PM R 8 (2016) 808-812

www.pmrjournal.org

Case Presentation

Acute Calcific Bursitis After Ultrasound-Guided Percutaneous Barbotage of Rotator Cuff Calcific Tendinopathy: A Case Report

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Abstract

Ultrasound-guided percutaneous barbotage is an effective treatment for rotator cuff calcific tendinopathy, providing rapid and substantial pain relief. We present the case of a 49-year-old woman with aggravated pain early after ultrasound-guided barbotage of a large calcific deposit in the supraspinatus tendon. Subsequent examination revealed a thick calcification spreading along the subacromial-subdeltoid bursa space, suggesting acute calcific bursitis complicated by barbotage. Additional barbotage alleviated her pain completely. Therefore, a high index of suspicion for acute calcific bursitis is required in patients with unresolved or aggravated pain after barbotage. Repeated barbotage could be effective for this condition.

Introduction

Rotator cuff calcific tendinopathy is one of common causes of shoulder pain, with a prevalence up to 20% in painful shoulders and 7.5% in asymptomatic shoulders [1]. Physical therapy and oral medications, such as nonsteroidal anti-inflammatory drugs, are prescribed for mild symptoms. For severe and intractable cases, several invasive treatments have been proposed [2]. Ultrasound (US)-guided barbotage is regarded as an excellent option because it does not use ionizing radiation, it is less invasive than arthroscopic removal of deposits, it can be performed at a relatively low cost, and good outcomes are expected [1,3-5].

Although clinical improvement after US-guided barbotage has been found in 71%-91% of patients [2,6], postprocedural complications, including late-occurring painful bursitis, have been reported [2,5,7]. Late-occurring painful bursitis has been found in 3.5%-13.2% of treated shoulders, with onset latencies ranging from 35-84 days [1,2]. In most of these cases, US re-evaluation revealed no macroscopic deposits requiring additional treatment [1]. In contrast, in this article we report a patient with acute postprocedural subacromial-subdeltoid (SASD) bursitis as a result of a newly developed, massive intrabursal calcification.

Case Presentation

A 49-year-old woman with no history of trauma gradually experienced bilateral shoulder pain over a 1 year period. The pain became progressively aggravated with a waxing and waning course despite supportive physical therapy and use of oral medications. Radiography and ultrasonography of her shoulders revealed large, bilateral, oval-shaped calcific deposits in her supraspinatus tendons (SSTs) that measured 13 mm (long axis) $\times$ 7 mm (short axis) and 22.3 $\times$ 5.5 mm for the right and left sides, respectively. She did not have any conditions provoking calcific deposits such as gouty arthritis, renal disease, parathyroid hormone disease, connective tissue disease, or tumoral calcinosis [8]. Because the pain in her right shoulder was more severe than the pain in her left shoulder, US-guided barbotage was first performed on her right SST. When her right shoulder pain resolved after 2 weeks, she underwent the same procedure on her left SST (Figure 1A, B).

The barbotage procedure was performed with the patient in a supine position. A small pillow was inserted under the involved shoulder to keep the scapulohumeral complex protracted and the glenohumeral joint extended. With the shoulder internally rotated to expose the SST as much as possible out of the overlying acromion, a US probe was placed on the SST and aligned to visualize the long axis of the calcific deposit. While

