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Case Report

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Bilateral agenesis of the long head of the biceps tendon

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Abstract

The congenital variations of the biceps brachii muscle are seen quite frequently, however, the agenesis of the long head, is extremely rare. Diagnosis can be difficult, especially in cases with traumatic shoulder pain. In this paper, a 25-year-old female patient with bilateral biceps tendon agenesis is presented. Shoulder examination was negative for any signs of a traumatic biceps injury. Magnetic resonance imaging revealed congenital absence of the long head of biceps tendon and bilateral shallowness of the intertubercular groove.

Keywords: congenital absence; long head of biceps tendon; magnetic resonance imaging; shoulder

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Introduction

The biceps brachii is a two-headed (short and long heads) muscle spanning two joints. It originates from the scapula and attaches distally to the bicipital or radial tuberosity of the radius. It acts as a strong supinator and flexor of the elbow and as an important stabilizer of the shoulder, especially in abduction and internal rotation.[1]

Congenital absence of the long head of the biceps (LHB) tendon is a rare variation and its prevalence is unknown. The publications reporting congenital absence of bilateral LHB tendon are limited.[2]

Due to the infrequency of this condition, clinical diagnosis is very difficult, and in cases with trauma, it is nearly impossible to distinguish it from tendon rupture.[3] Ultrasound and magnetic resonance imaging (MRI) shows an excellent diagnostic accuracy in detecting pathologies of the LHB tendon.[4]

In this case report, we present a patient with congenital absence of the bilateral LHB tendon who admitted to hospital with the complaint of shoulder pain.

Case Report

A 25-year-old female patient presented with a complaint of bilateral shoulder pain. The patient had no history of major trauma. Physical examination of both shoulders revealed symmetric range of motion in all planes. There was no "Popeye" sign to indicate a torn, retracted LHB tendon. She did not demonstrate signs of laxity or hypermobility in her upper extremities.

Shoulder MRI was performed with the patient in the supine position and the arm adducted in mild external rotation. MRI of both shoulders revealed bilateral absence of the LHB tendon and shallow intertubercular groove (**Figure 1**). There was no evidence of rotator cuff tears or labral tears bilaterally.

Discussion

The biceps muscle has two heads, the short and the long head, distinguished according to their origin at the coracoid process and supraglenoid tubercle of the scapula, respectively. From its origin on the glenoid, the long head remains tendinous as it passes through the shoulder joint and through the intertubercular groove of the humerus.[5,6]

The function of the tendon of LHB at the shoulder remains controversial and uncertain. Biceps brachii primarily acts as a flexor and supinator at the elbow. Many electromyographic studies have shown that it only plays an active role in elbow movements but not shoulder.[7] Some studies suggest that it plays an active role in the collapse of the humeral head during shoulder abduction.[8,9]

