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Lunate bone osteonecrosis in hemodialysis patient with rheumatoid arthritis

Hemodiyalize giren romatoid artritli hastada lunat kemik osteonekrozu.

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Abstract
Kienbock's disease is the osteonecrosis of lunate bone. Patients usually present with unilateral localized dorsal wrist swelling and pain that increase with movement. Direct radiographic and other imaging methods are used for diagnosis. Cautious evaluation of the radiological findings is substantial, because the management of the disease depends on radiological stage. Here, we present a 46-year-old woman with rheumatoid arthritis who admitted to the outpatient clinic of our hospital, because of pain, swelling and limitation of movement in the left wrist. We want to draw attention Kienbock's disease in patient with rheumatoid arthritis.

Key Words: Osteonecrosis, arthritis, rheumatoid, renal dialysis.

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Özet
Kienbock hastalığı lunat kemiğin osteonekrozudur. Hastalar genellikle hareket ile artan ağrı ve unilateral el bilek ekleminin dorsal yüzünde lokalize ödem ile kliniğe başvururlar. Tanı amaçlı direkt radyografiler ve diğer görüntüleme metotları kullanılır. Hastalığın tedavi ve takibinde radyolojik evreleme önemli olduğu için, radyografik bulguların dikkatli bir şekilde değerlendirilmesi oldukça temeldir. Bu yazıda, el bileği ekleminde hareket kısıtlanması, ağrı ve ödem şikayetleriyle ile polikliniğe başvuran Romatoid Artrit tanılı 46 yaşında bir olgu sunulmuştur. Yazımızda Romatoid Artritli hastalarda Kienböck hastalığına dikkat çekmek istedik.

Anahtar Kelimeler: Osteonekroz, artrit, romatoid, böbrek diyalizi .

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Introduction

Osteonecrosis (ON) is defined as death of bone tissue due to the cessation of blood flow to the bone. It is mostly seen femoral head and condyles and humeral head besides the small bones of the hand such as lunatum and scaphoid [1]. The risk factors are trauma, corticosteroid use, immunosuppression, systemic lupus erythematosus, rheumatoid arthritis, alcohol, hemoglobinopathies and coagulopathies [2]. Kienbock's disease (KD) is the ON of lunate bone which is a component of carpal bones [1]. Bone scintigraphy and magnetic resonance imaging (MRI) are effective methods for the diagnosis in the early stages of KD. However, in the advanced stage, plain radiographs, computed tomography, arthroscopy, or their combinations are recommended for the imaging of bone fracture and collapse [2, 3]. Stahl-Lichtman classification based on the radiographic findings in the anteroposterior (AP) position is used for the staging of KD. Stage I and II are defined as pre-collapse disease, stage IIIa, IIIb and IV are called collapsed lunate bone ON [3]. Treatment options for KD are immobilization, radial shortening osteotomy, vascularized and non-vascularized bone grafting, partial carpal arthrodesis, capitate shortening osteotomy, and rescue attempts for arthritic wrist. In the early stages immobilization and non-steroidal anti-inflammatory drug (NSAID) is recommended [1].

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Case report

A 46-year-old woman admitted to the outpatient clinic of our hospital with complaints of pain, swelling and limitation of movement in the left wrist. She has been under prednisolon 5 mg/day and leflunomide 20 mg/day treatment for 9 months by the diagnosis of rheumatoid arthritis (RA). RA diagnosis was made 2 years ago. When the patient was in remission with the medications she used, her complaints have started one month ago. Furthermore, the patient had been on regular hemodialysis three times per week due to chronic renal failure. The patient did not have the history of neither trauma and alcohol nor tobacco use. Vital signs were normal. Left wrist was swollen and warm. The wrist range of motion (ROM) was painful and limited. Left wrist flexion, extension, ulnar deviation and radial deviation measurements were 25°, 30°, 15° and 0°, respectively. On palpation of the wrist there was a sensitivity on the lunate bone, third and fourth carpometacarpal joints. Active arthritis was not found in any other joints. Disease Activity Score Calculator for Rheumatoid Arthritis (DAS 28) was 2.5. The pain intensity measured by visual analog scale (VAS) was 10. Muscle strength was normal. Sensory examination was normal. Laboratory test results were as follows: creatinine:4.95 mg/dl, blood urea nitrogen (BUN):74 mg/dl, erythrocyte sedimentation rate (ESR):6 mm/h, C-reactive protein (CRP):6.9 mg/L and rheumatoid factor(RF):12.3 IU/ml. AP left wrist radiographic imaging was normal.

