OLGU SUNUMU CASE REPORT

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Acute Spontaneous Supraspinatus Tendon Rupture in a Patient with End-stage Renal Disease

Son Dönem Böbrek Hastalığı Olan Bir Hastada Akut Spontan Supraspinatus Tendon Rüptürü

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ABSTRACT Spontaneous tendon ruptures in patients with end-stage renal disease have been reported previously in the literature. It is often related to hyperparathyroidism, the use of quinolone antibiotics, and steroids. In this case report, we present a complete rupture of the supraspinatus tendon in a 76-year-old hemodialysis patient without any previous shoulder disease or trauma. Considering the poor prognosis of surgical treatment, we received an acceptably good response to conservative treatment in our patient. Spontaneous tendon ruptures should be considered in the differential diagnosis of sudden-onset joint pain in end-stage renal disease patients, especially in the presence of hyperparathyroidism and long-term dialysis history.

Keywords: Spontaneous rupture; supraspinatus tendon; end-stage renal disease; hyperparathyroidism

ÖZET Son dönem böbrek hastalığı olan hastalarda, spontan tendon rüptürleri daha önce literatürde bildirilmiştir. Genellikle hiperparatiroidizm, kinolon antibiyotik kullanımı ve steroid kullanımı ile ilişkilidir. Bu olgu sunumunda, daha önce herhangi bir omuz hastalığı veya travma öyküsü olmayan 76 yaşında bir hemodiyaliz hastasında gelişen supraspinatus tendonu komplet rüptürünü sunuyoruz. Hastamızda, cerrahi tedavinin kötü prognozu göz önüne alındığında, konservatif tedaviyle kabul edilebilir derecede iyi yanıt aldık. Özellikle hiper paratiroidizm ve uzun süreli diyaliz öyküsü varlığında, son dönem böbrek hastalarında ani başlayan eklem ağrısının ayırıcı tanısında spontan tendon rüptürleri düşünülmelidir.

Anahtar Kelimeler: Spontan rüptür; supraspinatus tendonu; son dönem böbrek hastalığı; hiperparatiroidizm

The incidence and prevalence of end-stage renal disease (ESRD) have been increasing in recent decades. Hemodialysis and peritoneal dialysis are the most preferred renal replacement therapies which are frequently used in these patients.[1] Non-traumatic (spontaneous) tendon ruptures are one of the most important musculoskeletal involvements of ESRD, especially in hemodialysis patients. Patients with hyperparathyroidism, receiving quinolone antibiotics or steroids are at increased risk for the development of spontaneous tendon ruptures. Early diagnosis of complete tendon ruptures and distinguishing them from other musculoskeletal problems are crucial for effective treatment in these patients.[2,3] However, spontaneous rupture of the supraspinatus tendon due to ESRD is very rare in the literature. Therefore, we present a rare case of a hemodialysis patient who suffered a spontaneous complete rupture of the supra spinatus tendon.

CASE REPORT

A 76-year-old female patient has been admitted to our outpatient clinic with left shoulder and arm pain, dif-

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ficulty in arm movement, and bruising in the front of her left arm for a week. There was no history of chronic shoulder pain, trauma, strain, antibiotic, or steroid use. There was no accompanying neck pain, arm, and hand numbness, joint swelling, either. She had hypertension and ESRD for six years and had undergone right knee arthroplasty for knee arthrosis 12 years ago. Due to ESRD, she has been receiving hemodialysis two sessions a week for one year. In the last dialysis session 4 days ago, topical mucopolysaccharide polysulfate was prescribed for her complaints with the diagnosis of subcutaneous hemorrhage around the fistula, but her pain and limitation of shoulder movement had worsened.

In the examination we performed in our outpatient clinic, there was an ecchymosis on the anterior aspect of her left arm, extending to the antecubital region (Figure 1). Tenderness and a slight increase in temperature were noticed with palpation of her left shoulder joint.

