

# Case Report: Sever's Disease - A Common Cause of Heel Pain in Children

## Sever Hastalığı-Çocuklarda Topuk Ağrısının Yaygın Nedeni: Olgu Sunumu

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### ABSTRACT

Calcaneal apophysitis, also known as Sever's disease, is the most common cause of heel pain in children. This condition is usually seen between the ages of 8 and 15 years. The differential diagnosis for a child presenting with heel pain may include Achilles tendonitis, retrocalcaneal bursitis, calcaneal stress fractures, osteomyelitis, or plantar fasciitis. This study presents a 12-year-old boy with a four-month history of right heel pain, and aims to evaluate signs and symptoms, diagnostic approaches, and treatment protocols for the disease in light of current literature.

**Keywords:** Child, Sever's disease, heel pain, rehabilitation

### ÖZET

Kalkaneal apofizit çocuklarda topuk ağrısının en sık nedenidir ve Sever hastalığı olarak tanımlanır. Çocuklarda sıklıkla 8-15 yaşları arasında görülür. Topuk ağrısıyla başvuran çocuk hastada ayırıcı tanıda aşil tendiniti, retrokalkaneal bursit, kalkaneal stress kırığı, osteomyelit ve plantar fasiit göz önünde bulundurulmalıdır. Biz dört aydan beri sağ topuk ağrısı olan 12 yaşında bir erkek hastayı, hastalığın belirti ve bulgularını, tanısall yaklaşımlarını ve tedavi protokollerini güncel literatürler eşliğinde sunmayı amaçladık.

**Anahtar sözcükler:** Çocuk, Sever hastalığı, topuk ağrısı, rehabilitasyon

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## Introduction

Calcaneal apophysitis is the most common cause of heel pain in children and typically manifests during periods of rapid growth or early in the season when a child plays a sport (1). The disease was defined for the first time in 1912 by James Sever, for whom it was named. Sever reported on pediatric patients with pain in their heels and stated that the condition does not occur after puberty. The disease is a typical syndrome of overuse (2). It is similar to Osgood-Schlatter disease and is defined as an inflammatory process (2,3). There is an incidence of Sever's disease (SD) in 5.8% of athletes younger than age 20. SD is associated with sports, such as football, that

involve jumping and running, and symptoms become aggravated if these activities persist (3,4).

SD is the most common cause of heel pain in children and adolescents. Its mean age of incidence is 11, ranging from ages 8 to 15. With respect to injuries suffered by young football players, the disease is most-commonly seen during the pubertal growth spurt. The ratio of SD between boys and girls is 2-3:1 and the incidence of pain in both heels is approximately 60% (3,4). The disease is typically seen in pre-adolescents complaining of chronic heel pain that is aggravated by activity. Examination normally reveals no abnormality, except for pain caused by compression of the calcaneal rear fragment, ranging

from medial to lateral (2,3). Because toe walking tends to ease the pain, a patient can walk with slightly reduced dorsiflexion. If SD is diagnosed, a clinical examination is necessary (4,5).

There are few documented data on SD, which is a self-limiting disease. The following case of a 12-year-old patient with four-month history of heel pain will cast light on the clinical features of SD.

## Case

A 12-year old patient applied to the Physical Therapy and Rehabilitation outpatient clinic. He had experienced pain for four months in the area where the Achilles tendon cleaves into the heel. This pain was aggravated by activity. The patient reported that the pain was aggravated by sitting down or trying to get out of the bed in the morning, and that it had worsened during the past two weeks. He said he walked on tiptoes to ease the pain. There was no history of trauma that would have triggered the pain. The pain was aggravated by activity and eased by rest, and it was blunt with no metastasis. He had no history of weight loss, fever, allergy, chronic diseases, hospitalizations, or surgeries. There was no family history of the disease. The physical examination revealed that the patient was well-nourished with a normal and non-pale skin tone. Vital signs appeared normal. The patient was limping, indicating sensitivity in both posterior calcanei. In addition, the range of motion for both subtalar joints decreased for dorsiflexion, plantar flexion, inversion, and eversion. The Thompson's test revealed a normal Achilles tendon. A complete blood count, erythrocyte sedimentation rate, alkaline phosphatase, and serum calcium level, monitored at normal intervals, was recommended for the patient. The patient's rheumatoid factor was negative. An x-ray of his lateral ankle revealed fragmentation and sclerosing of the calcaneal apophysis (Figure 1). Magnetic resonance imaging revealed bone injury in the calcaneal metaphysis and apophyseal joint as well as what appeared to be a microfracture (Figure 2). In line with these findings, the patient was diagnosed with SD. It was recommended that he cease any sports activities that might aggravate his condition. He was provided with a silicon heel-lift arch supports for each heel.

