Journal Of Contemporary Medicine 2016;6(2): 122-125
DOI: 10.16899/ctd.15027

CASE REPORT
OLGU SUNUMU

Erişkinde radyografik anormalliğin eşlik etmediği spinal kord hasarı (SCIWORA)

Spinal cord injury without radiographic abnormality (SCIWORA) in an adult SCIWORA in an adult

Vural Hamzaoğlu[1], Tevfik Yılmaz[2], Ulaş Çıkla[3], Hakan Özalp[3]

1 Oregon Health and Science Universitesi, Beyin ve Sinir Cerrahisi Bölümü
2 Wisconsin Üniversitesi, Nörosirurji Bölümü
3 Ankara Özel Acıbadem Hastanesi, Nöroşirurji Bölümü

ABSTRACT

Spinal Cord Injury Without Radiographic Abnormality defines the clinical symptoms of traumatic myelopathy with no radiographic or computed tomographic features of spinal fracture or instability. This condition mostly affects the children below 8-years old and a rare phenomenon in adults. We aimed to report an adult patient with spinal cord injury without radiographic abnormality after a heavy fall of truck holder to his head and neck regions.

Key words: SCIWORA, Spinal cord injury, traumatic myelopathy

ÖZET

Radyografik anormalliğin eşlik etmediği spinal kord hasarı; radyografik olarak veya bilgisayarlı tomografide omurga kırığı ya da instabilitesinin saptanmadığı travmatik myelopatiyi tarif etmektedir. Bu durum çoğunlukla 8 yaş altı çocukları etkilemekte, erişkinde ise nadiren görülmektedir. Biz de baş ve boyun bölgesine kamyon kasası çarpması sonrası radyografik anormalliğin eşlik etmediği spinal kord hasarı bulguları gösteren erişkin hastanın sunumunu amaçladık.

Anahtar kelimeler: SCIWORA, spinal kord hasarı, travmatik myelopati

Corresponding Author: Vural Hamzaoğlu
Address: Oregon Health and Science Universitesi, Beyin ve Sinir Cerrahisi Bölümü
E-mail: vuralhamzaoglu@gmail.com

Başvuru Tarihi/Received: 04-05-2015
Kabul Tarihi/Accepted: 04-06-2015

INTRODUCTION

Spinal Cord Injury Without Radiographic Abnormality (SCIWORA) was described by Pang and Wilberger in 1982, which defines the clinical symptoms of traumatic myelopathy with no radiographic or computed tomographic features of spinal fracture or instability. (1) The first case of SCIWORA was reported by Burke in 1974. (2)

This condition mostly affects the children below 8-years old because of the elasticity of vertebral ligaments and relatively large head size. (3-5)

SCIWORA in adults is a rare phenomenon. The causes of adult SCIWORA are hyperextension injury to the spine and preexisting cervical spondylosis, which predisposes to cord injury. (6)

If there is no spinal fracture by x-ray and computed tomography (CT) scan in patients with blunt trauma and neurologic deficits, SCIWORA should be suspected and magnetic resonance imaging (MRI) should be performed because MRI is the best method to evaluate the spinal cord.

We aimed to report an adult case with SCIWORA after a heavy fall of truck holder to his head and neck regions.

CASE REPORT

A 29- year old male was admitted with quadriparesis of upper extremities after a heavy fall of truck holder to his head and neck region. Physical examination revealed sensory loss in upper and lower extremities, had motor strength as 3/5 in lower extremities and gait disturbance. He had also localized neck tenderness and high deep tendon reflex. No other abnormalities were detected in the neurological examination. No bony injury was apparent in CT scans. (Figure 1) He was given high dose intravenous methylprednisolone bolus of 30 mg/Kg iv within 8 hours of injury, followed by infusion at 5.4 mg/Kg/hr for the next 23 hours. MRI showed moderate, focal swelling of cord and edema at C1/2 with prevertebral soft tissue swelling and disruption of the anterior longitudinal ligament. (Figure 2) A diagnosis of occipitocervical contusion was made. The patient made further neurological recovery and got mobilized. He had normal evidence of vital signs and advised to be followed up in 15-days period by advising to use a Philedelphia cervical collar for at least 3 months.

Figure 1: Computed Tomography scan; There is no bony injury

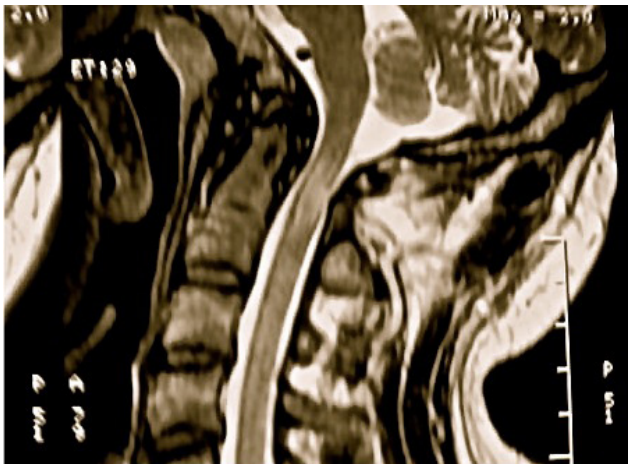

Figure 2: Magnetic Resonance Imaging; moderate, focal swelling of cord and edema at C1/2 with prevertebral soft tissue swelling and disruption of the anterior longitudinal ligament