Her left shoulder active range of motion was limited at 45 degrees of flexion, 25 degrees of abduction, 30 degrees of internal rotation, and 15 degrees of external rotation. On the other hand, passive range of motion was limited and painful at 70 degrees of flexion, 60 degrees of abduction, 40 degrees of internal rotation, and 70 degrees of external rotation. The ranges of motions of other joints were full and painless. Neurological examination revealed no sensory deficits or muscle weakness except for restriction and pain in active movement of the left shoulder. Deep tendon reflexes were normal. There was no neurological finding suggesting a central nervous system lesion.

Peripheral arterial pulses were palpable and a thrill was palpated over the arteriovenous fistula in her left antecubital region. Hawkins-Kennedy, Neer and Drop arm tests were positive on the left. The visual analog scale (VAS) scores indicating left shoulder pain severity were 80 mm at activity and 45 mm at rest.

Her laboratory tests revealed a normochromic normocytic anaemia (HGB: 9 g/dL), uraemia (urea 43 mg/dL, creatinine 3.93 mg/dL), hyperparathyroidism (93.5 µL) and hypoalbuminemia (3.16 g/dL). Corrected serum calcium level was 8.98 mg/dL. Although C-reactive protein level and erythrocyte sedimentation rate were elevated (60.4 mg/dL and 99 mm/hr); rheumatoid factor was negative and procalcitonin level was normal (0.44 ng/mL). Previous laboratory test results revealed that she had secondary hyperparathyroidism for three years.

FIGURE 1: The ecchymosis on the patient's left arm (with permission of the patient).

Her left shoulder joint magnetic resonance imaging (MRI) showed narrowing in the acromioclavicular joint distance, superior subluxation of the glenohumeral joint, and effusion in the subacromial and subdeltoid bursa. The supraspinatus tendon couldn't be seen at the subacromial space and was retracted to the suprascapular fossa. There were density areas, reminiscent of hemorrhagic material in the subacromial subdeltoid bursa, suggesting acute rupture. Also, there was no bone marrow edema or prominent degenerative change, suggesting trauma or chronic subacromial impingement syndrome (Figure 2, Figure 3).

Based on the present findings, the patient was diagnosed with an acute spontaneous complete rupture of the left supraspinatus tendon. Surgical treatment was not considered due to her age and clinical condition.

FIGURE 2: MRI of the left shoulder-sagittal PD FSE Fat Sat Sequence. The bold arrow indicates the narrowing of subacromial space and superior subluxation of the humeral head. The thin arrow indicates the effusion at the subacromial-subdeltoid bursa.
MRI: Magnetic resonance imaging; PD: Proton density; FSE: Fast spin echo.

FIGURE 3: MRI of the left shoulder-coronal PD FSE Fat Sat Sequence. The arrow indicates the absence of supraspinatus tendon at the insertion site and retraction of the supraspinatus muscle to the suprascapular fossa.
MRI: Magnetic resonance imaging; PD: Proton density; FSE: Fast spin echo.

Initially, we prescribed low dose oral etodolac (400 mg/day), diclofenac topical spray (4 times a day), pantoprazole 40 mg/day in consultation with the nephrology clinic; and recommended 15 minutes of cryotherapy (cold pack) to the shoulder joint four times a day to control her pain. Subsequently, ten sessions of physiotherapy including the active-assistive shoulder joint movement therapy, and scapular soft tissue mobilization along with 20 minutes of transcutaneous electrical nerve stimulation, 5 minutes of pulsed ultrasound therapy at a dose of 1.5 watt/cm^2 was applied.

The examination was repeated after the end of physiotherapy. Post-treatment pain VAS scores were 40 mm at activity and 10 mm at rest. Besides, the passive range of motions of her shoulder joint increased to 140 degrees of flexion, 120 degrees of abduction, 60 degrees of internal rotation. Informed consent was obtained from the patient to write this case report.

DISCUSSION

In this case report, we present a case of nontraumatic and complete rupture of the supraspinatus tendon in a patient with ESRD. We suggested that this rupture developed acutely and spontaneously since the patient stated that she had no chronic shoulder pain or any trauma before.

