ECRONICON OPEN ACCESS

EC PAEDIATRICS
Case Report

Computed Tomography Revealing Bilateral Sever's Disease in a Seven-Year-Old Child After Initially Normal Radiographs: A Diagnostic Challenge

El Mabrouk Fatma*, Hlioui Kamal, Mohamed Chtioui, Nazik Allali, Latifa Chat and Siham El Haddad

Department of Radiology, Ibn Sina University Hospital Center, Rabat-Sale-Kenitra, Rabat, Morocco

***Corresponding Author:** El Mabrouk Fatma, Department of Radiology, Ibn Sina University Hospital Center, Rabat-Sale-Kenitra, Rabat, Morocco.

Received: July 22, 2026; **Published:** July 30, 2026

Abstract

Sever's disease (calcaneal apophysitis) is the leading cause of heel pain in skeletally immature children and is generally diagnosed clinically. Imaging is mainly performed to exclude alternative diagnoses when symptoms are atypical or unusually severe.

A 7-year-old boy presented with progressively worsening bilateral heel pain for three months associated with bilateral calcaneal swelling. One month before admission, the pain became severe enough to prevent weight-bearing, particularly on the left side. Initial radiographs were interpreted as normal. Because of persistent symptoms and significant functional impairment, computed tomography (CT) of both feet was performed. CT demonstrated bilateral irregular fragmentation and sclerosis of the calcaneal apophyses, more pronounced on the left, without fracture, cortical destruction, periosteal reaction, or aggressive bone lesion. These findings, combined with the clinical presentation, established the diagnosis of bilateral Sever's disease. Conservative treatment resulted in progressive symptom resolution.

Although Sever's disease remains a clinical diagnosis, CT may be valuable in selected patients with persistent symptoms and inconclusive radiographs by excluding more serious conditions while demonstrating characteristic apophyseal abnormalities.

Keywords: *Sever's Disease; Calcaneal Apophysitis; Heel Pain; Computed Tomography; Pediatric Radiology*

Introduction

Sever's disease, or calcaneal apophysitis, is the most common cause of heel pain in children with open growth plates and accounts for a substantial proportion of pediatric sports-related foot complaints [1,2]. It results from repetitive traction forces exerted by the Achilles tendon on the immature calcaneal apophysis during periods of rapid skeletal growth, producing a traction apophysitis of the secondary ossification center [1-3].

The diagnosis is usually clinical, based on activity-related posterior heel pain and localized tenderness over the calcaneal apophysis. Conventional radiographs are frequently obtained to exclude fractures or other osseous abnormalities but have limited diagnostic value because apophyseal fragmentation and sclerosis may represent physiological developmental changes [2,4].

Advanced imaging is reserved for atypical presentations, persistent symptoms, inability to bear weight, or suspicion of infection, stress fracture, or neoplasm. MRI is considered the most sensitive modality in equivocal cases, whereas the contribution of CT has been only rarely discussed in the literature [2,5].

We present an unusual case of bilateral Sever's disease in a 7-year-old child with persistent disabling heel pain and initially normal radiographs, highlighting the complementary role of CT in the diagnostic work-up.

Case Presentation

A 7-year-old previously healthy boy was referred for persistent bilateral heel pain evolving over three months. The pain progressively worsened and was accompanied by swelling over both calcaneal regions. During the month preceding presentation, the patient became unable to bear weight on his left foot because of severe pain, while the right heel remained painful but less symptomatic. There was no history of trauma, fever, constitutional symptoms, or recent infection.

Initial plain radiographs obtained elsewhere were interpreted as normal. Despite symptomatic treatment, the patient's condition continued to deteriorate, prompting referral for further imaging.

Clinical examination revealed bilateral posterior heel swelling corresponding to the calcaneal apophyses, with left-sided predominance. Palpation elicited marked tenderness over both calcaneal apophyses, and the patient adopted an antalgic gait with inability to bear weight on the left side. There were no signs of local inflammation, including erythema or increased skin temperature (Figure 1).

