The Differential Diagnosis of Atypical Localized Osteoarthritis in Elderly Patients: A Case Report

Yaşlı Hastalarda Atipik Osteoartrit Ayırıcı Tanısı: Olgu Sunumu

Şule Şahin Onat, Timur Ekiz, Seda Biçer, Neşe Özgirgin

Ankara Physical Medicine and Rehabilitation Education and Research Hospital, Department of Physical Medicine and Rehabilitation, Ankara, Turkey

ABSTRACT

Osteoarthritis (OA) involves knee joints most commonly as well as hands (first metacarpophalangeal and distal interphalangeal joints), hip, cervical and lumbar spine. On the other hand; shoulder, elbow, feet, ankle, proximal interphalangeal and metacarpophalangeal joints involvements are the rare clinical manifestations in OA. If OA occurs in the aforementioned rare localizations, other causes such as calcium pyrophosphate dehydrate crystal deposition disease and other diseases should be kept in mind. In this article, a 77-year-old woman with atypical OA of metacarphopahalangeal and elbow joints was presented. This atypical involvement of OA and its differential diagnosis was discussed.

Keywords: Atipical osteoarthritis, chondrocalcinosis, differantial diagnosis

ÖZET

Osteoartrit diz, el (1. metakarpofalangeal ve distal interfalangeal eklem), kalça, servikal ve lomber omurgayı tutar. Öte yandan omuz, dirsek, ayak, proksimal interfalangeal eklem ve metakarpofalangeal eklem ise nadiren tutulur. Eğer bu nadir lokalizasyonlarda tutulum varsa kalsiyum pirofosfat depo hastalığı ve başka hastalıklar akılda tutulmalıdır. Bu yazıda da 77 yaşında metakarpofalangeal ve dirsekte atipik yerleşimli osteoartriti olan kadın hastada ayırıcı tanı tartışıldı.

Anahtar sözcükler: Atipik osteoartrit, kondrokalsinozis, ayırıcı tanı

Corresponding Author
Yazışma Adresi

Şule Şahin Onat

Ankara Fizik Tedavi ve Rehabilitasyon Eğitim ve Araştırma Hastanesi, Fiziksel Tıp ve Rehabilitasyon Kliniği, Ankara, Turkey

E-mail: sahinsulester@gmail.com

Received/Geliş Tarihi: 23.06.2014
Accepted/Kabul Tarihi: 28.07.2014

Introduction

Osteoarthritis (OA) is a major problem causing immobility, disability and loss of productivity in geriatric patients (1). OA involves knee joints most commonly as well as hands (first metacarpophalangeal and distal interphalangeal joints), hip, cervical and lumbar spine. On the other hand; shoulder, elbow, feet, ankle, proximal interphalangeal (PIP) and metacarpophalangeal (MCP) joints involvements are the rare clinical manifestations in OA (2). If OA occurs in the aforementioned rare localizations, other causes such as calcium pyrophosphate dehydrate crystal deposition disease (CPPDD), hemochromatosis, occupational causes, Wilson and other metabolic disorders should be kept in mind (3, 4). Accordingly; in this paper, an elderly woman with MCP and elbow involvements of CPPDD has been presented. Differential diagnosis of osteoarthritis which is rare localizations has been discussed via this case.

Case Report

A 77-year-old woman admitted with joints pain in the bilateral knees, hands and elbows. The pain was in a mechanic feature (easing with rest, deteriorating with movements of the joints). She had been performed to total knee arthroplasty bilaterally in her medical history. The patient did not declare a major or occupational

minor trauma. Physical examination revealed decreased range of motion of the bilateral knee and right elbow joints (Figure 1A). 2nd and 3rd MCP joint enlargement was revealed as well (Figure 1B). There was no redness, effusion or warmth. Range of motion measured by finger goniometer for the 2nd and 3rd MCP joints were between 0-80 degrees. That of right elbow was between 10-100 degrees. Visual Analog Scale (VAS) pain score was 9. Laboratory investigations including erythrocyte sedimentation rate, c-reactive protein, calcium, phosphor, magnesium, alanine transaminase, alkaline phosphatase, gamma glutamyl transferase, renal function tests, thyroid and parathyroid hormones, 25-OH vitamin-D, ferritin, iron, glucose, complete blood count levels were all normal. Anterior-posterior hand radiographs showed narrowing in 2nd and 3rd MCP joints' space, subchondral sclerosis, cysts and osteophytic changes bilaterally (prominent on the right side) (Figure 2A). Narrowing in the joint space, subchondral sclerosis in the right elbow joint and osteophytic changes in radius and ulna were also demonstrated by radiographs (Figure 2B). Magnetic resonance imaging also demonsrated degenerative changes (Figure 3).

