A Rare Cause of Leg Pain in a Housewife with a Sedentary Lifestyle: Shin Splints Syndrome: Case Report

Sedanter Yaşam Tarzı Olan Bir Ev Hanımında Bacak Ağrısının Nadir Bir Nedeni: Shin Splint Sendromu

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ABSTRACT Shin splints syndrome (SSS) is one of the exercise-induced overuse trauma that usually affects soldiers and athletes. The main risk factors in these people are high body mass index, female sex, excessive pronation of midfoot, increased plantar flexion and presence of hallux valgus. To draw attention to this rare condition, and to prevent both time lost and high cost for differential diagnosis in clinical practice, herein, we presented a first case of SSS detected in a housewife with sedentary lifestyle.

Keywords: Medial tibial stress syndrome; sedentary lifestyle; housewife; rehabilitation

ÖZET Shin splint sendromu (SSS); sıklıkla askerlerde ve sporcularda görülen, egzersizin indüklediği aşırı kullanım travmalarından biridir. Bu kişilerde SSS gelişiminde bildirilen başlıca risk faktörleri beden kitle indeksinin yüksek olması, kadın cinsiyet, orta ayağın aşırı pronasyonu, artmış plantar fleksiyon ve halluks valgus varlığıdır. Bu çalışmada, bu nadir görülen bu duruma dikkat çekilmesi ve klinik pratiğindeki ayırıcı tanıda zaman kaybının ve yüksek maliyetin önlenmesi için, hareketsiz yaşama sahip bir ev hanımında ilk kez bildirilen shin splint sendromu vakasının sunulması amaçlanmıştır.

Anahtar Kelimeler: Medial tibial stres sendromu; sedanter yaşam; ev hanımı; rehabilitasyon

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The shin splint syndrome (SSS) is a trauma induced by over-exercising usually observed among soldiers and athletes. The incidence of the syndrome has been reported between 4-35%.[1-3] Medial tibial stress syndrome and soleus syndrome are the other terms used for this condition.[4]

The patient history typically involves pain and tenderness in the leg after exercise in individuals exercising regularly including athletes and soldiers.[5-7] The pain and tenderness usually respond to resting only to return after renewed exercise.

Conditions to be considered in the differential diagnosis include the chronic compartment syndrome, popliteal artery entrapment syndrome, stress fractures, infection, various neuropathies, vascular diseases, spinal cord compressions, ischemic diseases and bone tumours.[5,6,8,9]

In order to underline that this condition may also be observed in daily practice, we present a case of a housewife who has pain and tenderness in the distal part of the right leg, who was referred to the electrophysiology laboratory with the pre-diagnosis of neuropathy and diagnosed with SSS based on her history and physical examination.

CASE REPORT

A 45-year old female housewife who presented to a physical therapy outpatient clinic with pain, tenderness and thinning in her right leg was referred to our electrophysiology laboratory with the pre-diagnosis of tibial nerve entrapment neuropathy.

The patient history included pain and tenderness at the 2/3 inner and posterior distal aspect of the right leg for the last 2 months. The pain would increase after standing or walking for a long time and subside after resting. She also stated that she had recognised a thinning in the leg within the last few weeks while she had longer periods of pain.

The patient history did not indicate any trauma, long walks, or change of shoes before the onset of the pain. No comorbidities, history of surgery or fractures, or chronic drug therapy were observed. It was learned that the patient walked less than 30 minutes/day, including only daily life activites, in the physical activity interrogation.

The patient's height was 168 centimeters and her weight was 85 kilograms with a body mass index (BMI) of 30.1 kg/m^2. During the physical examination, the patient was able to ambulate independently, her bilateral hip and knee joint ranges of motion (ROM) were full and she had no varus or valgus deformities. The bilateral feet examination revealed that the dorsiflexion and plantar aspect of the ROM was limited 10 degrees and her pronation ROM was slightly increased in the right feet. In the right posterior part of the foot, calcaneus valgus was observed; while a pes planus that became apparent when stepped on was observed in the mid part of the foot. The patient also had bilateral hallux valgus, which was more prominent on the right foot, and the hallux valgus syndrome with a bunion. During the physical examination, the medial and distal areas on the right tibia were tender to touch. No heat or discoloration was observed. The sensory evaluation was normal except for this region and no hypoesthesia was observed. Deep tendon reflexes were normal and no pathological reflexes were detected. The dorsalis pedis and posterior tibial pulses were normal. The measurement performed at the ankle to assess the atrophy indicated a 3.5 cm difference in diameter compared to the left side, while this difference was 2 cm at the point 10 cm below the patella (Figure 1).

Pain was reported during active plantar flexion, balancing on the toes on one foot, and jumping, which are the diagnostic manoeuvres for SSS.

The direct anteroposterior and lateral foot and ankle X-rays showed narrowing joint space in the talotibial, talocalcaneal and talonavicular joints in the right foot; increased sclerosis, partial irregularities on the joint surfaces, and tarsal coalition between the talus and calcaneus (Figure 2).