Figure 1: *Clinical photograph demonstrating a visible prominence of the posterior heel corresponding to the calcaneal apophyseal region of the left foot.*

Multidetector CT of both feet demonstrated irregular fragmentation of the posterior calcaneal apophyses with mild surrounding sclerosis bilaterally. The abnormalities were more pronounced on the left side. No cortical interruption, fracture line, periosteal reaction, osteolytic lesion, sequestrum, or aggressive osseous destruction was identified. The adjacent subtalar joints were preserved (Figure 2 and 3).

Considering the characteristic imaging findings together with the clinical presentation, bilateral calcaneal apophysitis (Sever's disease) was diagnosed.

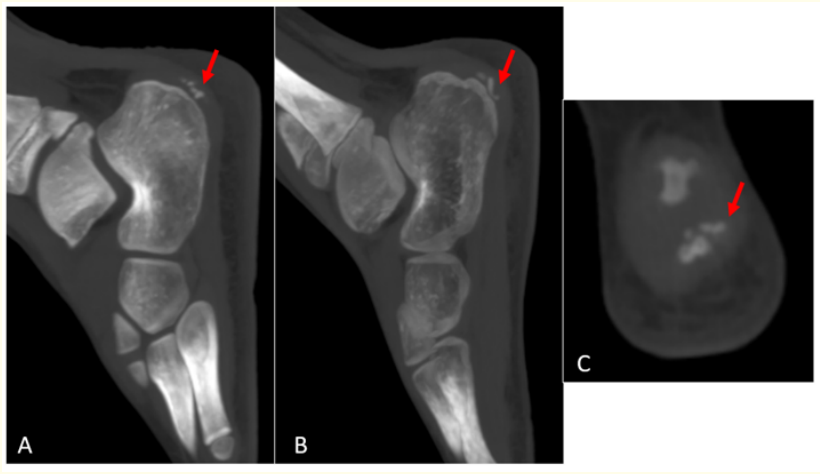

Figure 2: *Sagittal (A, B) and coronal (C) CT images of the right calcaneus demonstrate irregular fragmentation of the secondary ossification center of the posterior calcaneal apophysis (Red arrows), associated with reactive sclerosis of the adjacent calcaneal metaphysis and inflammatory infiltration with partial effacement of the pre-Achilles (Kager's) fat pad. No cortical destruction, fracture line, periosteal reaction, or focal osteolytic lesion is identified. These findings are consistent with calcaneal apophysitis (Sever's disease).*

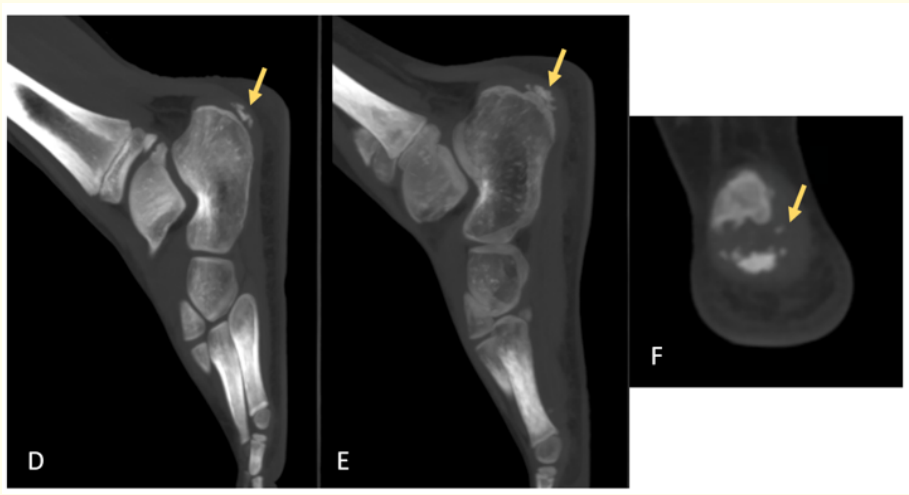

Figure 3: *Left calcaneus. Sagittal (D, E) and coronal (F) CT images demonstrate more pronounced irregular fragmentation of the posterior calcaneal apophysis (Yellow arrows), associated with reactive subapophyseal calcaneal sclerosis and inflammatory infiltration with partial effacement of the pre-Achilles (Kager's) fat pad.*

The patient was managed conservatively with temporary restriction of sports activities, heel cushions, Achilles tendon stretching exercises, and nonsteroidal anti-inflammatory medication.

