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CASE REPORT

A Case of Psoriatic Arthritis with Elbow Involvement Misdiagnosed as Osteomyelitis

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Abstract

Psoriatic arthritis is a chronic systemic inflammatory disease characterized by joint inflammation associated with psoriasis and may present with a variety of clinical manifestations related to bone structures and soft tissues around the joints. Psoriatic arthritis may show radiological findings similar to osteomyelitis (OM). A 69-year-old patient who had been diagnosed with psoriatic arthritis for 5 years was referred to our clinic with a preliminary diagnosis of OM due to severe pain in the right elbow. The patient had polyarthralgia and extensive skin involvement. Disease activation was considered as a result of detailed investigations. Both the joint and skin involvement of the patient was controlled with biological agent treatment. Differential diagnosis should be done carefully in patients with arthralgia and/or arthritis. Advanced radiological imaging should be performed.

Keywords: Osteomyelitis; psoriatic arthritis; psoriasis.

Psoriatic arthritis (PsA) is a chronic, destructive, and inflammatory disease of the musculoskeletal system associated with psoriasis, which can affect different anatomical areas such as peripheral joints, axial skeleton, entheseal regions, skin, and nails[1]. While psoriasis occurs in 2% of the population; it is estimated that up to 6–42% of these patients with psoriasis develop PsA[2]. This disease is most common between the ages of 30 and 50 and is equally common in males and females[3]. PsA presents a spectrum of clinics ranging from isolated monoarthritis to severe destructive arthritis. It has been reported that the average time to develop PsA is 10–15 years[4]. Approximately 70% of patients develop arthritis after skin lesions, 15% of patients develop arthritis simultaneously with skin lesions and 15% of patients develop skin lesions after arthritis[4]. Radiological findings of PsA are erosions in hand joints (especially distal interphalangeal joints (DIP) involvement), pencil-in-cup deformity, bone erosions alongside new bone formations, bone cysts, periosteal changes, osteolysis in the metatarsal bones, asymmetric sacroiliitis, non-marginal syndesmophytes, and ankylosis in the spinal column. Osteomyelitis (OM) is a disease that occurs as a result of infectious and inflammatory processes leading to damage to bone tissue; besides, it can progress to osteonecrosis, bone

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destruction, and septic arthritis. Although this disease can be localized to a single region of the bone, it can also affect several regions such as the cortex, medulla, periosteum, and surrounding connective tissues[5]. Pain, redness, tenderness, and swelling may develop in the affected joint. The earliest radiological finding is soft tissue swelling, followed by periosteal reaction and cortical destruction. Although magnetic resonance imaging (MRI) has a high sensitivity for the detection of OM (98%), it is not specific enough to help distinguish OM from other pathologies (75%)[6].

In this report, we present a patient with PsA, who was referred to us with a pre-diagnose of OM; however, we have diagnosed of a psoriatic disease exacerbation with provided remission with biological agents.

Case Report

A 69-year-old female patient had been followed-up for 8 years after diagnosed with psoriasis and had been in follow-up PsA for 5 years. She was referred to our clinic from the center she had been followed-up due to persistent pain in her right elbow and widespread arthralgia and skin lesions. She had been on Sulfasalazine 2 g/day, methotrexate 20 mg/week for the last 4 months with no change in her symptoms. On physical examination; there was tenderness in all distal interphalangeal and proximal interphalangeal joints of hands, elbows, and knees bilaterally. There was extreme swelling and increased temperature in her right elbow. Severe widespread psoriatic plaques were present on the thighs, knees, elbows, dorsum of the fingers of hands, and on the scalp (Fig. 1). In the laboratory investigation; erythrocyte sedimentation rate (ESR) was 82 mm/h and C-reactive protein (CRP) was 2.8 mg/dl while rheumatoid factor (RF), anti-cyclic citrullinated peptide (anti-CCP) antibody, and HLA-B27 were negative. Complete blood count and routine biochemical test values were in normal ranges. Disease activity score-28 with ESR (DAS28-ESR) was 6.59 and Psoriasis Area and Severity Index (PASI) score was 30. Because of that patient's most symptomatic joint was her right elbow, elbow MRI was ordered to exclude other pathological conditions. It was reported that there was bone edema in an approximately 4 cm segment in the posterior cortex of the proximal radius, focal irregularity and cortical defect in the posterior cortex of the bone, marked pathological change in the signal intensity of nearby soft tissues, and an observed lesion compatible with OM (Fig. 2). It was stated that OM should be considered among the preliminary diagnosis. On that, we consulted our patient to the orthopedic clinic. Whole body leukocyte labeled bone scintigraphy was requested to exclude OM. In the bone scan report, there was increased activity in the bilateral glenohumeral joint, sternoclavicular joint, manubriosternal joint, right proximal radius, metaphysis of the left proximal ulna, right wrist, and small joints of the hand. Moreover, it was considered and stated that these involvements were primarily related to the disease activation. Thereupon, the patient was started to be administered adalimumab 40 mg every other week. In the 2nd month of follow-up, there was no complaint related to joints (DAS-28 ESR: 1.6), psoriatic plaques were decreased (Fig. 3), and acute phase responses returned to a normal level. In the control MRI of the patient, minimally medullary edema was revealed in the proximal radius. Compared to the previous MRIs, a prominent decrease in the bone lesions was noticed. Despite the fact that there was no increase in joint complaints of the patient who was followed up with adalimumab for about 1 year, subcutaneous treatment of secukinumab 300 mg/month was started on the exacerbation of the patient's psoriatic lesions. PASI score decreased to 5 after 4 months of the therapy, joint complaints of the patient completely resolved. The patient was informed and started to be followed-up by our clinic upon her consent.