The patient was eventually accepted as CPPDD and treated with a non-steroidal anti-inflammatory drug and colchicine 0.5 mg 2x01/d. 30 sessions of hot pack 20 min/d, transcutaneous electrical stimulation (TENS) (50-100 hz) 20 min/d, ultrasonography (frequency: 1 MHz, intensity: 1 Watt/cm^2) 5 min/day were applied to elbows. Additionally, paraffin bath 20 min/d, conventional TENS (50-100 Hz) were applied to bilateral hands. At the end of the rehabilitation program, the VAS pain score was 1, there was five degrees of improvement in the range of motion of hand and elbow joints.

Discussion

CPPDD, also known as the chondrocalcinosis (CC) which is characterized by calcific deposits of the joints is usually seen in elderly women patients. This joints include knee (particularly isolate patellofemoral component), wrist, MCP (particularly second and third), shoulder, hip, ankle, pelvic and spine. It has some similar features with OA; on the other hand apart from OA, it is also seen in non-weight bearing joints such as radiocarpal joint, MCP, glenohumeral, elbow joints (3). Radiologic signs of CPPDD are typical linear calcifications in articular fibrocartilage menisci and hyaline cartilage. Isolated patellofemoral degenerative change is characteristic in CPPDD. Narrowing of joint space, subchondral sclerosis and extensive subchondral cysts can also exaggerated occur. CC is common in triangular fibrocartilage (5). Calcium deposition can be seen in gastrocnemius tendon (5). Symphysis pubis and hip labrum are the rare manifestations of CC (6). Our case had MCP and elbow involvements as well. This condition alerted against CPPDD. On the contrary, CC isolated patellofemoral joint involvements were not detected. On radiographs, hypertrophic pattern and increased bone remodeling, extensive subcondral cysts are in favor of CPPD (7). CC of the joint capsule by radiographs or CPPDD crystal depositions are typical for the CPPDD and the diagnosis are based on the occurrence of the aforementioned two conditions (8). Lack of the crystal investigation in synovial liquid is a limitation of our case.

CPPDD is postulated to be related to various metabolic and endocrine disorders. These are hemochromatosis, hyperparathyroidism, hypophosphatasia, hypo-magnesemia, Wilson's disease, hypothyroidism, acromegaly, and X-linked hypophosphatemic rickets

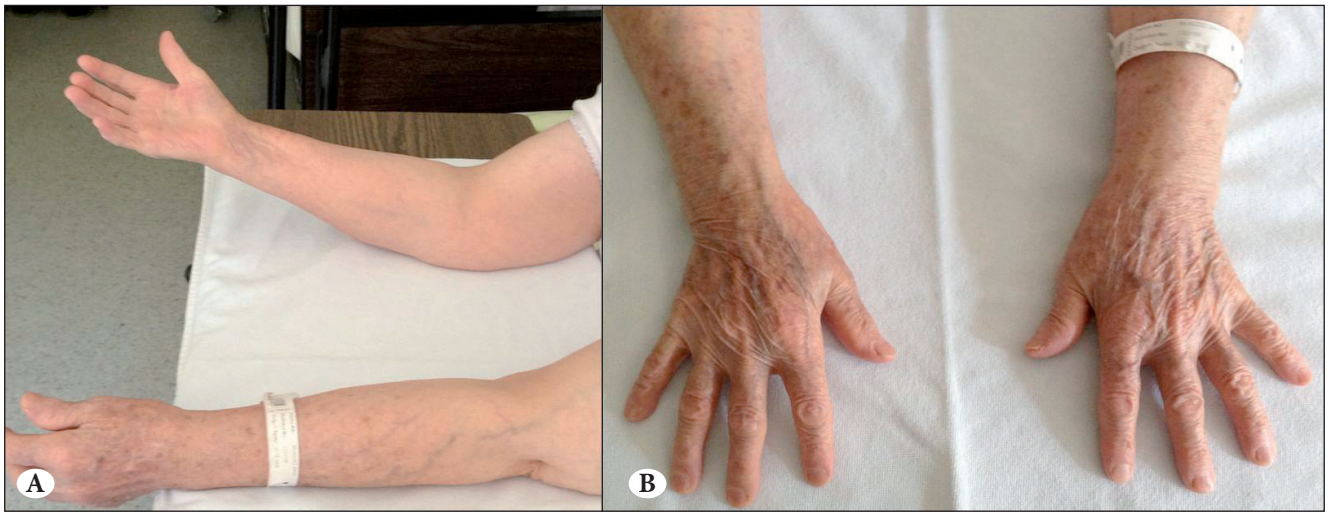

Figure 1. Picture demonstrating decreased range of motion of right elbow (A) and enlargement of 2nd and 3rd MCP joints (B).