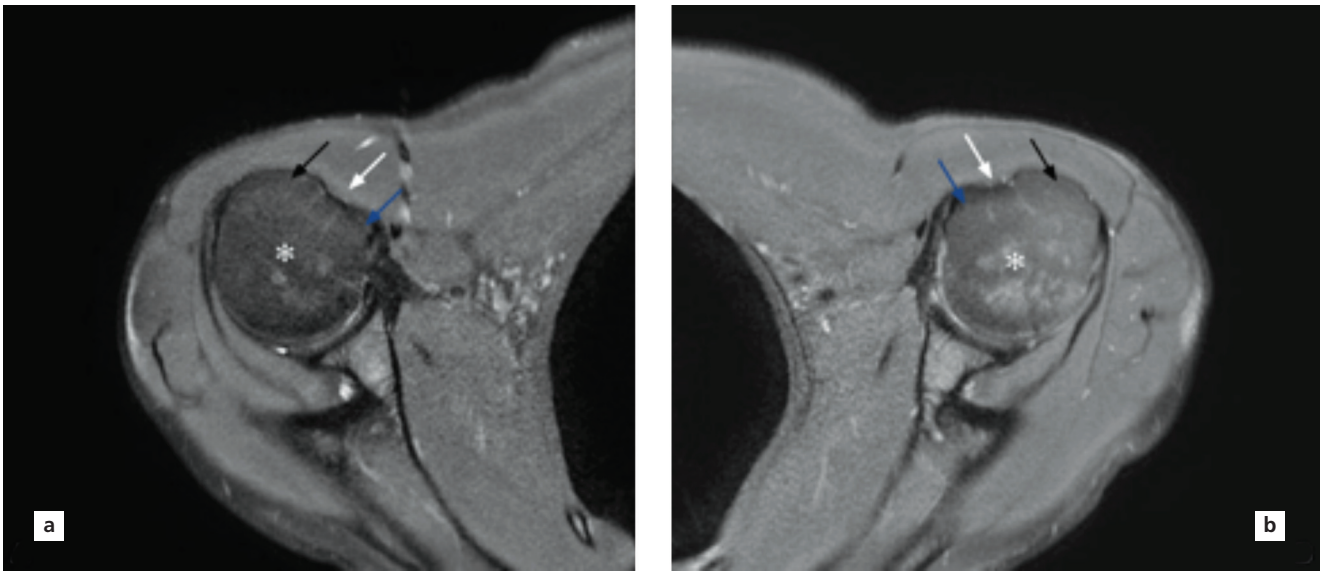

Figure 1. Axial fat suppressed proton-density weighted MR images. (**a**) right; (**b**) left shoulders. Biceps long head tendon is not observed, intertubercular sulcus is shallow (**white arrow**). **Asterisk:** head of humerus; **black arrow:** greater tubercle of humerus; **blue arrow:** lesser tubercle of humerus.

LHB tendon has quite wide range of variations. In cadaver studies, the presence of multiple heads is the most commonly reported variation, with a prevalence of 8–20%.[9–11] In addition to the number of tendons, the origin of LHB differs between individuals, and it is stated in the literature that approximately 50% originates from the supraglenoid tubercle, and the remaining 50% is variable from different regions of the superior glenoid labrum.[5,12] Besides all these variations, congenital absence of LHB tendon is an exceedingly rare anomaly. It is often accompanied by findings such as hypoplastic intertubercular groove and shoulder instability.[13]

The unilateral absence of LHB has been reported in the literature to be associated with some skeletal and non-skeletal congenital anomalies (57%) such as spina bifida, VATER syndrome, and congenital limb abnormalities.[14,15] Bilateral absence is extremely rare, with only nine previous reports in the literature to the best of our knowledge.[2,3,10,13,14,16–19] Diagnosing the pathologies related to LHB could be challenging both on clinical examination and radiologically.[20] Although arthroscopy is considered as the gold standard method; MRI is the most preferred one. The shallowness of the intertubercular groove is the most important finding in differentiating it from traumatic injuries and biceps tears.[3,4,13,20] In our case, bilateral shallow intertubercular grooves were observed as stated in the literature.

In most cases described in the literature, patients might have shoulder pain like our case, and one of the cases published by Kwapitz et al.[17] was asymptomatic. Although it was stated that the absence of LHB might cause shoulder instability in some cases,[19] this was valid for our case. In our case, there was no other accompanying pathology detected by physical examination and MRI.

Surgical intervention is not performed in most of the cases with absent tendons, and arthroscopic interventions are applied for other accompanying shoulder pathologies. Although there is no consensus yet, nonsteroidal anti-inflammatory drugs and physical therapy are used for patients with isolated long head absence.[1,2] Since there was no other accompanying pathology, our patient was treated symptomatically with nonsteroidal anti-inflammatory drugs. Symptoms improved with physical therapy and medical treatment.

Conclusion

LHB agenesis should be kept in mind in the absence of major trauma and other accompanying findings in patients with shoulder pain.

Conflict of Interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

Author Contributions

SD: data collection, data analysis, manuscript writing and editing; MBG: data collection, data analysis, manuscript writing and editing.

Ethics Approval

This report has been prepared in accordance with the Helsinki Declaration and does not require any kind of approval of the Ethical Committee.

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