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Case Report

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Rare cycling-related shoulder fracture at pediatric age

Abstract

Introduction: Scapula Fractures are uncommon fractures to the shoulder girdle caused by high energy trauma and associated with pulmonary injury, head injury, and increased injury severity scores. They usually occur between 25-50 years of age. Diagnosis can be made with plain radiography and CT scan studies are helpful for fracture characterization and surgical planning. Treatment is usually conservative and thus early rehabilitation is essential.

Case description: During a track cycling competition, a 14-year-old male participant falls. He was assessed by the medical team and evacuated to the nearby hospital for a suspected clavicle fracture. After evaluation and imaging investigation he was diagnosed with a scapular fracture. He was treated with immobilization for 4 weeks, with subsequent rehabilitation.

Discussion: The present clinical case emphasizes the importance of correctly identifying a scapular fracture which may be associated with serious life-threatening conditions such as haemothorax or pneumothorax. A well systematised objective examination, early evacuation to hospital and effective imagiological examination as well as a prompt rehabilitation strategy are fundamental for therapeutic success.

Keywords: scapula fracture, cycling, pediatric age, rehabilitation

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Introduction

Scapular fractures in the pediatric population are rare.[1] Fractures of the scapula have an incidence of 1% of all fractures and only 3-5% of fractures of the shoulder joint complex.[1] It affects more men than women and it is usually between 25-50years of age. The most common location is scapular body/spine in 45-50%, glenoid in 35%, neck in 25%, acromion 8% and coracoid 7%.[2]

The most frequent mechanism of injury is high-energy trauma (80-90%) (Such as motor vehicle collisions), followed by indirect trauma by falling on the outstretched hand and glenohumeral dislocation in the context of convulsive crisis or electric shock.[2,3]

In cycling athletes, the clavicle fractures are the most common, followed by fractures of the wrist, hand, femur and ribs.[3,4] Besides being rare fractures, their occurrence are frequently associated with other complications (80-95%) such as haemotorax or pneumotorax and head injuries.[2,5] When there are other fractures, the ribs are the most frequently involved (53%), followed by ipsilateral clavicle fractures (25%), vertebral fractures (26-30%) and acetabular or pelvic fractures (15%).

Case description

A 14-year-old athlete, with no remarkable personal and/or familiar clinical background crashed during a velocity cycle race at a Portuguese High Performance Centre.

The athlete presented diffuse pain in the right shoulder and extreme pain when moving the arm classified as 8/10 in the visual analog scale, inability to lift the arm, tenderness to palpation, with apparent deformity in the anterosuperior aspect of the shoulder joint complex. The athlete was holding the injured arm close to the body where the elbow was in a 90-degree position with internal shoulder rotation. The range of movement was limited by the pain. He was hemodynamically stable.

After evaluation by the medical team at the event he was evacuated to a nearby hospital. The medical team suspected a clavicle fracture, immobilized his right shoulder and gave him intravenous analgesia. He remained stable during transport. At the hospital the shoulder X-ray revealed a fracture of the neck of the scapula. He had no other associated injuries such as haemothorax or pneumothorax. He was indicated for immobilization for 4 weeks with a sling and re-evaluation at the pediatric hospital in his residence area (Figures 1 & 2).

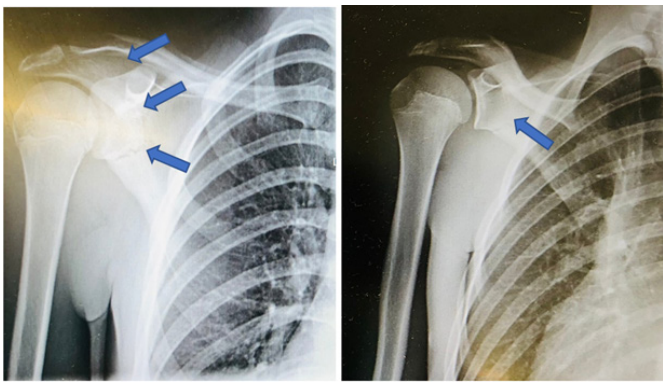

Figure 1 and 2 X-ray of right shoulder after fall (anteroposterior projection).

Discussion

In this case, the patient was young, which is unusual for this type of injury. Besides, his fracture was in the neck of the scapula and in literature only 25% of scapula fractures are described as neck fractures.[5]

He had no other associated injuries, neither medical nor orthopedic, and was indicated for immobilization with sling for 4weeks and re-evaluation at the pediatric hospital. The sling holds the shoulder in place while the bone heals. Most scapular fractures are managed without surgery.

Physiotherapy should be started as soon as possible, mainly to prevent adhesive capsulitis. It is advisable to start moving the shoulder within the first week of injury to minimize the risk of shoulder and elbow stiffness. Rehabilitation typically involves six weeks of the active and active-assisted range of motion; strength training begins approximately 3-4months after injury or surgery.[5] The patient has started a rehabilitation programme focused on gaining joint range of motion and muscle strength and so far, recovery has been good. Return to competition is expected between 6 months to one year after the fracture.

Conclusion

Scapula fracture may be missed or diagnosed late in presence of other eventual more conspicuous traumatic injuries. In addition, it is not the most common fracture in cycling competitions. However, understanding the kinetics of trauma and performing a systematic physical examination may help to steer the diagnosis in this direction. It is important to monitor the athlete, to exclude complications and to allow the earliest return possible to competition, without sequels. Rehabilitation plays an important role in the recovery of the normal functional movements of the scapular region/shoulder complex

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Conflicts of interest

The authors have no conflicts of interest to declare.

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