(9, 10, 11). Abovementioned metabolic and endocrine disorders were excluded in our case.

In our case; being and elderly woman, typical involving area for CPPDD gave raise to thought CPPDD. Since OA is also a frequent disorder in elderly women, OA and CPPDD can coexist. When they coexist, the clinical scenario becomes more challenging. Additionally, association between OA and CPPD is disputed (3, 12). Because, the more cartilage degenerants, the more OA develops in knee, hand, 2nd and 3rd MCP joints. Further; in the severe stages of OA, changes in the cartilage and other articular tissues' damages can trigger CPPD.

Hemochromatosis (HC) causing iron overload. Articular findings are seen in 25–50% of patients with HC. It typically affects the 2nd and 3rd MCP joints as articular manifestations. Knee, hip and wrist joints may also be involved (13). Hyperpigmentation, hepatomegaly, diabetes mellitus, abnormal liver function tests can be

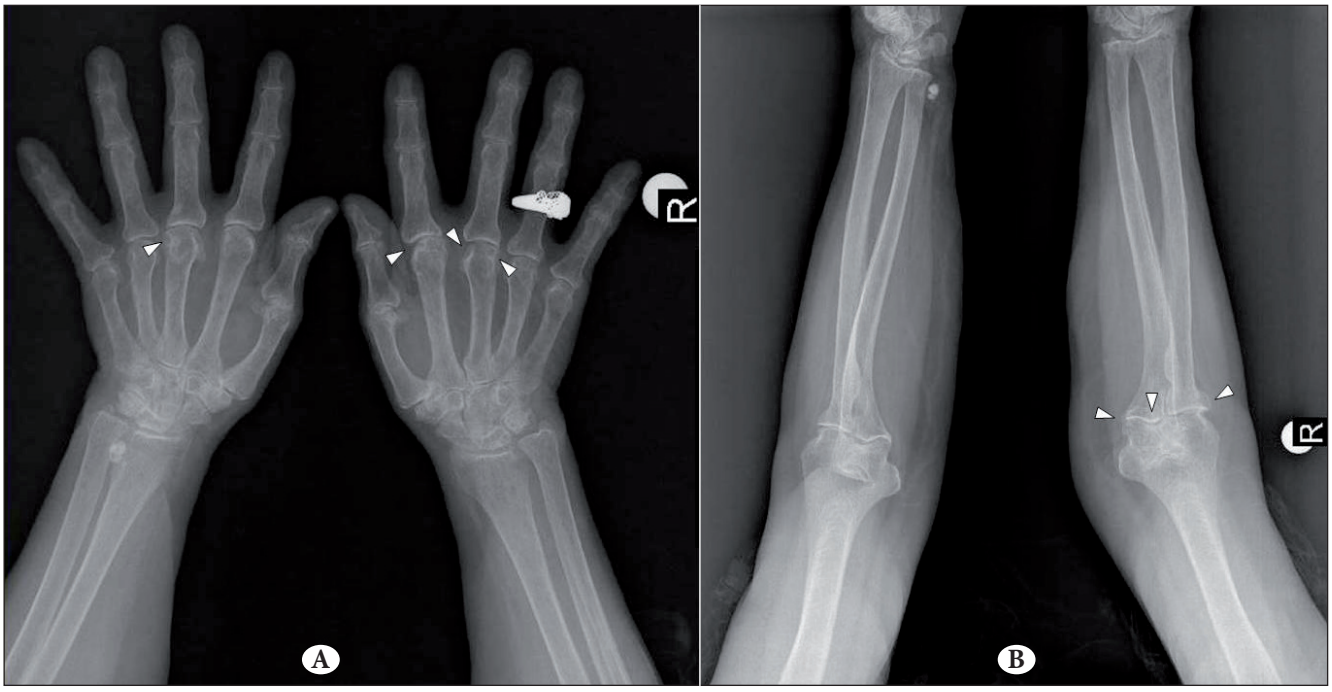

Figure 2. Radiographs showing narrowing in the 2nd and 3rd MCP joints' space, subchondral sclerosis, cysts and osteophytic changes of hand joints (A), and joint space narrowing and subchondral sclerosis in the right elbow joint and osteophytic changes in radius and ulna (B).