The patient was prescribed 400 mg of oral ibuprofen, three times a day, and topical diclofenac to apply to his heels for three weeks. The patient was instructed on how to stretch and strengthen. Twenty sessions of post-iontophoresis stretching and 15 minutes of cold compresses for both heels were prescribed.

Manual stretching and joint mobilization were performed on both subtalar joints. Examination of the patient after two months of therapy revealed fewer complaints. There was no sensitivity around the heels on palpation and the joints had normal range of motion. No gait disorder was observed. The patient was permitted to return to his daily activities.

## Discussion

Calcaneal apophysis, located where the Achilles tendon cleaves into the calcaneus, is composed of cartilage columns, and it is the secondary center of ossification. Apophysitis is a result of recurring microtraumas and leads to microavulsion in the bone-cartilage junction. For apophysitis to be revealed, there must be a recurring injury above the bone healing speed (2, 3).

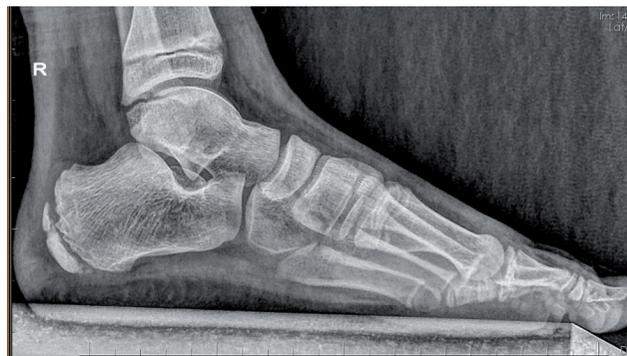


Figure 1. X-ray of sclerosis in the calcaneal apophysis with fragmentation.



Figure 2. Magnetic resonance imaging reveals bone injury and microfractures in the calcaneal apophysis and the apophyseal joint.

A pediatric patient with SD had complaints of pain in the posterior calcaneus with no spread, which was aggravated by activities that put pressure on the heels. The pain eased when the patient rested. Another finding that usually accompanies such pain is the loss of ankle dorsiflexion caused by the reduced flexibility of the Achilles tendon. Dorsiflexion might be 10 degrees or less (5). The pain may increase in time and prevent a patient from performing his or her physical activities. Adolescents may experience dorsiflexion in their ankles because the lower extremity long bones grow faster than muscles and tendons (3, 4). This difference in growth is likely a cause for the increased tension in the calcaneal apophysis during activities that put pressure on the heels. Radiography cannot diagnose SD, although it is used to diagnose other types of heel pain (6).

Heel-lift therapy is a well-known treatment for SD. Sever recommended the use of heel lifts to mitigate the pressure on the heels and tension on the Achilles tendon (3, 4). The use of heel lifts remains to be a standard component of SD therapy. MacLellan and Vyvyan (7) report that viscoelastic heel reinforcers decrease ground reaction force and mitigate heel pain. In addition, Madden and Mellion (8) recommend that people with SD use a heel lift because it decreases shock impacts of viscoelastic heel reinforcers. For more resistant or severe cases, one can use oral non-steroidal anti-inflammatory medicines (NSAID) or wear a short leg cast for two to four weeks (6, 8).

The desired outcome of physical therapy for a person with SD is for the patient to return to all his or her previous physical activities. To do so, no pain should exist when pressure is placed on the patient's heels (7, 8). The patient can gradually return to activities once the pain is under control and has disappeared. Secondary ossification of the center of the calcaneus is active between the ages of 7 and 16. The disease limits itself, disappearing once ossification begins in the apophysis (5, 6). SD most commonly affects boys between the ages of 10 and 12 and girls between the ages of 8 and 10. No long-term problems have been reported as a result of SD. However, SD is painful and capable of limiting activities (6, 9, 10). Because of the disease's self-limiting nature, the prognosis is quite good and the patient can eventually return to all activities. Increased intensity of activities, variation in physical activity, regression of the Achilles tendon's ability to extend, or a growth spurt are all factors that can potentially lead to recurring injuries and pave the way for the disease. Such preventive therapies as stretching, strengthening, cold compression, and proper footwear choices should be considered to avoid recurrence or aggravation of the disease (6, 9, 10).

To diagnose a pediatric patient with complaints of heel pain, the differential diagnosis should include Achilles tendinitis, retrocalcaneal bursitis, calcaneal stress fracture, calcaneal cysts, osteomyelitis, and plantar fasciitis (2, 6). A proper clinical evaluation may rule out some of these causes (3, 4).

SD is a common cause of heel pain in adolescents. This article presents the symptoms, findings, diagnostic methods, and treatment protocols for the disease using the case of an 12-year old male suffering from right heel pain with complaints of limping.

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