

Spinal Cord Injury without Radiographic Abnormality Post Penetrating Chest Injury: A Case Report

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Received: May 03, 2020; Published: June 29, 2020

Abstract

Spinal Cord Injury Without Radiological Abnormality (SCIWORA) is extremely rare in adults. Here, we report a case of an adult SCIWORA who had a trauma with a nail gun penetrated his chest. Neither X-Ray nor spinal CT scan showed any structural abnormalities. The MRI spine showed evidence of degenerative lumbar spondyletic changes with multilevel degenerative discs of variable degrees which due to chronic diseases he has and there is no traumatic or vascular abnormality in MRI. Spinal cord MRI has proven to be the most accurate modality for diagnosis.

Keywords: SCIWORA, Adults ,Trauma ,Case Report ,MRI spine

Introduction

Spinal Cord Injury without Radiographic Abnormality (SCIWORA) is a syndrome in which there are clinical signs of traumatic SCI as shown by spine X-rays, computed tomographic (CT) scans, myelograms, and dynamic flexion/extension X-rays [1]. The proposed mechanisms of SCIWORA include hyperextension, hyperflexion, and parenchymal cord damage[3]. SCIWORA is more commonly seen in pediatrics than in adults with incidences ranged from 13 to 19% and 10 to 12% , respectively and far more common in males[2].

Case Presentation

A 52 years old male referred to our hospital with a history of Trauma with nail gun penetrating his chest in right lung. After which patient was transferred to small hospital where resuscitation was done, and right InterCostal chest tube (ICT) Inserted. Chest x-ray and CT chest was done, and it showed foreign body on the right axilla with no clear exist, right antero-lateral chest wall surgical emphysema, left side pneumothorax And the trajectory of nail is away from spinal cord., right upper lobe contusion with right heamo-pneumothorax. Left ICT was Inserted & mechanical ventilated and the patient was referred to intensive care unit (ICU), in the first day He had a progressive sensory loss and weakness in both his lower limbs. On the second day, motor system assessment showed normal upper extremities, but the manual muscle testing in lower extremities revealed grade 2 muscle strength and paraplegia. Sensory system examination showed bilateral weakness and hypoesthesia below level of D5. The neurologist suggested motor-sensory problem and ordered MRI dorsal spine. The MRI spine showed evidence of degenerative lumbar spondyletic changes with multilevel degenerative discs of variable degrees which due to chronic diseases, and there was traumatic (Figure 1).

Citation: Bashaier G AlQahtani., *et al.* "Spinal Cord Injury without Radiographic Abnormality Post Penetrating Chest Injury: A Case Report". *EC Neurology* 12.7 (2020): 83-85.



Figure 1: MRI spine.

On the 3rd day, the patient was Weaned from the mechanical ventilator, but next day he was reconnected due to hypoxia and left lung collapse. Cerebro-Spinal Fluid analyses was done, and results showed reddish – turbid fluid, slightly high glucose level at 130.70 (normal: 40–85 mg/dL), high WBCs at 0.152 k/uL (normal: 0–5/ μ L), neutrophils was 88% (normal: 2% or less), protein was 182.50 mg/dl (normal: 15–45 mg/dL), lymph 41.20% (normal: 60–70%) (Table1). On the 5th day, an infection control physician who recommended the induction of vancomycin, and there was no change in the neurological signs until that point. Beginning on the 6th day in the ICU, the patient was Weaned from mechanical ventilation and the left ICT was removed on the 10th day.

CSF analysis		
Component	Patient value	Normal
Glucose	130.70	40 - 85 mg/dL
WBCs	0.152 k/uL	0 - 5/ μ L
Protein	182.50 mg/dl	15 - 45 mg/dL
Lymph	41.20%	60 - 70%
Neutrophil	88%	2% or less
Color of fluid	Reddish-turbid fluid	Color less

Table 1: Lumpur puncture of the patient's results.

The CT brain with contrast showed no skull bones fracture, no brain parenchyma infarctions or hemorrhage. The CT showed no evidence of generalized brain edema or midline shift, with appearance of the brain stem and cerebellum. Repeated chest X-ray showed improvement after removal of both ICT , while no improvement was obtained in the neurological functions. The final diagnosis is made after discussion by neurosurgeon, neurologist,icu physician , general surgeons and thoracic surgeon by exclusion of other possible causes of paraplegia such as Transverse myelitis , Multiple sclerosis & Traumatic paraplegic . And Based on the clinical findings and MRI results, a clinical diagnosis of SCIWORA was made.

Discussion

Pang and Wilberger described the concept of medullary lesion without radiological abnormality under the acronym SCIWORA [4]. Currently, MRI has become the investigation of choice for the diagnosis of SCIWORA [5].

SCIWORA include of any type of neurological injury, and onset of neurological deficit may be immediate or delayed ranging from few minutes to few days [6]. The most commonly causes of SCIWORA are road traffic accidents and fall from height [6]. performing an early MRI in all those cases and in all patients presenting with spinal trauma to is important to avoid any delay in making diagnosis and treatment . Disagree clinicians regarding its surgical and conservative management. The main stay of treatment in SCIWORA patients is non-operative management including immobilization, steroid therapy, and avoiding any activities that may increase the risk of exacerbation or recurrent injury. Despite the fact that operative treatment in SCIWORA can be controversial, surgical alternatives such like decompression and fusion should be considered in selected patients with clinical and MRI evidence of instability and persistent spinal cord compression [7]. Neck immobilization only was indicated for those patients who showed good response to steroids by Saruhashi et al. (2018), while patients with severe or progressive symptoms should undergo surgical intervention [8].

Conclusion

In the context of trauma, with Paraplegia, and in the absence of radiological abnormality in plain radiography and CT-scan, SCIWORA diagnosis should be considered even in adults and emergency spinal cord MRI has proven to be the most accurate imaging resource.

Conflict of Interest

None.

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Volume 12 Issue 7 July 2020

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