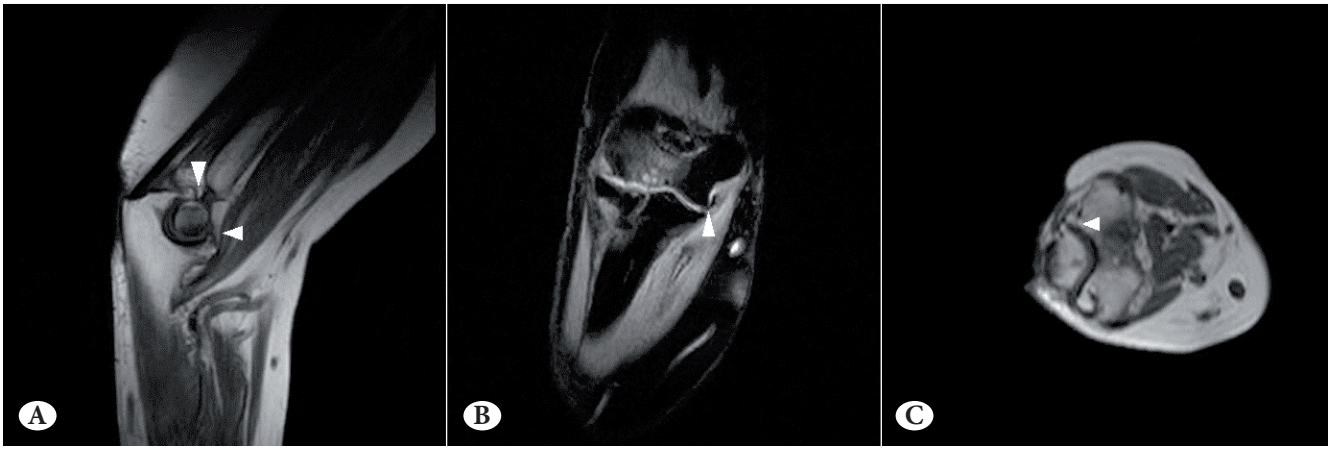

Figure 3. Magnetic resonance imaging illustrating degenerative changes on T1-weighted coronal (A), T2 weighted (fat suppressed) sagittal (B) and T1 weighted axial (C) views.

helpful to distinguish. HC usually affects MCP joints and has the radiologic findings of CC (14). On the other hand, HC can present with isolated asymmetric MCP arthritis and radiologic findings but without systemic symptoms. Normal serum transferrin saturation and ferritin levels are quite predictive for hemochromatosis. Fasting transferrin saturation is the most sensitive (≥45%) screening test (15). Our case did not have hyperpigmentation, hepatomegaly, diabetes mellitus and abnormal liver function. There were no findings of hook-like osteophyte formation, chondrocalcinosis. Iron level, transferrin saturation and ferritin levels were all normal.

MCP joint involvements can be seen as an occupational disorder due to overuse of hands. William et al. has described this condition in manual laborers (16). Atypical severe OA of the MCP and elbow joints has been previously reported in a jackhammer operator (17). Pneumatic drill operation might lead to OA in workers who were predisposed to the disease. It also cause to develop at unusual sites such as the elbow, shoulder, wrist, and MCP joints. Further, Peter et al, presented a 62-year-old male truck driver with pain and stiffness along the third metacarpal and MCP joint of the left hand (18). All patient radiographs revealed bilateral hand OA, particularly in the second and third MCP joints. Our case did not reveal an occupational overuse history.

Wilson disease was also considered for the differential diagnosis of our patient. Wilson disease is characterized by Kayser–Fleischer rings (the golden brown pigmented ring of the eye), cirrhosis, basal ganglia (tremor, rigidity), renal tubular acidosis. It is inherited in an autosomal recessive manner and clinic findings present between the ages of 4-50 (19, 20). Wilson involves commonly ankle, elbow, shoulder, hip, knee and interphalangeal joints, the last one being rare. Early onset and ankle involvement can differentiate from primary OA. Subchondral bone fragmentation, sclerosis and cysts can be detected by radiographs. Wilson disease was also excluded whereby late clinical onset, without eye involvement, neurologic deficits and renal disfunction.

