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A rare complication of total knee arthroplasty: Type l complex regional pain syndrome of the foot and ankle

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ABSTRACT

Complex regional pain syndrome (CRPS) is a painful and disabling disorder that usually affects the extremities. This complication may affect the knee joint after total knee arthroplasty (TKA). We report a unique case of CRPS of the foot and ankle, which was an unusual involvement site for CRPS after TKA.

Introduction

Complex regional pain syndrome (CRPS) is a painful and disabling disorder that usually affects the extremities. The disease has two forms; symptoms occur without previous peripheral nerve injury in type 1 (Sudeck's atrophy) and with previous injury to specific nerve in type 2.[1] CRPS type 1 is usually initiated by some form of traumatic stimuli including injury and surgical intervention.[1,2]

The pathophysiology of CRPS type 1 is not clear and many theories have been postulated.[3]

The disease has four cardinal features: pain, swelling, movement abnormalities, color–temperature-sudomotor changes.[4] Pain is the most troubling complaint; it is not isolated to the area of injury or surgery and is out of proportion with the degree of injury.[4] The diagnosis is excluded by the existence of any condition that would otherwise account for the degree of pain and dysfunction.[5,6]

Total knee arthroplasty (TKA) surgery has many complications. It is also possible to observe TKA-related CRPS type 1 in the knee.[7–9] Surgeons should suggest the disease (given certain findings) after TKA cases because treatment at the early stages is promising.[6,10] To the authors' knowledge, no cases of CRPS type 1 of the foot and ankle have been reported following TKA. We report a case of CRPS type 1 of the left foot and ankle following left TKA.

Case report

A 67-year-old woman was admitted to the outpatient clinic with complaints of left foot and ankle pain, swelling, limitation of motion and difficulty in weight bearing and walking. The patient's history revealed a left TKA operation two months prior, and complaints started at the first month postoperatively (Fig. 1). Nonsteroidal anti-inflammatory drug (NSAID) failed to relieve the pain, swelling, and tenderness and these symptoms had gradually increased. The patient reported that she could not wear socks or

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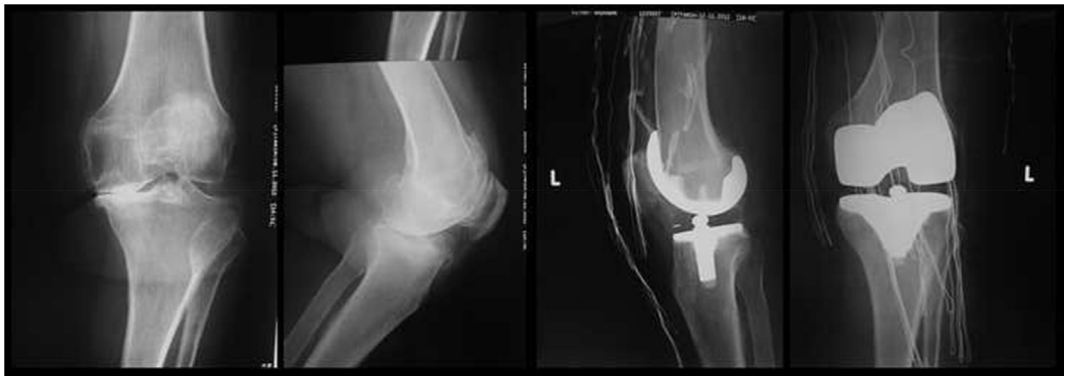

Fig. 1. Preoperative and postoperative radiographs of the left knee.

