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Clinical case

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Latissimus dorsi. Case report of a rare lesion diagnosed by magnetic resonance imaging

Músculo dorsal ancho. Reporte de caso de una lesión rara diagnosticada mediante resonancia magnética

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ABSTRACT. The latissimus dorsi is a flat muscle that covers most of the back. Its injury happens when there is avulsion of the tendon. There are currently few reported cases in the literature, but most sources agree that latissimus dorsi injuries are more common among professional athletes. The main injury sites should be highlighted: tendon, myotendinous junction, ventral muscle, and costal muscle. Patients with latissimus dorsi muscle injury describe a burning or popping sensation in the armpit followed by pain and weakness. Magnetic resonance imaging confirms the diagnosis of avulsion injury, defining its extent and excluding the hypothesis of the presence of other involvements and masses. We report a case of a 64-year-old woman who report pain in her right shoulder after a fall in the bathroom diagnosed with insertional rupture of the latissimus dorsi and teres major muscles. She was treated conservatively, presenting the range of motion recovered and being able to carry out daily activities after two months.

Keywords: muscles, magnetic resonance imaging, trauma.

RESUMEN. El músculo dorsal ancho es un músculo plano que cubre la mayor parte de la espalda. Su lesión ocurre cuando hay avulsión del tendón. Actualmente, hay pocos casos reportados en la literatura, pero la mayoría de fuentes indican que la lesión del músculo dorsal ancho es más frecuente en atletas profesionales. Se deben destacar los principales sitios de lesión: tendón, unión miotendinosa, músculo ventral y músculo costal. Los pacientes con lesión del músculo dorsal ancho describen una sensación de ardor o chasquido en la axila seguida de dolor y debilidad. La resonancia magnética confirma el diagnóstico de lesión por avulsión, define su alcance y excluye la presencia de otras afectaciones y masas. Presentamos el caso de una mujer de 64 años que informó dolor en su hombro derecho después de una caída en el baño, diagnosticada con ruptura insercional de los músculos dorsal ancho y teres mayor. Fue tratada conservadoramente, recuperando el rango de movimiento y siendo capaz de realizar actividades diarias después de dos meses.

Palabras clave: músculos, resonancia magnética, trauma.

Level of evidence: IV

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Abbreviations:
MRI = magnetic resonance imaging
NSAIDs = non-steroidal anti-inflammatory drugs

Introduction

The latissimus dorsi is a flat muscle of the back. It has a broad origin that includes: the lower thoracic spine, ribs, iliac crest, and thoracolumbar fascia. Injuries to the latissimus dorsi are uncommon. They occur in cases of acute trauma involving tendon avulsion, which often occurs concomitantly with ipsilateral shoulder trauma.[1,2,3]

Avulsion injuries are the result of excessive muscle tension and sports activities. There are currently few reported cases in the literature, but most sources agree that latissimus dorsi injuries are more common among professional athletes. Among them, the injury becomes frequent in water skiers and baseball pitchers.[1,2]

The injury of this muscle is not always evident and there is the possibility of causing minor disability. Some studies reported a low deficit in shoulder strength, mobility, and function.[1]

The aim of this study is to present a case report and review the literature on latissimus dorsi lesions.

Clinical case

A 64-year-old woman reported pain in her right shoulder after a fall in the bathroom 60 days ago. The patient reports that at the time of the trauma the shoulder dislocated and immediately returned. She denies the practice of sports but mentions polycystic kidneys, systemic arterial hypertension under treatment, and a previous hysterectomy. She mentions having difficulty lifting her right upper limb and performing daily activities such as sweeping the house, performing personal hygiene tasks, and combing her hair. She also says that she has difficulty sleeping. During those 60 days, the patient used analgesic medication and cryoterapy.

Physical examination shows a limitation of upper limb elevation, as well as external rotation and abduction, in addition to pain on palpation of the axillary region, with significant edema but without evident ecchymosis. She was not able to perform internal rotation tests. There was no evidence of neurovascular deficit. Magnetic resonance imaging (MRI) detected insertional rupture of the latissimus dorsi and teres major muscles *(Figure 1)*.

The patient made a conservative treatment, as she denied surgical intervention, with analgesic medication and a sling for four weeks with physiotherapy, which started with pain relief protocol for a week, following restoration of shoulder range of motion. The patient presents, after physiotherapy, with the range of motion recovered and being able to carry out daily activities, but with limitation on internal rotation movements, as movements for personal hygiene, and unable to carry attached objects, initiating muscle strengthening. One year later, she reports normal range of motion of the shoulder and strength.

