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Case Report

A Rare Case of Cervical Spinal Post-Traumatic Anterior Subluxation in A Pediatric Patient: The First Documented Case Report in Africa and Literature Review

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Abstract

Cervical spine injuries in children can be so devastating that they can lead to life-altering neurologic sequelae or death. Cervical spine injury patterns in pediatric patients however, constitute less than 1% of pediatric trauma patients. The case that is presented is an extremely rare case of post-traumatic C2-C3anterior subluxation in a 4-year-old-boy. To the best of our knowledge; this is the first documented case of pediatric C2-C3 anterior subluxation in Africa.

Keywords: Traumatic Anterior; Pediatric Patient

Introduction

The pediatric cervical spine has unique anatomical features that predispose children to increased upper cervical spinal and ligamentous injuries [1-3].

In spite of this predisposition, cervical spine injuries in children are rare constituting less than 1% of pediatric trauma patients and to date, only 1 similar report describing traumatic C2-C3 anterior subluxation has been documented [4,5].

The following case report describes a rare case of post-traumatic C2-C3 anterior subluxation in a pediatric patient.

Case Report

A previously healthy 4-year-old boy presented to the outpatient department with history of neck pain of sudden onset and associated restricted neck movement. There was history of trauma to the back of the neck the evening before. There was however no history of ear, nose, throat and upper respiratory tract infection or neurological abnormality.

Examination findings revealed a young boy who held his neck flexed and was unable to rotate his head past the midline. His head was in a classic "cock robin" position with a left lateral tilt. Right side, downward and upward rotations were not possible. In the supine position, he was in no pain and could rotate his head. Neck examination revealed soft tissue swelling and mild tenderness on palpation of the spinous processes in the C2-C3 region.

Systemic examination including neurological examination was essentially normal.

Laboratory examination for infection and the coagulation profile were unremarkable.

An initial diagnosis of neck spasms by the pediatrician was made. The patient was given an oral and topical non-steroidal anti-inflammatory (NSAID) gel.

Following two days of no improvement, the patient returned to the out-patient department for review where a cervical spinal x-ray request form was provided to rule out cervical spinal injury.

Anterio-posterior and lateral plain cervical spine radiographs and radiological review were done the next day. The cervical spine radiographs showed significant loss of the cervical spine lordosis with anterior displacement of C2 relative to C3 and mild narrowing of the disc space C2-C3 which were suggestive of C2-C3 anterior subluxation.

Attempts at doing an open mouth view x-ray of the cervical spine were unsuccessful as the patient was irritable and restless in spite of having provided analgesia prior to the attempt.

Computed tomography (CT) scans were unable to be conducted due to financial constraints. Spinal orthopedic surgical review done later that day however, confirmed that the patient had post-traumatic C2-C3 anterior subluxation with acute traumatic torticollis of the right sternocleidomastoid muscle.

The patient was managed conservatively with an oral NSAID and two weeks of intensive physiotherapy that entailed massage, ultrasound-vibration, stretching exercises, bed rest and manual traction.

Muscle spasms resolved, and normal tonus of the right sternocleidomastoid muscle was achieved. The patient was followed up closely for 1 month. No limitations in head rotation, pain or neurological abnormality were observed at the end of the follow-up period. Flexion and extension cervical radiography showed successful resolution of the C2-C3 subluxation at the 1 month follow-up examination.

Discussion

This is the first documented observation of post-traumatic anterior C2-C3 subluxation in a previously healthy child in Uganda and the first on the continent of Africa.

Traumatic C2-C3 injuries in the pediatric population are so rare that to date there have been only two other reports describing post-traumatic C2-C3 subluxation in pediatric patients: one describing traumatic C2-C3 anterior subluxation in a 2-year-old girl and the second describing C2-C3 posterior subluxation in an 8-year-old boy from Ireland and South Africa respectively [5,6].

Although algorithms for cervical spine clearance in children are difficult to institute at trauma centers due to the incapability of young children to communicate effectively, recent studies have shown that non-operative management is still the treatment of choice for stable traumatic subluxation [6-9].

Clinical resolution may require an average of 4-6 weeks of conservative treatment which may include a combination of bed rest, muscle relaxants, physiotherapy, NSAIDs, oral corticosteroids and immobilization (soft cervical collar and cervical halter traction) [10]. In this particular case, clinical resolution was observed after 2 weeks. Early diagnosis of pediatric cervical subluxation was fundamental in obtaining clinical recovery in this patient.

Lateral and anteroposterior x-rays of the cervical spine, the primary investigative imaging modality for diagnosis of pediatric cervical spine subluxation, were employed for this patient [11].

Although CT imaging in this patient was not done in this patient due to financial constraints, CT imaging is recommended in pediatrics to rule out possible fractures missed on plain films that may result into potentially devastating neurological complications [11-13].

Because flexion and extension are greatest in children less than 10 years about C2 and C3; this finding, pseudo subluxation is present in one-third of all lateral cervical spine films [14].

Against this backdrop, it is dangerous to assume pseudo subluxation as this could result in delays in establishing true subluxation. It is therefore prudent that cervical spine immobilization is provided in all pediatrics less than 10 years with suspected cervical spine injury until the true diagnosis has been ascertained.

Conclusion

This case underscores the necessity of managing all cervical spine injuries in children less than 10 years as true subluxation till proven otherwise. Early diagnosis and treatment are paramount in ensuring early clinical resolution.

Ethics Approval and Consent to Participate

Ethics approval is not applicable.

Author's Contributions

The author diagnosed the patient, drafted, edited and approved the final manuscript.

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Conflict of Interest

None declared.

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