment without the need for occipitontal traction or halo traction, and he was discharged with rigid collar. During outpatient clinic follow-up, no recurrence was observed, he had no symptoms, and his neck joint range of motion was within the physiological limit.

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