Case report:

Double Trouble: Two Scapulothoracic Dissociation in a Single Head-On Collision

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Abstract

Scapulothoracic dissociation is a potentially limb-threatening and life-threatening high energy injury. Diagnosis could be obscured due to other associated trauma sustained by the patient. We present a rare case of motor vehicle accident involving 2 motorcyclists who collided onto each other, resulting in both victims sustaining left upper limb scapulothoracic dissociation.

Keywords: Scapulothoracic dissociation, Subclavian artery injury, Amputation

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Introduction

Scapulothoracic dissociation is a rare injury to the upper limb. This clinical entity was first described in 1984 as an injury resulting in lateral or rotational displacement of shoulder girdle with intact skin. (1) The injury varies from simple musculoskeletal pain to open dissociation of the shoulder girdle with or without associated neurovascular injury. (2,3) Involvement of brachial plexus was found to be the main prognostic factor towards poorer outcome. Herein, we report a rare incidence where both victims involved in the same accident sustained scapulothoracic dissociation with subclavian artery injury and brachial plexus injury to their left upper limb.

Case Report

Mr. S, a 20 years old male, was brought to Emergency Department after his motorcycle collided with head on with another motorcyclist. He presented with GCS score of E4V4M5, deformity over left forearm, left ankle and left foot, flail left upper limb, bruises over left chest and multiple open wounds. He was appropriately resuscitated as per ATLS guidelines. Further examination reveals absent brachial and radial pulses of left upper limb, an increasing swelling over left shoulder girdle region and lack of sensation over the entire left upper limb. (Fig. 1)A diagnosis of left sternoclavicular joint dissociation

with possible subclavian artery injury and brachial plexus injury was made.

Doppler ultrasound examination of left upper limb was negative. Chest X-ray revealed dissociation of left sternoclavicular joint with lateral migration of scapula. (Fig. 2)X-rays of the extremities revealed fracture of distal third left radius and ulna, fracture of left lateral malleolus with subluxation of ankle joint and Lisfranc injury of left foot.

CT Angiography of left upper limb showed moderate length of non-opacification of mid left subclavian artery with adjacent filling defects at the immediate proximal and distal artery. (Fig. 3) There is distal reconstitution both proximally and distal artery supplying the left upper limb. CT brain shows left parietal, left tectorial subdural and extradural bleeds.

Left upper limb injury was treated conservatively and condition of left upper limb was monitored in ward. Upper limb fracture was stabilized with external fixation after 3 days after observing no deterioration of vascularity of left upper limb. Patient was referred to a Tertiary Centre for reassessment and further management of left post ganglionic brachial plexus injury.

The other victim from the same accident is Mr. H, a 18 years old male, who was brought in to Emergency department with complain of pain over left shoulder, leg elbow, left hip, left foot and

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difficulty of breathing. Upon commencing ATLS patient was diagnosed with right pneumothorax and chest tube was inserted by the ED physician. Further examination revealed a flail left upper limb, loss of sensation from left shoulder downwards, increasing swelling over the right shoulder and clavicle region. Left brachial and radial pulses could not be felt. Doppler ultrasound examination was negative. The same diagnosis of left sternoclavicular joint dissociation with subclavian artery injury and brachial plexus injury was made.

Chest X-ray shows a widen sternoclavicular joint.X-rays of the extremities show comminuted fracture proximal left radius and ulna, fracture left 3rd to 5th metacarpal bone and left hip dislocation. CTA of left upper limb showed short segment non-opacification of the proximal left subclavian artery with adjacent indistinct luminal outline and non-opacification of the distal subclavian and axillary arteries suggestive of vascular injury with thrombosis. (Fig. 3) There is alsoleft sternoclavicular joint dislocation. Patient was subsequently referred to Tertiary Centre for vascular support and a trans-radial amputation was done.



Fig. 1 Note swelling over left shoulder girdle suggesting expanding hematoma.



Fig 2. Left sternoclavicular dislocation, a tell-tale sign of possible scapulothoracic dissociation.

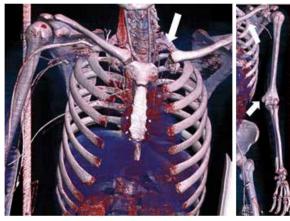


Fig. 3 Left image showing absent of continuity at left subclavian artery in CT Angiogram. Right image belongs to the CT Angiogram showing absent of continuity of left subclavian artery with presence distal reconstitution along the brachial artery.

Discussion

Scapulothoracic dissociation is a devastating injury. This injury is frequently described in literatures involving motorcyclists. Common mechanism of injury involves the motorcyclist holding on to the motorcycle handle while being thrown off by force. The high energy force also bring about other associated injuries such as head trauma, lung injuries and long bone fractures. Acromioclavicular joint dislocation, dislocation. sternoclavicular ioint clavicle fractures and comminuted scapula fractures are some of the commonest associated injuries of scapulothoracic dissociation. (3,4)

Physical examination plays an important role in picking up vascular and neurological components of scapulothoracic dissociation. Examination of radial, brachial and axillary pulses should be done routinely. However, patient who are in hypovolemic state would make examination difficult. (5)

Kelbel et al has described radiological criteria in diagnosing scapulothoracic dissociation. The scapula index requires both the distance from the medial border of each scapula to the spinous process to be measured in a non-rotated chest radiograph. The average ratio of normal scapula to spinous process relationship is found to be 1.07. (2) Any deviation from the normal value would be suggestive of scapulothoracic dissociation.

Damshen et al has classified scapulothoracic dissociation base on the association of musculoskeletal injury to vascular disruption and neurological injury while Zelle et al further subclassify neurological injury into complete and

incomplete neurological impairment. (3)

In conclusion, we would like to highlight the possibility of missed diagnosis due to a variety of other injuries which is commonly associated with scapulothoracic dissociation. Priority of management of patients with scapulothoracic dissociation should be placed on resuscitation and standard ATLS protocol. Clinician should maintain high index of suspicion based on mechanism of injury. Early diagnosis and referral to tertiary center capable in managing such vascular injury could be limb-saving. A primary amputation is considered if there is complete disruption found as maintaining an ischemic limb carries the risk of myoglobinuria, vascular thrombosis, renal failure, hyperkalemia and sepsis.

Conflict of Interest

No conflict of interest has been disclosed by theauthors.

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