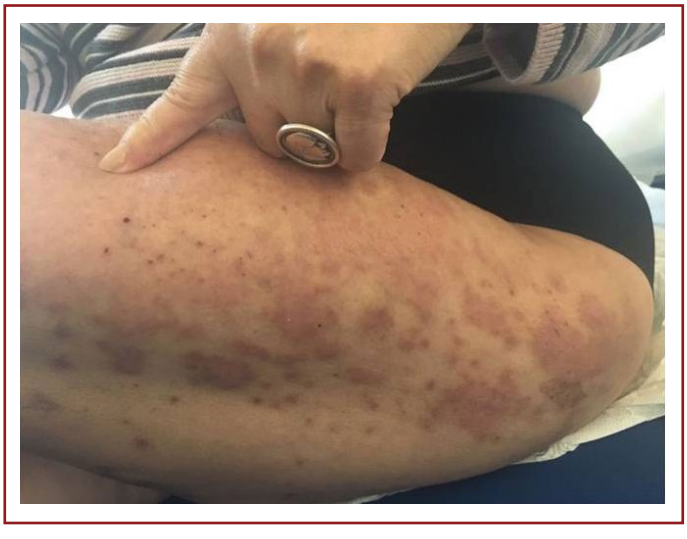

Figure 1. Widespread psoriatic plaques shown on the left thigh.

Discussion

PSA may present with very different clinical scenarios including articular and non-articular involvement. Reactive lesions in the cortical areas of the long bones and inflammation in the soft tissue can lead to misdiagnoses such as OM. Although MRI is the best imaging method in the diagnosis of OM, three-phase bone scintigraphy (technetium-99m-labeled), gallium, and leukocyte labeled scintigraphy are also frequently used. OM can be diagnosed in 90–95%