Discussion

The latissimus dorsi is responsible for sustaining eccentric contractions in specific situations in the baseball pitching cycle.[4] Eccentric contraction with extreme concentric contraction during acceleration followed by a rapid return to eccentric contraction poses a risk of tendon injury.[4] Throwers describe a sudden onset of intense, localized pain posterior to the armpit.[4] The injury mechanism is comprised of resisted contraction with the arm in extreme abduction, external rotation, and hyperextension.[4]

The lesion can occur in any region of the latissimus dorsi. The main injury sites should be highlighted: tendon, myotendinous junction, ventral muscle, and costal muscle.[5] Latissimus dorsi injuries are mostly reported by professional baseball players, military services, CrossFit practices, rock

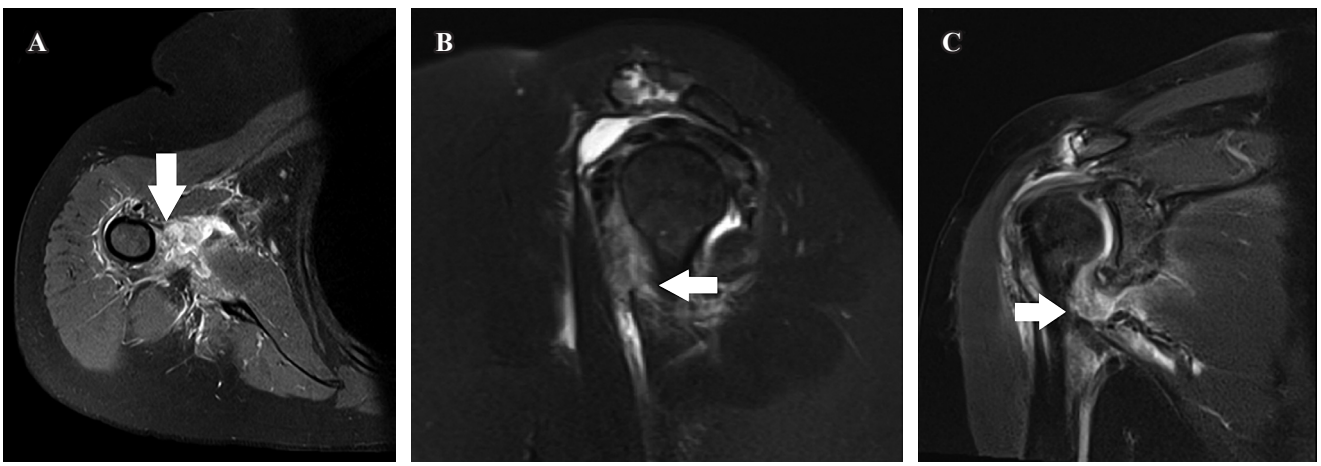

Figure 1: Magnetic resonance imaging in the axial section in **A)** the proton density fat saturated (DP FAT SAT) sequence and **B)** in the sagittal section and **C)** coronal section in the T2 FAT SAT sequence detecting insertional rupture of the latissimus dorsi and teres major muscles (white arrow).

climbing, tennis, and golfers. The incidence is higher in young males.[5]

Patients with latissimus dorsi muscle injury describe a burning or popping sensation in the armpit followed by pain and weakness. Its injury occurs in situations of abduction and external rotation during resistance exercises that can be exemplified as pull-up, in which the individual holds onto a metal bar and keeps the arms extended above the head during a fall or pulling the body up and down.[3]

In the clinical presentation, axillary bruises and a palpable mass may be present, which is usually confused with sarcoma. Using imaging modalities, it is possible to obtain the differential diagnosis of osteoma and intracortical osteoid or periosteal osteosarcoma.[1,3,6] To obtain the diagnosis, radiological exams are used, in addition to guiding the conduct. MRI and ultrasonography are options that provide information for the characterization of lesions into four basic categories, namely:[3]

1. Isolated lesion or avulsion.
2. Injuries combined with latissimus dorsi injury associated with trauma to the teres major muscle.
3. Isolated myotendinous lesion.
4. Muscle strain.

An MRI confirms the diagnosis of an avulsion injury and defines its extent. It also excludes the possibility of other injuries or masses. Furthermore, it is useful for delineating disseminated lesions over the shoulder even if they are minimal. It is essential to report its importance since computed tomography is the best imaging modality to detect bone lesions and differentiate local calcification from a bone fragment, however, it does not present the quality of MRI for the evaluation of soft tissue.[1,2]

In the case of partial ruptures of the latissimus dorsi, the choice of treatment is non-surgical intervention (period of rest and progressive return to activities). Whereas in complete rupture, the humeral insertion of the latissimus requires surgical repair. Some authors recommend surgical intervention to high-level athletes to preserve muscle strength and reestablish anatomy – an objective that is difficult to achieve with conservative treatment – but the conservative treatment had good results when indicated for recreational athletes. Other reports have described conservative treatment directed towards subacute injuries of the latissimus dorsi as an effective therapy making it possible for the athlete to return to physical activities. In conservative therapy, rest must be present together with cryotherapy and non-steroidal anti-inflammatory drugs (NSAIDs). The goal of physiotherapy in conservative treatment is the restoration of movement. Once the range of motion of the shoulder has been restored, strengthening of the teres major muscle followed by assisted training should be initiated. Patients under conservative therapy can return to activities within six months with a slight functional deficit.[3,6]

Conclusion

We report a case of injury to the latissimus dorsi, which is a flat muscle that covers most of the back. Among musculotendinous avulsions or tears of the shoulder, injury to the latissimus dorsi is uncommon. The diagnosis of this lesion is obtained mainly through MRI. The treatment can be performed both conservatively and invasively, however, it has been reported that the surgical process is directed to high-level athletes to preserve muscle strength, while conservative treatment has good results when directed to recreational athletes.

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Conflict of interests: authors declare no conflict of interests regarding the present study.