Discussion

Sever's disease is a self-limiting traction apophysitis caused by repetitive mechanical stress at the insertion of the Achilles tendon into the developing calcaneal apophysis [1,3]. During rapid skeletal growth, relative shortening of the gastrocnemius-soleus complex increases tensile forces across the immature secondary ossification center, resulting in repetitive microtrauma and inflammation [3,6].

Although the disease most commonly affects children between 8 and 15 years of age, younger patients may occasionally present, as in our case [1,2]. Bilateral involvement has been reported in approximately half of patients, although symptoms are frequently asymmetric [2].

Diagnosis is generally clinical. The combination of activity-related heel pain, tenderness over the posterior calcaneus, and a positive calcaneal squeeze test is highly suggestive. However, imaging becomes necessary when symptoms are unusually severe, prolonged, associated with inability to bear weight, or when infection, stress fracture, inflammatory disease, or neoplasm cannot be confidently excluded [2,5].

Radiographs have limited sensitivity because fragmentation, sclerosis, and irregular ossification of the calcaneal apophysis frequently represent normal variants during skeletal maturation [4]. Consequently, normal radiographs do not exclude Sever's disease, and abnormal radiographic appearances should always be interpreted in conjunction with clinical findings.

MRI remains the preferred advanced imaging technique because it can demonstrate bone marrow edema of the calcaneal apophysis and adjacent metaphysis while excluding osteomyelitis and neoplastic infiltration [2,5]. Nevertheless, MRI may not always be readily available or feasible in young children.

Although CT is not routinely recommended, it offers excellent visualization of osseous anatomy. In our patient, CT clearly demonstrated bilateral apophyseal fragmentation and sclerosis while confidently excluding occult fracture, cortical destruction, aggressive bone lesions, and osteomyelitis. This illustrates the usefulness of CT as a complementary diagnostic tool in selected cases with persistent symptoms and inconclusive radiographs.

The principal differential diagnoses include calcaneal stress fracture, osteomyelitis, eosinophilic granuloma, osteoid osteoma, benign and malignant bone tumors, tarsal coalition, inflammatory arthropathies, and Achilles tendon disorders [2,5].

Conservative treatment remains the cornerstone of management and includes activity modification, heel lifts or heel cups, stretching exercises targeting the gastrocnemius-soleus complex, and analgesic or anti-inflammatory medication. The prognosis is excellent, with complete recovery expected after closure of the calcaneal apophysis [1,2].

Conclusion

This case highlights that severe bilateral heel pain with initially normal radiographs does not exclude Sever's disease. Although CT is not routinely indicated, it may provide valuable diagnostic information in carefully selected patients by demonstrating characteristic calcaneal apophyseal abnormalities while excluding more serious conditions such as stress fracture, osteomyelitis, or bone tumors. Early recognition of these imaging findings can facilitate appropriate conservative management and prevent unnecessary invasive investigations.

Funding Statements

I have no funding.

Conflict of Interest

This work has no conflict of interest.

Informed Consent

Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images. All identifying information has been removed to ensure complete anonymity.

Bibliography

1. Smith JM and Varacallo MA. "Sever disease (Calcaneal apophysitis)". StatPearls. Treasure Island (FL): StatPearls Publishing (2024).
2. Kothari A., *et al*. "A review of pediatric heel pain". *Cureus* 15.1 (2023): e34508.
3. Micheli LJ and Ireland ML. "Prevention and management of calcaneal apophysitis in children: an overuse syndrome". *Journal of Pediatric Orthopaedics* 7.1 (1987): 34-38.
4. Ahmed S., *et al*. "Sever's disease: a common cause of paediatric heel pain". *BMJ Case Reports* (2013): bcr2013009758.
5. Chiodo WA and Cook KD. "Pediatric heel pain". *Clinics in Podiatric Medicine and Surgery* 27.3 (2010): 355-367.
6. Sitati FC and Kingori J. "Chronic bilateral heel pain in a child with Sever disease: case report and review of literature". *Cases Journal* 2 (2009): 9365.
7. Ogden JA., *et al*. "Sever's injury: a stress fracture of the immature calcaneal metaphysis". *Journal of Pediatric Orthopaedics* 24.5 (2004): 488-492.

Volume 15 Issue 8 August 2026