



Letter to Editor

Severe C2-C3 dislocation with significant displacement, resembling subtotal decapitation: A case letter

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Trauma is one of the main causes of mortality and morbidity in childhood.^{1,2} Spinal traumas are less common compared to adults.¹ Spinal traumas are mostly associated with lumbar vertebrae, but cervical injuries are observed more frequently in young children (<8 years).^{2,3} In contrast to adults, upper cervical injuries (such as C2-C3) are observed more frequently.^{1,4} Although fractures are rare in this age group due to the flexible structure of the spine, cervical cord injuries are a significant risk.³ While vehicle collisions and falls from height are among the most common causes of such injuries, fall mechanisms are more prominent in younger age groups.¹⁻⁴ Although a significant portion of cervical injuries are treated conservatively, surgical intervention may be required in some cases. Conditions such as spinal cord lesions without radiologic abnormalities (SCIWORA) may cause diagnostic difficulties, especially in young children.⁴ In such cases, MRI with advanced imaging methods is an important diagnostic tool. Although neurologic deficits are rare, concomitant head trauma may cause serious complications and increase the mortality rate.²⁻⁴ Therefore, careful evaluation of pediatric trauma patients in terms of cervical spine injuries and adoption of appropriate diagnostic-treatment approaches are of vital importance.

At around 17:00, an 11-month-old boy was brought to the emergency department by his family. It is learned that the child sitting in the back seat was thrown out and hit the windshield as a result of sudden braking of the traveling vehicle. It was learned that the child was traveling with his mother in the back seat without any protection (seat belt, baby seat, etc.). It was understood that the patient had cardiopulmonary arrest on first arrival. He was taken to the resuscitation room and placed on the trauma board, cervical collars were placed, and chest compression and ventilation with a balloon valve mask were started. When monitored, it was observed that the first rhythm was asystole. Endotracheal intubation was performed without interruption of chest compressions and intravascular access was provided. Focused Assessment with Sonography for Trauma revealed no significant internal bleeding. Spontaneous circulation was restored after four minutes of intervention. On secondary examination, a 10 cm incision was observed in the frontoparietal midline on the scalp, no external bleeding was observed, other body parts were morphologically natural and no obvious signs of trauma were observed. Wound care was provided and radiologic examination was performed. Cranial computed tomography showed subdural hematoma in the occipital region, diffuse hemorrhage and air images around the fourth ventricle and brain stem. Cervical examination showed c2-c3 luxation, almost resembling decapitation

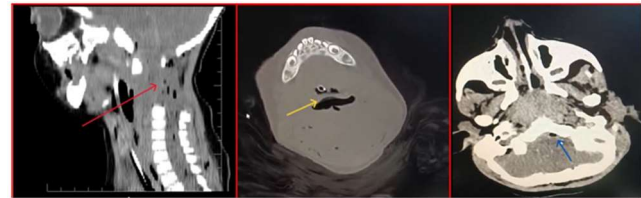
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(Figure 1). Cardiopulmonary arrest developed again after these observations. Advanced cardiac life support was initiated. There was no response to the intervention and the patient died.

The etiology of trauma-related cervical injuries in children varies depending on age, physical development and trauma mechanism. In younger age groups (0-9 years), the most common causes of injury include falls from height and vehicle collisions, while sports injuries and traffic accidents become more prominent in older children.^{1,3} Falls from height affect the upper segments of the cervical spine, especially in children between 2 and 8 years of age, because the center of motion is at the C2-C3 level in this age group.²⁻⁴ Vehicular traffic accidents may lead to severe cervical trauma due to lack of seat belt use or inappropriate seat position.⁴ Vehicle collision as a pedestrian usually leads to head and cervical spine injuries. In older age groups, traumas occurring during sports activities and contact sports usually cause injuries in the lower cervical region (C5-C6).^{3,4} However, rare mechanisms such as penetrating injuries may also be encountered, especially in preschool children.⁴ Furthermore, if the child is young and neurologic examination is limited, cervical spine injuries may be difficult to detect, which requires detailed radiologic examination. It is also important to consider concomitant injuries when evaluating etiologic factors; head traumas frequently coexist with cervical injuries and may adversely affect the prognosis. In this context, a good understanding of the mechanisms of trauma in all age groups is critical for both early diagnosis and optimization of treatment processes.

In conclusion, upper cervical spine injuries in pediatric trauma are rare but critical clinical conditions that can lead to serious morbidity and mortality, especially in younger age groups. Detailed physical examination, neurological evaluation and radiological imaging are critical in the early period in pediatric trauma patients. In this case, the lack of seat belt and appropriate child safety seat use appears to be a significant factor leading to severe cervical trauma and head injuries. The widespread use of protective equipment and raising awareness of parents, especially in injuries related to vehicular traffic accidents, can play an important role in preventing such fatal cases.



Red and yellow arrows; A wide area of C2-C3 dislocation. Blue arrow; Image of air inside the cranium.

Figure 1: Cranial and cervical tomography images of the patient

1. Consent

Written informed consent was obtained from the parents for publication.

2. Authors' Contribution

All authors contributed to the completion of this work. The final manuscript was read and approved by all authors.

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4. Conflict of Interest

None.

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