DISCUSSION

Spinal cord injury without radiographic abnormality (SCIWORA) was first defined by Pang and Wilberger in a series of children with clinical signs of acute traumatic myelopathy and no radiographic or computed tomographic features of spinal fracture or instability. (1)

The prevalence of SCIWORA is 6 to 19% and 9% to 14% in spinal injuries, in children and adults, respectively. The most common site of involvement is cervical spine. İn pediatric group

the predisposing factors to this situation are inherent elasticity of the vertebral column due to ligamentous laxity and the large head size. (3-5)

SCIWORA in adults is a rare phenomenon. The causes are hyperextension forces or direct anterior craniofacial trauma. Launay and Kasimatis suggested that underlying degenerative spine changes, like spondylosis or spinal canal stenosis, can be predisposing factor to this situation because these changes were typically present in adult SCIWORA cases. Venous congestion in the stenotic spinal cord is another cause of SCIWORA. (6,7)

In patients with SCIWORA, neurologic deficit is usually more severe in the upper extremities when compared with the lower extremities. (6,8) The onset of clinical symptoms is delayed from a few minutes to 48 hours after injury in about 50% of patients. Neurologic deficits can change from mild and transient symptoms to quadriplegia and may only become apparent after several days of injury. (9)

A spine x-ray can demonstrate 75% of fractures with sensitivity of 85%. If we take all cervical views like lateral, anteroposterior, open mouth and oblique, the sensitivity increases to 92-99%. (10) CT scan is useful to show subtle injuries to the posterior arch or lateral masses and injuries in the atlantoaxial region. (4) If there is no spinal fracture by x-ray and CT scan in patients with blunt trauma and neurologic deficits, SCIWORA should be suspected and MRI should be performed because MRI is the best method to evaluate the spinal cord. Spin-echo T1 (T1 SE), gradient-echo T2* (T2-weighted GRE*) and STIR-weighted MRI pulse sequences are preferred in patients with spinal injuries. (9)

The main symptoms of an acute spinal injury are edema, hematoma, anatomic transection of the spinal cord and prolapsed nucleus pulposus. (9) Rozzelle et all suggested that spinal cord lesions revealed by MRI are important prognostic factors in patients with SCIWORA. Small hematomas, which is measured up to 1/3 of the spinal cord diameter or edema have better prognosis with resolving over time in most cases. On the other hand, anatomic transection of the spinal cord or large hematomas, which is greater than 1/2 of the spinal cord diameter, have poor prognosis with paresis or paralysis. (11)

SCIWORA should be treated by external immobilization with a collar or a more rigid brace until neurological deficits have resolved. However, to avoid the risk of recurrent injury, activity should be strictly limited up to 6 months. Bracken at all found that high dose steroids-Methylprednisolone bolus of 30 mg/Kg iv within 8 hours of injury, followed by infusion at 5.4 mg/Kg/hr for the next 23 hours is beneficial in improving the outcome and results were better at 6 weeks and 6 months when steroid was given over 48 hours. (12)

As a result, clinicians should be aware of the possibility of SCIWORA caused by the trauma in adult patients. External immobilization and steroid therapy are important for acute phase management.

REFERENCES

1. Pang D, Wilberger JE, Jr. Spinal cord injury without radiographic abnormalities in children. J Neurosurg. 1982;57(1):114–129.
2. Burke DC. Traumatic spinal paralysis in children. Paraplegia. 1974;11:268–76.
3. Eleraky MA, Theodore N, Adams M, Rekate HL, Sonntag VK. Pediatric cervical spine injuries: report of 102 cases and review of the literature. J Neurosurg. 2000;92(Suppl 1):12–17.
4. Kothari P, Freeman B, Grevitt M, Kerslake R. Injury to the spinal cord without radiological abnormality (SCIWORA) in adults. J Bone Joint Surg Br. 2000;82(7):1034–37.
5. Parent S, Mac-Thiong JM, Roy-Beaudry M, Sosa JF, Labelle H. Spinal cord injury in the pediatric population: a systematic review of the literature. J Neurotrauma. 2011;28(8):1515–24.
6. Kasimatis GB, Panagiotopoulos E, Megas P, et al. The

adult spinal cord injury without radiographic abnormalities syndrome: magnetic resonance imaging and clinical findings in adults with spinal cord injuries having normal radiographs and computed tomography studies. J Trauma. 2008;65(1):86–93.

7. Launay F, Leet AI, Sponseller PD. Pediatric spinal cord injury without radiographic abnormality: a meta-analysis. Clin Orthop Relat Res. 2005;(433):166–70.
8. El Masri WS, Kumar N. Traumatic spinal cord injuries. Lancet. 2011;377:972–74.
9. Szwedowski D, Walecki J. Spinal Cord Injury without Radiographic Abnormality (SCIWORA) – Clinical and Radiological Aspects. Pol J Radiol. 2014; 79: 461–464.
10. West OC, Anbari MM, Pilgram K, Wilson AJ. Acute cervical spine trauma: diagnostic performance of single view versus three-view radiographic screening. Radiology. 1997;204:819–23.
11. Rozzelle CJ, Aarabi B, Dhall SS, et al. Spinal Cord Injury Without Radiographic Abnormality (SCIWORA). Neurosurgery. 2013;72:227–33.
12. Bracken MB, Shepard MJ, Collins WF, *et al.* A randomized, controlled trial of methylprednisolone or naloxone in the treatment of acute spinal cord injury. Results of the second national acute spinal cord injury study. *N Engl J Med* 1990; 322: 1405-1415.