

STRENGTH TRAINING HELPS US TO DISCOVER CALCIFIED TENDONITIS IN THE SHOULDER

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Abstract

Objective: Using body building exercises for the diagnosis of calcified tendonitis.

Background: Calcified tendonitis of the shoulder is an acute or chronically painful condition that is caused by inflammation around calcium deposits located in or beside the rotator cuff tendons. When it becomes painful, it usually has an abrupt onset and can severely limit physical activity, even though it is not necessarily activity-dependent.

Case report: Fifty-seven years old man, left handed dominant, with a history of several decades in body building, began to suffer from pain inside his right shoulder appears gradually during strength training, doing overhead external rotation movements of his arm. The most painful movements were back presses, back lat pull-downs and dumbbell flies. In the physical examination, it was impossible to find a point of tenderness, local swelling or friction in the involved shoulder. Calcium deposits could be seen on plain radiographs and ultra-sound of the shoulder over the supraspinatus tendon.

Conclusions: Tension overload in overhead and external rotation movements of the arm, during strength training, can help us to discover an eventual supraspinatus calcified tendonitis.

Key words: calcified tendonitis, shoulder, external rotation, strength training.

Introduction

Calcified tendonitis of the shoulder is an acute or chronically painful condition that is caused by inflammation around calcium deposits located in or beside the rotator cuff tendons. When it becomes painful, it usually has an abrupt onset and can severely limit activity, even though it is not necessarily activity-dependent. The diagnosis is made by history and physical examination with specific attention to radiographic evidence of calcification that can confirm the findings (1, 2).

Shoulder injuries occur frequently in weightlifting and especially in body building where developing the entire girdle require the athlete to perform significant number of repetitions and variations in exercises, which multiple the risk of injury. The shoulder joint, which is very mobile and allows the arm to move through a wide range of motion, is in fact is much less contained and protected than the hip joint, for example. Most weightlifting injuries occur when training the shoulder girdle, and they rarely result in muscle pulls or tears. They are usually caused by poor technique or overuse of the tendons reinforcing the articular capsule. In contrast to contact sports, the most serious injury in all forms of weightlifting, involves entrapment (3).

Case report

57 years old man, left handed dominant, with a history of several decades in body building, began to suffer from pain inside his right shoulder appears

gradually during strength training for body building, doing overhead external rotation movements of his arm against resistance.

In the physical examination, it was impossible to find a point of tenderness, local swelling or friction in the involved shoulder. The pain did not appear during the regular activity of daily living. Only ninety degrees abduction and forced external rotation of the involved arm provoked a difficult to localize pain in the shoulder, spreading to the proximal part of the arm.

The idea of the authors was to see if they can use body building exercises for the diagnosis of painful shoulder, and which were the exercises that provoked pain in the superior and external part of the shoulder. The physical examination of the patients was done in the body building hall of a country-club, located in the north of Israel.

The most painful movements were:

1. back lat pull-downs (photo 1)

Sit with the thighs positioned under the pads, grasping the bar with a wide overhand grip and pull the bar down to the back of the neck bringing the elbows alongside the body.

2. back presses (photo 2)

Sit with the back straight, holding the bar across the back of the neck and extend it straight as possible.

3. dumbbell flies (photo 3)

Lie on a narrow bench that will not interfere with the shoulder movement, hold the dumbbell in each hand with the arms extended and open the arms to oblique position.



Photo 1. Back lat pull-downs



Photo 2. Back presses



Photo 3. Dumbbell flys

Radiographic evaluation exhibits rather homogeneous density within a discrete, well circumscribed lesion. Ultra-sound evaluation helped us to localize the deposit to a specific tendon, the supraspinatus in this case.

Discussion

The recognition of the biomechanics of different body building exercises can convey us to the diagnosis of musculo-skeletal problems that originate from continuous strength training. Most weightlifting injuries are usually caused by poor technique or overuse of the tendons reinforcing the articular capsule (3).

What is common to back lat pull-downs back presses and dumbbell flys, knowing that these three exercises provoked anterior shoulder pain in our patient, who had calcified tendonitis? The answer is that in all these exercises we use combined movements of abduction and forced external rotation of the arms.

When some people perform exercises in which they raise the arms in extension or laterally, the supraspinatus tendon is rubbed and compressed between the head of the humerus and the osteo-ligamentous ceiling created by the inferior surface of the acromion and the coraco-acromial ligament. We can consider this lesion as a result of entrapment. Raising the arm becomes extremely painful and eventually can cause irreversible deterioration of the supraspinatus tendon through calcification and even tearing. When doing lateral dumbbell raises for example, we'll need to determine the proper height to raise the arms to. The correct movement is the one you can perform without causing pain (3). Tension overload is a mechanism that can result in damage to the supraspinatus tendon (4).

Spasm, hypertonicity or hypotonicity in one or more of the shoulder girdle, can pull the involved shoulder joint into an incorrect position. This position can cause friction of tendon during arm movements, disruption of fascicles, inflammation and dystrophic calcification (3, 5).

Generally, this lesion occurs in the fourth or the fifth decades and it is slightly more common in the non-dominant arm, as happened to our patient (6). Histologic studies have shown degenerative changes characterized by calcification, fibrovascular proliferation, and microtears in elderly individuals but not in younger subjects (7).*

Its generally begins with inflammation of the serous bursa, which protects the supraspinatus tendon from excessive friction and extends to the supraspinatus tendon itself (3). Others retain that the lesion is most often in the supraspinatus tendon, with the bursa being involved secondarily (6).

Calcium deposits could be seen on plain radiographs and ultra-sound of the shoulder. X-rays demonstrate a large calcific deposit in the supraspinatus tendon (photo 4). Ultrasound evaluation of the shoulder has been proved to be an accurate and noninvasive screening tool for the diagnosis of calcified tendonitis (photo 5).



Photo 4. Calcific deposit in the supraspinatus tendon (inside the circle) seen in X-rays

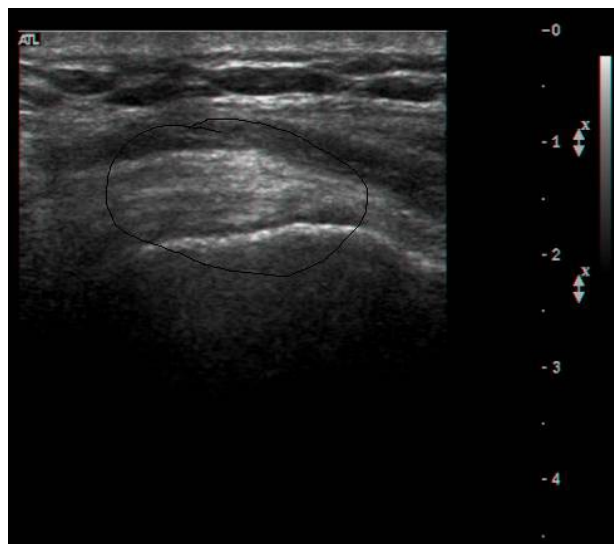


Photo 5. Calcific deposit in the supraspinatus tendon (inside the circle) seen in ultrasound

Conclusions

Tension overload in overhead and external rotation movements of the arm during strength training, as back lat pull down, back presses and dumbbell fly, can help us to discover an eventual supraspinatus calcified tendonitis.

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