

Septic Arthritis of the Shoulder in a Peritoneal Dialysis Patient

Bir Peritoneal Diyaliz Hastasında Omuz Septik Artriti

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Summary

In this paper, we describe the case of a patient with end-stage renal disease (ESRD) undergoing continuous ambulatory peritoneal dialysis (CAPD) who had developed septic arthritis of the shoulder further complicated by abscess formation. A 29-year-old male hemiplegic patient (two months post-stroke) with ESRD undergoing CAPD was hospitalized for rehabilitation. He developed painful shoulder while receiving antibiotic therapy. The patient was diagnosed as having septic arthritis with abscess formation. Magnetic resonance imaging of the right shoulder demonstrated multilocular fluid collections in the subacromial and subdeltoid regions including the subscapularis and deltoid muscles. He was treated with vancomycin and followed up by serial C-reactive protein measurements. His shoulder motions returned to near-normal at the end of therapy including physical therapy interventions as well. As part of the differential diagnosis of shoulder pain in ESRD patients, we want to draw attention to septic arthritis, which can be further complicated by abscess formation, as in our case. *Türk J Phys Med Rehab* 2011;57:57-9.

Key Words: Continuous ambulatory peritoneal dialysis, end-stage renal disease, septic arthritis, shoulder, stroke

Özet

Son dönem böbrek yetmezliği (SDBY) için sürekli ambulator peritoneal diyaliz (SAPD) ile tedavi edilmekte iken abse oluşumu ile komplike olmuş omuz septik artriti geliştiren bir hasta sunuldu. 29 yaşındaki iki aylık inme öyküsü olan erkek hemiplejik hasta SDBY için SAPD ile tedavi edilmekte iken rehabilitasyon amacı ile hospitalize edildi. Antibiyotik tedavisi almakta iken ağrılı omuz geliştirdi. Sağ omuzun manyetik rezonans görüntülemesi subskapular ve deltoid kasları da içine alan subakromiyal ve subdeltoid bölgelerde multiloküler sıvı koleksiyonları olduğunu gösterdi. Hasta vankomisinle tedavi edildi ve seri C-reaktif protein ölçümleriyle takip edildi. Fizik tedavi uygulamalarını da içeren tedavi sonucunda omuz hareketleri tamamen normale yakın düzeldi. SDBY olan hastalarda omuz ağrısının ayırıcı tanısının bir parçası olarak abse oluşumu ile komplike olmuş septik artrite dikkat çekmek istiyoruz. *Türk Fiz Tıp Rehab Derg* 2011;57:57-9.

Anahtar Kelimeler: Sürekli ambulator peritoneal diyaliz, son dönem böbrek yetmezliği, septik artriti, omuz, inme

Introduction

Patients with end-stage renal disease (ESRD) are immunocompromised and are prone to a variety of infections. Infection is a common morbidity, which can be mortal in ESRD patients. Unintentional pathogens are introduced to such patients during hemodialysis and peritoneal dialysis straight through the access site (arteriovenous fistula, arteriovenous graft, central venous catheter, or peritoneal dialysis catheter) (1). Septic arthritis (SA) is a rarely reported infectious complication in ESRD patients. Among

the cases of SA, involvement of the glenohumeral (shoulder) joint is relatively uncommon, occurring in approximately 3% of all cases of SA (2).

The presentation of a patient with one or more hot swollen joints is a common medical emergency with a wide differential diagnosis; the most serious cause of which is SA (3). Immunocompromised status is a well-known risk factor for SA. Other risk factors for SA include extremes of age, recent bacteremia, pre-existing joint disease, prosthetic joints, and immunocompromised states such as diabetes, cirrhosis, cancer and renal disease (2,4). In this case

presentation, we describe the case of a patient with ESRD undergoing continuous ambulatory peritoneal dialysis (CAPD) who had developed SA further complicated by shoulder abscess formation.

Case Report

A 29-year-old male patient with right-sided hemiplegia was hospitalized for rehabilitation two months post-stroke. The patient was on CAPD program for six years with the diagnosis of focal segmental glomerulosclerosis. His brain magnetic resonance imaging (MRI) and diffusion brain MRI revealed subacute hematoma and surrounding edema at the level of the left lentiform nucleus radiating superiorly to corona radiata and compression of the left lateral ventricle secondary to the edema. On admission, physical examination revealed prominent swelling of the right shoulder joint, with painful movements limited in all planes of motion. C-reactive protein (CRP) was high (199 mg/L, normal range 0-10 mg/L), but white blood cell (WBC) count was 4900/mm³ (normal range 4500-11000/mm³) on initial laboratory examination. Patient's general condition worsened and he became febrile (39°C-40°C). CRP further increased to 220 mg/L. Urine and CAPD fluid cultures were negative. Upon consultation with the Department of Infectious Disease, intravenous (IV) antibiotic therapy (piperacillin 2 g, tazobactam 250 mg 4x 2.25 g) was initiated. After the antibiotic treatment was started, the shoulder joint of the patient became hot, red and even more swollen. Arthrocentesis over the anterior aspect of the glenohumeral joint was unsuccessful. MRI of the right shoulder demonstrated multilocular fluid collections in the subacromial and subdeltoid regions including the subscapularis and deltoid muscles, contrast enhancement of the surrounding muscles concordant with prominent inflammation (the fluid collections were thought to be related