On left wrist MRI, lunate bone had changes compatible with early stage ON (Figure 1a and 1b). Rest splint was prescribed for the left wrist. The wrist stretching and ROM exercises were given. NSAID treatment was prescribed. In addition, the patient was consulted by the Orthopedics and Traumatology Department. Surgical intervention was not advised. Three weeks later, an outpatient clinic control visit planned. In the control visit, pain severity on VAS was 3. On the palpation decreased sensitivity of the lunate bone, third and fourth carpometacarpal joints were found. Wrist flexion, extension, ulnar deviation and radial deviation measurements were 40°, 45°, 25° and 10°, respectively. Left wrist ROM measurements were improved.

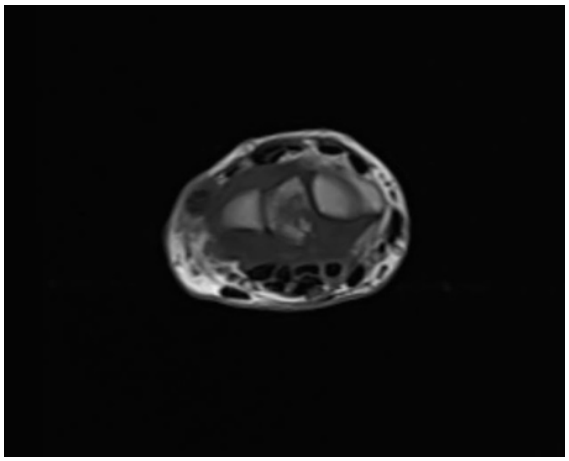

Figure 1a. On MRI, T1-weighted scans on the left wrist showed hypointense signal area extending from the central of the lunate bone to the palmar facial cortex.

Figure 1b. Hyperintense appearance of the same area on the proton dancite sequences.

Discussion

Forty-six-year-old female patient with RA who admitted to the outpatient clinic with the complaints of pain, swelling and limitation of ROM in the left wrist was diagnosed as KD. KD is occasionally associated with medical conditions including trauma, coagulation disorders, scleroderma, septic emboli, sickle cell disease, systemic lupus erythematosus, as well as systemic corticosteroid use [4, 5]. There was no history of trauma in the detailed anamnesis of our patient. In literature, there was

only a case report with lunate bone ON in the RA patients who are not using corticosteroids [6]. Glucocorticoid-induced ON is usually seen in long-term and high-dose use, but has also been reported after short-term and intra-articular injection [7]. Our patient has been using low dose corticosteroid for 9 months, but there was no history of intraarticular steroid injection in the anamnesis. The patient had hemodialysis history due to chronic renal failure. Until now, there have been only three published reports of KD in hemodialysis patients [8, 9]. The causal relationship between dialysis treatment and development of KD was not clarified in these previous three cases, although damaged bone remodeling was suggested [9, 10]. In one of them, KD was suggested to develop due to impaired arterial circulation and secondary to venous drainage impairment as a consequence of radiocephalic AV fistula formation [10]. Our patient had brachiocephalic AV fistula. For this reason, the radiocephalic AV fistula was not considered as a risk factor in this case. Intermittent heparinization during hemodialysis is thought to be related to the development of KD by triggering the revascularization process which causes lunate bone collapse [8, 11]. This may be a risk factor for our patient. However, there were several risk factors for KD in our patient; we believe that the main risk factor was corticosteroids. In patients with RA followed up at physical medicine and rehabilitation outpatient clinics, lunate bone ON can be easily missed because in most cases wrist pain already accompanies the disease. A different pathology should be suspected in the presence of pain persisted locally in one wrist in the patients who are in the remission with RA. In cases where direct radiographic is not sufficient to diagnose, MRI is useful for differential diagnosis of fractures, arthritis and other pathologies as well as early diagnosis and treatment [1].

As a result, it is useful to consider lunate bone ON in the differential diagnosis of wrist pain, even if the absence of hemodialysis history in the RA patients who are using corticosteroids.

Conflict of Interest: The authors declare that there is no conflict of interest.

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