Spontaneous tendon ruptures in patients with ESRD have been reported in the literature. The most affected tendons are the quadriceps, patellar, and Achilles. Especially quadriceps tendon ruptures tend to be bilateral in chronic hemodialysis patients. Remarkably, multiple simultaneous tendon ruptures of different muscles also have been reported.[2,3] These ruptures have been associated with hyperparathyroidism, the use of quinolone antibiotics, and steroids.[2,4] Secondary hyperparathyroidism has been observed in almost all ESRD patients with spontaneous tendon rupture. The certain etiology of spontaneous tendon ruptures in patients receiving hemodialysis is unknown, but increased bone fragility of the enthesis area and intratendinous calcification due to secondary hyperparathyroidism have been blamed. Spontaneous rupture of quadriceps tendon at the osteotendinous junction has been associated with increased bone fragility by some authors.[5-7] Besides, structural changes in the affected tendons have been observed in ESRD patients with hyperparathyroidism. In a study conducted on the ultrasonographic evaluation of the Achilles tendon of chronic hemodialysis patients, the relationship between Achilles tendinopathy and hyperparathyroidism has been shown. Moreover, the authors suggested that the longer the hemodialysis history, the higher the incidence of tendinopathy.[6] As described in the literature, our patient also had secondary hyperparathyroidism accompanying ESRD for three years. Shoulder joint arthrosis and chronic subacromial impingement syndrome were excluded because of the acute onset of shoulder pain and the

absence of significant joint degeneration on MRI. Besides, there was no history of trauma or use of steroids and quinolone. Therefore, we concluded that the supraspinatus tendon rupture of our patient was associated with ESRD and secondary hyperparathyroidism.

It is a known fact that rotator cuff tendon degeneration increases with advancing age. Symptomatic or asymptomatic rotator cuff tears are more common in the elderly population and tend to be bilateral. However, it is not clear how often rotator cuff degeneration accompanying aging results in an acute spontaneous complete rupture.[8] In this case report, we couldn't comment on this issue because there was no asymptomatic right shoulder imaging of our patient.

ESRD and secondary hyperparathyroidism could accelerate the degeneration of the rotator cuff and precipitate the acute rupture of the supraspinatus tendon. Few studies in the literature emphasize the relationship between spontaneous supraspinatus tendon rupture and ESRD.[9] On the other hand, shoulder joint involvement is not uncommon in patients with chronic kidney disease. In a study on shoulder MRI of patients with chronic kidney disease, effusion in the subacromial-subdeltoid bursa and thickening of the rotator cuff tendons were reported even in the absence of shoulder pain. Dialysis-related arthropathy, characterized by the accumulation of beta-2 microglobulin, has been blamed for these soft tissue changes.[10] Similarly, our patient's left shoulder MRI showed effusion at the subacromial-subdeltoid bursa. But, we excluded the diagnosis of dialysis-related arthropathy because of no destructive changes in the periarticular bone on MRI and the absence of chronic joint pain history.

Early surgical treatment of complete tendon ruptures is recommended to prevent impairment in movement and functional capacity. Moreover, good outcomes have been reported following quadriceps tendon repair in ESRD patients.[4,5,11] Unfortunately, surgical repair of the rotator cuff tendon ruptures has not a good prognosis, unlike quadriceps and Achilles. Besides, old age and accompanying comorbidities can result in surgical complications in chronic hemodialysis patients.[12] In line with these clinical predictions, we preferred to apply conservative treatment considering our patient's age, clinical status, and expectations.

Spontaneous tendon ruptures should be considered in the differential diagnosis of sudden-onset joint pain in ESRD patients, especially with hyperparathyroidism and long-term dialysis history. To prevent this complication, management of secondary hyperparathyroidism may be crucial. Surgical or conservative treatment should be decided considering the clinical status of the patient and the characteristics of the injury. In patients for whom surgical treatment is not considered, conservative methods including appropriate physiotherapy modalities and exercise interventions can reduce pain and improve mobility.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

This study is entirely author's own work and no other author contribution.

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