1934-1482/$ - see front matter
http://dx.doi.org/10.1016/j.pmrj.2016.02.005

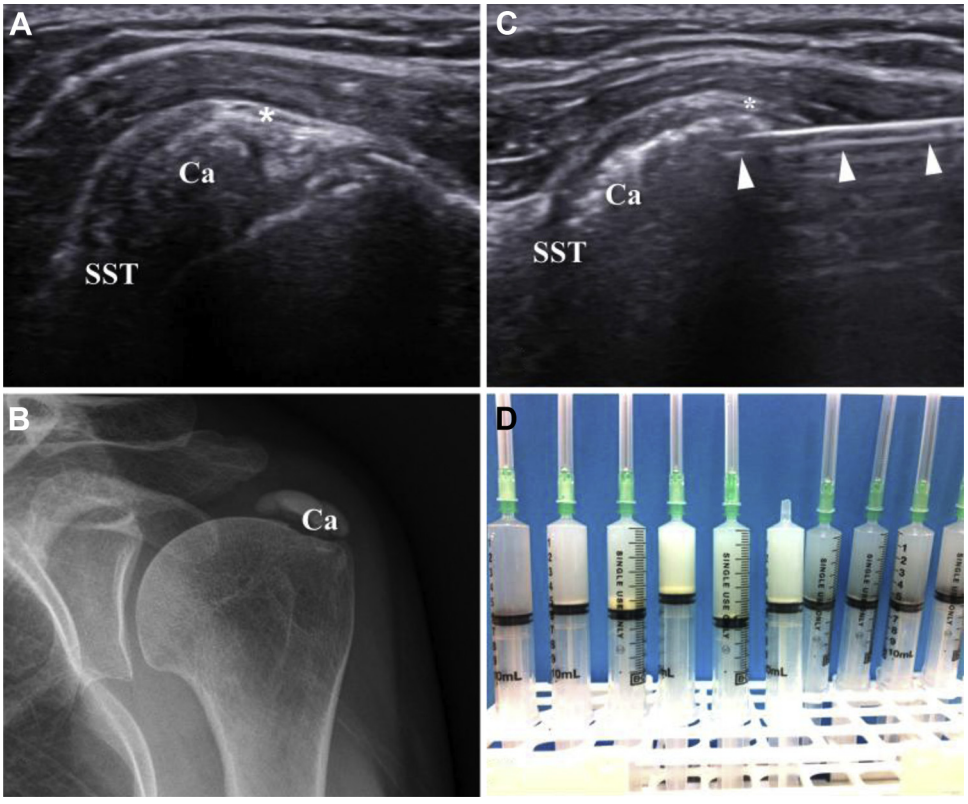

Figure 1. (A) Ultrasonography and (B) plain radiography show calcification (Ca) of the left supraspinatus tendon (SST) under the swollen subacromial subdeltoid bursa (asterisk). The size of calcification is 22.3 × 5.5 mm. (C) The tip of an 18-gauge spinal needle (arrowheads) is thrust through the bursal surface of the tendon into the calcific deposit, under ultrasound guidance. (D) Cloudy calcific material is removed from the SST by the syringe.

using the heel-toe maneuver and tilting the probe slightly, the best position and orientation of the probe was chosen by determining a US view showing the most calcification. Being careful not to move the probe, a large area of skin adjacent to it was sterilized with an iodopovidone solution. To maintain the sterile field, the needle entry site was kept far from the probe and great care was exerted never to move the probe into the sterile field at any time [9]. Approximately 1 cm from its end, 1% lidocaine was administrated subcutaneously using a 2-inch, 25-gauge needle to produce a visible wheal. Then the needle was advanced deeply through the deltoid muscle to the SASD space as 1% lidocaine was infiltrated into the soft tissue along the needle's path, and eventually into the bursa.

The 25-gauge needle was removed, and an 18-gauge spinal needle attached to a 10-mL syringe filled with 5 mL of 1% lidocaine was inserted following the same tract traveled by the previous fine needle. When the spinal needle tip reached the tendon bursal surface, approximately 0.5 mL of lidocaine was infiltrated to further anesthetize the pain-sensitive area. After informing the patient about a possible increase in discomfort, the needle tip was passed through the bursal surface into the calcific deposit. After US confirmation that the needle tip was at the center of the nodule, the syringe plunger was tapped gently but firmly to infuse fluid into the calcific deposit. The plunger was released immediately after a short, firm push to allow the infused fluid to return with cloudy calcific material back to the syringe. This cycle of push and release was repeated until the syringe was filled with thick, cloudy fluid (Supplementary Videos 1 and 2). When the entire amount of fluid in the initial syringe became thick and cloudy, it was replaced with another syringe filled with 5 mL of sterile saline solution. This syringe replacement was repeated until the returning fluid was clear without any calcific material, which required more than 10 replacement syringes. At the end of the barbotage procedure, a mixture of 1 mL triamcinolone acetonide (40 mg/mL) and 4 mL normal saline solution was used to wash out the cavity created by removal of the calcific material from the deposit. This maneuver was performed to prevent crystal-induced intratendon inflammation. Approximately 10 push-release cycles were performed, and less than 0.5 mL of corticosteroid mixture was left in the cavity. Most of the mixture was returned to the syringe. A prophylactic intrabursal corticosteroid injection was not performed.

Three weeks after the left shoulder procedure was performed, the patient returned with severe left shoulder pain, contrary to her experience with the right shoulder, where her pain had resolved since the barbotage procedure that was completed 5 weeks prior to