Rheumatoid arthritis frequently involving the MCP joints was also excluded since acute phase reactants, erythrocyte sedimentation rate and the other laboratory parameters were within normal limits (20).

Consequently, if the OA is seen in non-weight bearing joints such as MCP and elbows, secondary causes such as CPDDD, hemochromatosis, occupational causes, Wilson and other metabolic disorders and further investigations should be performed as in our case. Correct diagnosis is crucial for reducing pain, range of motion limitations, independency and achieving a better quality of life especially in geriatric patients.

References

1. Wajed J, Ejindu V, Heron C, Hermansson M, Kiely P, Sofat N. Quantitative sensory testing in painful hand osteoarthritis demonstrates features of peripheral sensitisation. Int J Rheumatol 2012; 2012:703138.
2. Das SK, Farooqi A. Osteoarthritis. Best Pract Res Clin Rheumatol 2008;22:657-75.
3. Resnick D. Calcium pyrophosphate dihydrate crystal deposition disease. In: Resnick, editor. Diagnosis of Bone and Joint Disorders. Philadelphia, WB Saunders Company, 2002;1560-1618.
4. European Association for the Study of the Liver EASL clinical practice guidelines on hemochromatosis. Jour Hepatol 2010;53:3–22.
5. Yang BY, Sartoris DJ, Resnick D, Clopton P. Calcium pyrophosphate dihydrate crystal deposition disease: frequency of tendon calcification about the knee. J Rheumatol 1996;23:883–4.
6. Steinbach LS, Resnick D. Calcium pyrophosphate dihydrate crystal deposition disease revisited. Radiology 1996;200:1–9.
7. Terkeltaub R. Disease associated with articular deposition of calcium pyrophosphate dihydrate and basic calcium phosphate crystals. In: Firestein GS, Budd RC, Harris Jr ED, McInnes IB, Ruddy S, Sergent JS, editors. Textbook of rheumatology. Saunders Elsevier, Philadelphia, 2009;1507-1524.
8. Ahn JK, Kim HJ, Kim EH, et al. Idiopathic calcium pyrophosphate dihydrate (CPPD) crystal deposition disease in a young male patient: a case report. J Korean Med Sci. 2003;18:917-20.
9. Wright GD, Doherty M. Calcium pyrophosphate crystal deposition is not always'wear and tear'or aging. Ann Rheum Dis 1997;56:586-8.
10. Jones AC, Chuck AJ, Arie EA, Green DJ, Doherty M. Diseases associated with calcium pyrophosphate deposition disease. Semin Arthritis Rheum 1992;22:188-202.
11. Canhao H, Fonseca JE, Leandro MJ, et al. Cross-sectional study of 50 patients with calcium pyrophosphate dihydrate crystal arthropathy. Clin Rheumatol 2001;20:119-22.
12. 12. Adamson TC, Resnick CS, Guerra J Jr, Vint VC, Weisman MH, Resnick D. Hand and wrist arthropathies of hemochromatosis and calcium pyrophosphate deposition disease: distinct radiographic features. Radiology 1983;147:377–81.
13. European Association for the Study of the Liver EASL clinical practice guidelines on hemochromatosis. Jour Hepatol 2010;53:3–22.
14. Axford JS. Rheumatic manifestations of haemochromatosis. Baillieres Clin Rheum 1991;5:351–65.
15. McLaren CE, McLachlan GJ, Halliday JW, et al. Distribution of transferrin saturation in an Australian population: relevance to the early diagnosis of hemochromatosis. Gastroenterology 1998;114:543–9.

16. McDonald E, Marino C. Manual labor metacarpophalangeal arthropathy in a baker. NY State J Med. 1990;90:268–9.

17. Fam AG, Kolin A. Unusual metacarpophalangeal osteoarthritis in a jackhammer operator Arthritis Rheum 1986;29:1284-8.

18. 18. Peter C. Emary. Manual labor metacarpophalangeal arthropathy in a truck driver: a case report. J Chiropr Med 2010;9:193–9.

19. 19. Clark P, Britton LJ, Powell LW. The diagnosis and management of hereditary haemochromatosis. Clin Biochem Rev 2010;31:3–8.

20. Rowe LJ, Yochum TR. Arthritic disorders. In: Butler JP, editor. Essentials of skeletal radiology. Williams & Wilkins; Baltimore 1996;795–973.