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Scapulothoracic Dissociation Without a Neurological Compromise: A Case Report

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ABSTRACT

Background: Scapulothoracic dissociation is a high-energy traumatic disruption of the scapulothoracic articulation often associated with severe neurovascular injuries, scapula fractures, and clavicular fractures. It is a rare injury that can be recognized on chest X-ray.

Objective: This case report presents our patient with left femur and tibia shafts fracture, and left clavicle fracture with scapular separation indicating scapulothoracic dissociation.

Case report: 26 years old male patient medically free, presented to our hospital on 25/4/2019 after a history of road traffic accident, the driver lost control as he was driving around 100km/hr and the car rolled over multiple times, patient was the passenger and not seatbetled and due to that he was ejected from the car, he suffered from loss of consciousness and does not remember the events of the accident and his presentation to the hospital.

Conclusion: Scapulothoracic dissociation, although a rare injury, may be life threatening. Priority should be placed on resuscitative measures, as these patients have sustained significant trauma. As threatening ischemia is rare, careful observation is recommended for the nonthreatened limb. For the ischemic limb, inspection of the neurological injury is recommended as complete plexus injuries bear a poor functional prognosis and sequelae can include early amputation and death.

Keywords: Scapulothoracic dissociation, X-ray, CT scan, chest X-ray, case report, Saudi Arabia.

INTRODUCTION

Scapulothoracic dissociation is a rare injury involving separation of scapula from the thorax along with the upper extremity. Majority of the patients have concomitant neurovascular injury and the prognosis is uniformly poor in such cases [(1)].

Scapulothoracic dissociation is a serious and potentially limb-threatening injury caused by high energy trauma to the shoulder girdle. The classical description of this injury is a triad of musculoskeletal, nerve and arterial damage [(1-2)]. Brachial plexus and subclavian artery damage are very common; sequelae can include early amputation and death. The severity of this condition is classified by the extent of neuromuscular compromise [(3,4)].

CASE REPORT

A 26 year-old male patient medically free, presented to our hospital on 25/4/2019 after a history of road traffic accident, the driver lost control as he was driving around 100km/hr and the car rolled over multiple times, patient was the passenger and not seatbetled and due to that he was ejected from the car, he suffered from loss of consciousness and does not remember the events of the accident and his presentation to the hospital.

Initial emergency room management started with a full primary survey:

1. On C collar, patient was able to talk and communicate.
2. Bilateral chest movement with equal air entry.
3. Vitally stable, no external bleeding sources.
4. Glasgow Coma Scale 15/15 and reactive pupils.
5. Full exposure and log roll showed no neurological injuries.

Secondary survey showed:

1. Left clavicular pain with bruising and apparent shoulder, distal vascularity was intact as well as full neurological examination showed to deficits.
2. Left tibia and femur both showed bruising, tenderness and crepitus with intact distal neovascularity.

CT scan and X-rays showed the patient had:

- Left femur and tibia shafts fracture.
- Left clavicle fracture with scapular separation indicating scapulothoracic dissociation.

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Figure (1): At the time of the injury.

Figure (2): At the time of the injury.

Figure (3): Initial fractured leg.

Figure (4): Initial fractured femur.

Management proceeded with urgent consultation with the thoracic team for further management of the dissociation, their recommendations did not include surgical intervention due to the lack of neurovascular compromise.
Orthopedic wise, patient had internal fixation of the left femur and tibia without complications, regarding his left clavicle the patient elected to go with conservative maangment after weighing the risks and benefits with had the increased risk of neurovasclar injury due to the sever displacment.

Figure (5): Postoprative X-rays of femur and tibia fixation.

In 2 years follow up with the patient, he is satisfied with the outcome of the conservative management, patient is doing well, able to practice daily life activity with overhead movements without problems, he did not notice any weakness or hendarness to his work and function, the only noticeable issue is his left shoulder level compared to the right normal side.