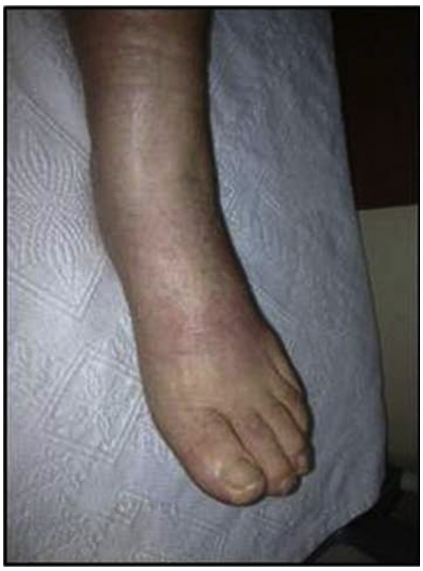

Fig. 2. Foot and ankle of the patient at presentation.

shoes and could not walk without a cane due to pain. She described the pain as burning, numbness, and pins and needles sensations. Her sleep was also disturbed. The medical history of the patient included hypertension and a surgical procedure for cystocele.

Physical examination of the patient's left foot and ankle revealed non-dermatomal pain, swelling, edema over the dorsum of the foot and ankle, increased heat and redness, limitation of ankle motion (10° dorsiflexion and 40° plantar flexion) (Fig. 2). Moreover, allodynia, hyperesthesia and hyperalgesia were determined. However, muscle strength was normal and deep tendon reflexes were normoactive at left lower limb. The patient's left ankle circumference was measured 2 cm larger compared to the right ankle. The calf was painless and Homans' sign was negative fort he left lower limb. Range of motion of the knee was nearly normal (0° extension, 100° flexion). There was no tenderness or pain at medial and lateral joint lines, patellofemoral joint, or retinaculi, as well as no swelling around the knee.

Laboratory findings for the complete blood count, erythrocyte sedimentation rate, and C-reactive protein were normal. The serum rheumatoid factor was negative. Radiographs of the left foot and ankle showed a calcaneal spur. Mild soft tissue edema of the foot was observed on T2-weighted magnetic resonance images (MRI). Lumbar spine MRI revealed L4-5 right foraminal herniated disc, degenerative spondylosis, and chronic degenerative discopathy at multiple levels. According to the patient's history, physical examination, laboratory results, and radiologic evaluation, the patient was diagnosed as CRPS type 1.

Operation report revealed that we have used tourniquet located midthight. Thus, there was no remarkably intra-operative blood loss. The tourniquet has inflated at 165 mm-Hg pressure and the pressure has kept along with the operation. Total tourniquet time was 105 min. Clinical reports revealed 520 ml visible blood loss via a hemovac drain and transfusion of two unites erythrocyte suspensions postoperatively. Also, there was no complication like infection or hematoma formation.

Amitriptyline 10 mg/day, pregabalin 150 mg/day, as well as vitamin C 1000 mg/day was prescribed. Additionally, the patient continued using previously prescribed NSAIDs. Elevation of the limb, retrograde massage and contrast bath therapy three times per day were recommended to produce desensitization and to reduce swelling. Passive and active range of motion exercises and mild stretching exercises were advised.

Swelling, increased heat, and redness subsided at the first month follow-up. Allodynia, hyperesthesia and hyperalgesia were reduced. There was nearly a full range of motion of the ankle. The patient reported that she could wear socks and shoes. At the last follow-up, at the end of the first year, the foot and ankle remained asymptomatic (Fig. 3).

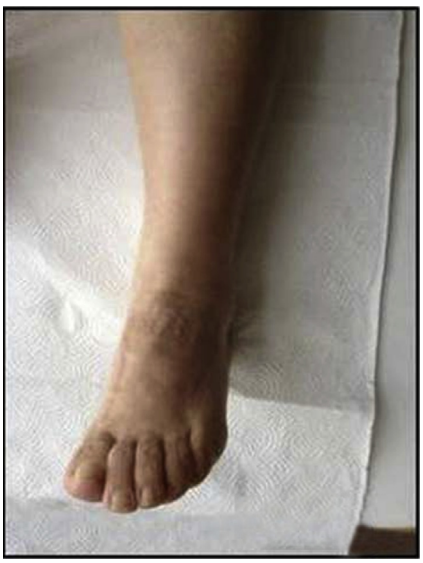

Fig. 3. Foot and ankle of the patient at the end of the 1st year follow-up.

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