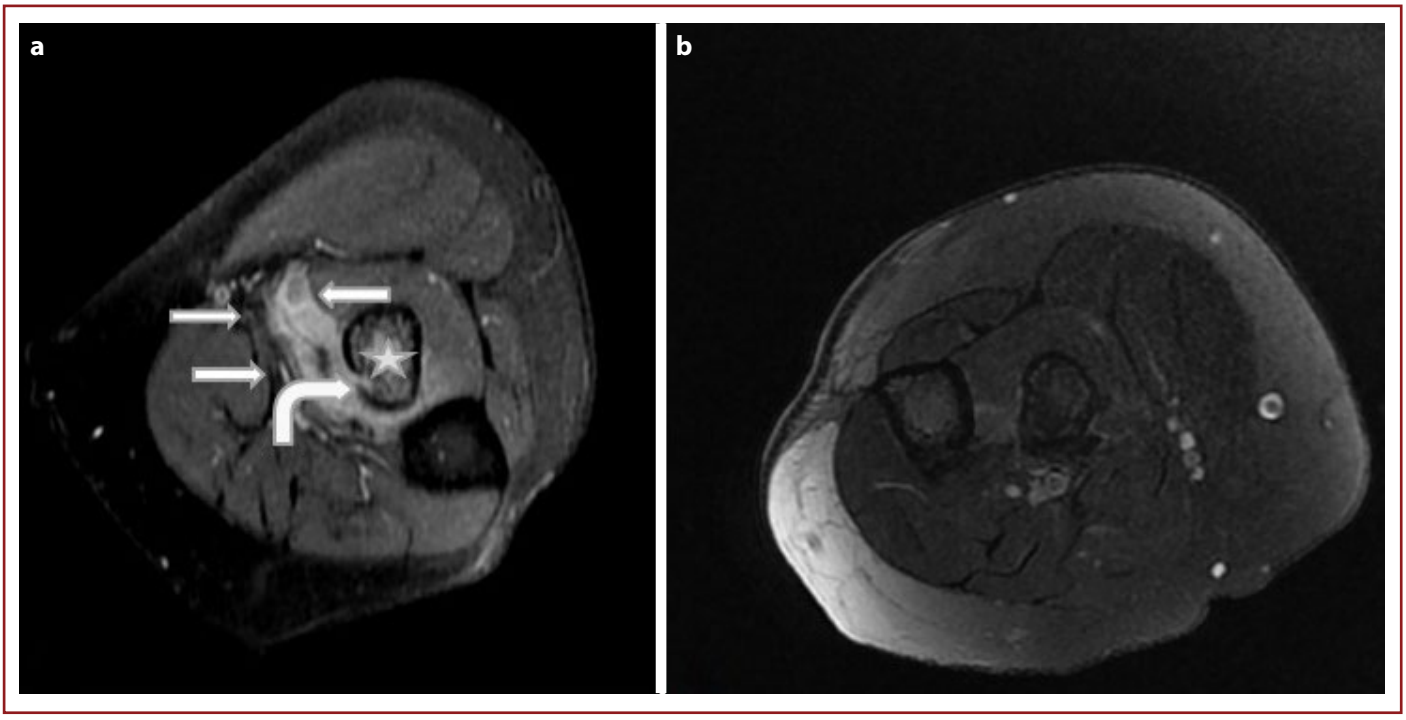

Figure 2. (a) Medullary bone marrow edema, cortical bone destruction, and adjacent soft tissue signal intensity changes. **(b)** Complete regression of findings at the same level after treatment.

of the patients with the help of Technetium 99m scintigraphy within 24–48 h after disease onset. Galium and 111-labeled leukocyte scintigraphy are also helpful in diagnosis when used in a combination with Technetium. More importantly, negative technetium scintigraphy can exclude the diagnosis of OM[5,6]. T1-weighted MRI images should be carefully examined for the differential diagnosis between OM and reactive osteitis resulted from inflammatory diseases such as rheumatoid arthritis and PsA. In reactive osteitis, the marrow can have intermediate T1 signal or poorly demarcated areas of low T1 signal in a subcortical distribution. In acute OM, the bone marrow always has a lower T1 signal and appears darker and well-demarcated than the reactive osteitis with an intramedullary distribution[7]. The aims of PsA treatment are remission, improving the quality of life of the patient, and arresting of the structural radiological damage. In treatment of PsA; nonsteroidal anti-inflammatory drugs (NSAIDs), disease-modifying antirheumatic drugs (DMARDs), and biologic DMARDs are used[8]. Although the patient had been taking 20 mg/week methotrexate and 2 g/day sulfasalazine, both joint and skin involvements were active. On that adalimumab 40 mg was started to be given by subcutaneously every other week. Adalimumab is an effective agent for improving both joint and skin manifestations; moreover, it has also a good clinical safety profile[9]. In a recent study in which 37 patients diagnosed with PsA included, it was reported that adalimumab treatment was effective, well tolerated and no adverse effect was observed during the study[10]. While joint complaints responded well to the first biological agent given to the patient, after a while, re-exacerbation of skin lesions was revealed. This adverse effect was considered as paradoxical psoriasis that can be seen after anti-TNF-α treatment. Therefore, the treatment of the patient was replaced by secukinumab. In our patient, remission was achieved in terms of both musculoskeletal and skin findings with the treatment of secukinumab. In an open-label, multicenter, 52-week study on skin lesions, it

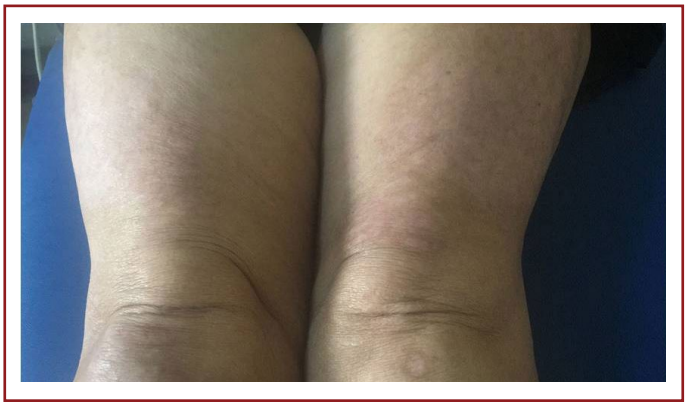

Figure 3. Significant clinical improvement in psoriatic plaques after treatment.

was reported that 10 out of 12 patients with generalized pustular psoriasis have successful outcomes with secukinumab treatment[11]. In a multicenter study of 76 patients with peripheral psoriatic arthritis, it was reported that secukinumab was effective and safe for 12 months after receiving inadequate response to a TNF-alpha inhibitor or when given as the first biological agent[12]. In a case series, it was reported that in 11 of 13 patients who had received at least one TNF-alpha inhibitor treatment before, psoriasis lesions improved at week 4, and both skin and joint findings and quality of life improved at week 16[13].

Consequently, PsA is a heterogeneous inflammatory disease that can reveal with diverse clinical manifestations of articular and non-articular. Bone and surrounding soft-tissue involvement similar to seen in OM can be seen in the long bones during the active period of PsA. Even advanced imaging methods such as MRI might be insufficient to differentiate these two conditions. In such cases, technetium 99m scintigraphy can be helpful when used alone or in combination with gallium and leukocyte labeled scintigraphy. In the treatment, remission should be targeted by using agents that are effective on both the joint and the skin thus the quality of life of the patient can be significantly increased.

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

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