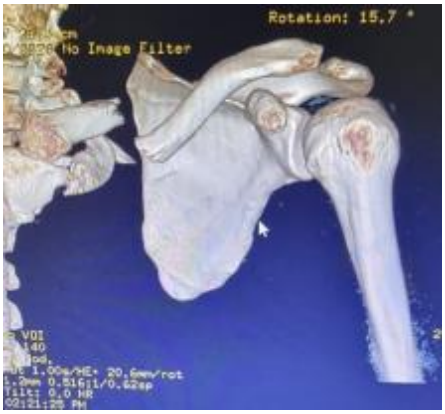

Figure (6): 2 years follow up CT.

Figure (7): 2 years follow up X-ray.

DISCUSSION

Scapulothoracic dissociation was originally described by **Oreck *et al.*** [5] in a series of patients with severe injury and lateral displacement of the scapula visualized on chest X ray.

Our patient, on CT scan and X-rays showed that left femur and tibia shafts fracture, and left clavicle fracture with scapular separation indicating scapulothoracic dissociation.

On clinical exam, there is often significant muscular swelling as well as severe pain in an otherwise anesthetic extremity indicating nerve root avulsion. The actual site of avulsion may be either preganglionic or postganglionic. Postganglionic injuries will correspond to a specific neurologic compromise depending on the site(s) of injury within the brachial plexus. Preganglionic avulsion can lead to additional neurologic signs and symptoms such as a Horner's syndrome (suggesting preganglionic T1 avulsion) or paralysis of the serratus anterior, rhomboids, supraspinatus and/or diaphragm [6].

The radiologic findings of ST dissociation have been detailed by **Kelbel *et al.*** [7]**.** He measured the distance from the medial border of the scapula to the thoracic spinous process on each side of the thorax. The ratio of these distances between the injured and non-injured sides was dubbed the "scapula-index", and a ratio of 1.29 or greater correlated with scapulothoracic dissociation. Other imaging modalities may also be useful. A CT scan may show a paraspinous hematoma or separation of the scapula away from the chest wall. A CT myelogram may show pseudomeningoceles which are diagnostic for nerve root avulsion. Other diagnostic tests such as EMG of the limb and posterior neck muscles may demonstrate denervation three weeks after injury due to Wallerian degeneration [6].

Management of scapulothoracic dissociation depends on many factors. The injury is often the result of a high-speed collision and thus there is a significant risk of associated neurologic, intrathoracic and intraabdominal injuries which may require operative intervention [6].

Our patient management proceeded with urgent consultation with the thoracic team for further management of the dissociation, their recommendations did not include surgical intervention due to the lack of neurovascular compromise. Orthopedic wise, patient had internal fixation of the left femur and tibia without complications, regarding his left clavicle the patient elected to go with conservative maangment after weighing the risks and benefits with had the increased risk of neurovasclar injury due to the sever displacment.

Scapulothoracic dissociation is a relatively rare condition however it has been reported increasingly for two reasons. Increasing use of allterrain vehicles and motorcycles have contributed to the increase in scapulothoracic dissociations [8]. It is postulated that the mechanism involves attempting to hold on to the handlebars while being forcibly thrown [9,10]. In one series 60% of the patients with scapulothoracic dissociation were motorcycle riders [11].

The other factor contributing to the increase in cases are the improvements in trauma care which allow more patients to survive devastating injuries [6].

Our patient after 2 years follow up with the patient, he is satisfied with the outcome of the conservative management, patient is doing well, able to practice daily life activity with overhead movements without problems, he did not notice any weakness or hendarness to his work and function, the only noticeable issue is his left shoulder level compared to the right normal side.

CONCLUSION

Scapulothoracic dissociation, although a rare injury, may be life threatening. Priority should be placed on resuscitative measures, as these patients have sustained significant trauma. As threatening ischemia is rare, careful observation is recommended for the non-threatened limb. For the ischemic limb, inspection of the neurological injury is recommended as complete plexus injuries bear a poor functional prognosis and sequelae can include early amputation and death.

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