to abscess formation), partial rupture of the supraspinatus tendon, prominent effusion, synovial thickening of the shoulder joint, bone marrow edema in the humerus, inferior displacement of the humeral head (Figure 1). Aspiration from the anteromedial part of the humerus and subdeltoid bursa was accomplished by interventional radiologists, while the patient was under IV antibiotic treatment. WBC count of the aspirate was 27400/mm³ with 95% polymorphonuclear leukocytes (PMNLs) on cell count. Cultures of aspirated material were negative. The antibiotic therapy was changed to IV vancomycin 1 g every 72 hours. The patient received eight doses of vancomycin totally. His final CRP was 20.6 mg/L. The shoulder motions returned to near-normal at the end of therapy that also included physical therapy interventions consisting of application of cold pack, transcutaneous electrical nerve stimulation and range of motion exercises.

Discussion

Hemiplegic shoulder pain is a diagnostic challenge and in patients with ESRD, the clinical picture is further complicated by musculoskeletal problems inherent to the disease. Musculoskeletal manifestations of ESRD are seen in a variety of tissues (bones, joints, and soft tissues) and include avascular necrosis, osseous abnormalities, ligamentous laxity, destructive arthropathies, crystal arthropathies and soft tissue calcifications (5,6). However, SA in patients undergoing CAPD is rarely reported. Infectious organisms can enter the joint via direct inoculation, hematogenous spread, or contiguous spread from intra-articular extension of an adjacent osteomyelitis.

SA of the shoulder is uncommon in adults. In a study of SA of the shoulder in adults, 17 out of 18 patients had at least one serious associated disease and had a delay in diagnosis (7). The diagnosis and management of acute bone and joint infections in patients with ESRD are fraught with major difficulties (8). Whenever there is suspicion of SA, treatment should be initiated promptly while waiting for laboratory confirmation of the diagnosis (9). Antibiotics should be started immediately after the collection of microbiological specimens (10). In our patient, the pathogenic organism could not be identified because the specimens were collected while the patient was on IV antibiotic therapy. Since catheter-related infections remain a serious problem for patients on CAPD, antibiotic treatment was initiated immediately after the increment of CRP. There are no guidelines for antibiotic treatment in SA (11). The key to diagnosing SA is being aware of the possibility of joint infection, with immediate arthrocentesis of the affected shoulder and proper analysis of synovial fluid (2). The diagnosis of SA was confirmed by MRI of the right shoulder. Ultrasound and MRI are excellent tools in the evaluation of the suspected septic joint, and will demonstrate alterations before radiography (12).

Since our patient had prominent swelling of the shoulder joint, amyloid arthropathy was included in the differential diagnosis. Dialysis-related amyloidosis (DRA), also known as beta-2-microglobulin amyloidosis, is a unique type of amyloidosis affecting patients with ESRD (13). The most common manifestations of DRA are carpal tunnel syndrome, shoulder pain and destructive arthropathy (14). Beta-2-microglobulin amyloid deposits in the

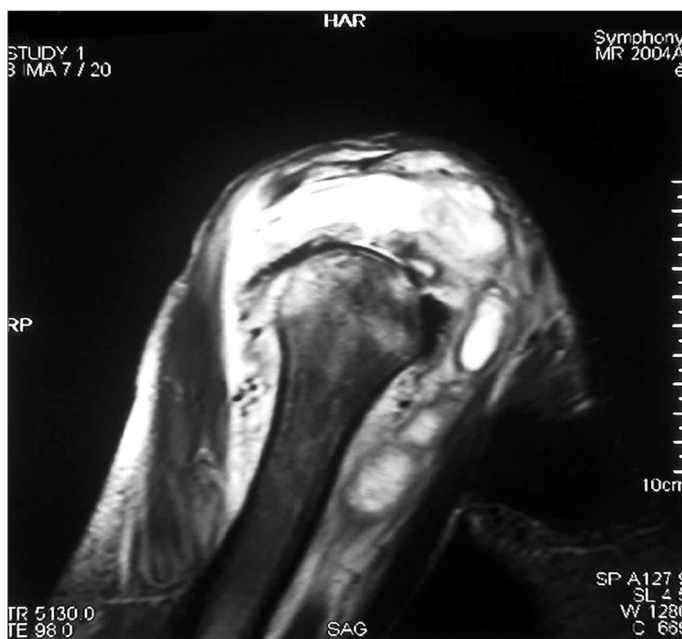


Figure 1. Oblique T2-weighted sagittal section of the right shoulder demonstrated multilocular fluid collections in the subacromial and subdeltoid regions including the subscapularis and deltoid muscles as well as prominent effusion and synovial thickening of the shoulder joint.

osteoarticular tissues were found in patients who had been predominantly treated by CAPD (15). Blumberg et al. (16) demonstrated that serum beta-2 microglobulin is massively elevated in long-term hemodialysis and CAPD patients. The treatment of DRA involves only symptomatic management and surgical removal of amyloid deposits (17). Because of the rising number of patients undergoing CAPD, an increasing incidence of amyloid arthropathy is expected in this group of patients.

As more patients have undergone hemodialysis, peritoneal dialysis and renal transplantation in the recent years, the problem of bone and joint infections may become more common (8). The diagnosis of SA can be difficult even among specialists and there is a lack of consensus on the key management issues (3). High index of suspicion is crucial for prompt diagnosis and successful management of SA.

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