Bilateral peroneal and tibial nerve motor and sural nerve sensory conduction studies were normal in the nerve conduction studies of the patient. Immunological and inflammatory tests such as biochemical parameters, hemogram, erythrocyte sedimentation rate, C reactive protein, rheumatoid factor and anti nuclear antibody were normal. No pathology was detected in bilateral lower extremity arterial-venous doppler ultrasonography.

The MRI of the right tibia requested for the differential diagnosis indicated an edema in the

FIGURE 1: View of atrophy in right leg due to 3.5 cm difference in diameter compared to the left side

FIGURE 2: View of increased sclerosis, partial irregularities on the talotibial, talocalcaneal and talonavicular joint surfaces in the right foot and tarsal coalition between the talus and calcaneus

subcutaneous adipose tissue at the anteromedial aspect of the tibia.

Based on these results, the patient was diagnosed with SSS.

DISCUSSION

Although the pathophysiology of SSS is not exactly understood, the periostal reaction due to repeated use, overtension, bone stress reaction, myofascial strain and entesopathy are thought to lead to this syndrome.[1,6,8] The muscles thought to be associated with SSS are the soleus, flexor digitorum longus, tibialis posterior and tibialis anterior.[5,6] Periostitis is reported to result from the traction of Sharpey's fibres in these muscles.[6] It has been reported that especially the soleus muscle adhere to the posterior distal 2/3 of the tibia and that the pain may originated from this adhesion. Especially the medial section of the soleus muscle contracts eccentrically as the feet moves from supination to pronation and the tension force generated during the contraction leads to increased stress at the adhesion point of the medial soleus to the fascia, causing Sharpey's fibres to separate.[10] This is currently the most widely accepted theory.[6,11]

In our patient, the measurement of the diameter at the level of the ankle including the soleus muscle revealed a 3.5 cm difference and an increase in the pronation ROM was observed during the examination of the foot. These findings are also in compliance with the most commonly accepted theory on the pathophysiology of the condition.

However, unlike our patient, this syndrome is usually described in athletes, soldiers and individuals who exercise regularly. There is no case in the literature reporting SSS in a housewife without any additional jobs. Certain risk factors have been reported for this condition.[5,7] The primary risk factor is a high BMI, female gender, excessive pronation of the mid-section of the foot, increased plantar flexion and hallux valgus.[5,7] Although these risk factor are common among the patients reported above who are involved in heavy exercise, our patient also had multiple risk factor including a high BMI, female gender, increased ROM during the pronation of the foot and hallux valgus.

Besides these risk factors, our patient also had a tarsal coalition which probably remained undiagnosed since her childhood, and degenerative changes in the tibial, talocalcaneal and talonavicular joints resulting from the disturbed biomechanics of the foot.

The talocalcaneal joint transfers the body weight from the leg to the foot. Especially during the gait cycle, it plays a role in distributing the body weight after the heel strike.[12] The relationship between the talus and the calcaneus during load transfer helps to distribute the pressure appropriately. Disturbance of this relationship may disrupt the distribution of the pressure within the foot and lead to pes planus or degenerative changes. Increased

pronation in the foot has also been reported as a cause of hallux valgus.[13]

Although our patient was not actively involved in exercise, we are of the opinion that the disturbed biomechanics for long years affecting various parts of the foot, advanced age and the increased BMI may have increased the muscle tension at the adhesion point of the soleus muscle, leading to the development of the SSS.

In this syndrome, the damage caused by repeated movements leads to pain and tenderness at the distal 2/3 of the tibia. Although this pain subsides with resting, it returns with continued movement.[1,5,6] During the early period, the typical characteristic of the pain is the gradual relief during rest. However, with continued activity, the pain becomes more serious, acute and resistant to treatment.

The patient history and the physical examination are important in the differential diagnosis. The conditions to be considered in the differential diagnosis are the chronic compartment syndrome, popliteal artery entrapment syndrome, stress fractures, infection, various neuropathies, vascular diseases, spinal cord compressions, ischemic diseases and bone tumours.[5,6,8,9]

In our patient, the electrophysiological and ultrasonographic examinations did not indicate any neurological or vascular pathologies. The laboratory parameters ruled out any infectious, immunological or metabolic diseases. The X-ray and the tibial MRG did not point to a stress fracture. As these diagnoses were ruled out, our patient was diagnosed with SSS. However, unlike the characteristic findings reported in this syndrome, our patient had an atrophy at the ankle level. We are of the opinion that the muscle atrophy at the ankle level in our patient has resulted from the disturbed biomechanics of the foot and the patient's avoidance of use to decrease the pain.

In conclusion, although SSS is known to be a condition observed in people who exercising active, it may also be observed in a person who has a sedentary lifestyle and undiagnosed disturbance in the biomechanics of the foot. In outpatient clinics, this condition should be considered in the differential diagnosis especially in case of patients with pain and tenderness at the distal aspect of the leg.

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