North Bengal Medical College Journal
Vol 1 No 1 July 2015

Case Report

Sever Disease – A Case Report

Md. Mofazzal Sharif[1], Shamim Adom [2], Tawhidur Rahman[3]

Revised: August 10, 2014 Accepted: August 19, 2014

Abstract

A 10 year old male patient reported to orthopaedic out patient department (OPD) of North Bengal Medical College Hospital, Siraganj with the complaints of pain in left heel at the posterior aspect that was made worse by sports, especially those involving jumping. The onset was usually gradual. Often, the pain had been relieved somewhat with rest. He had history of fall from height and trauma to left heel. Then his parents were advised to do X ray both ankles lateral views. X ray report revealed dense left calcaneal apophysis with a lucent area within. Right calcaneal apophysis appeared normal. Rest of the bones and joint spaces of both ankles were unremarkable. Considering his history and x-ray findings he was diagnosed as a case of left sided calcaneal apophysitis or Sever Disease. Further x ray of left ankle two weeks later revealed denser calcaneal apophysis than the previous which confirmed diagnoses of calcaneal apophysistis or Sever disease.

Key words: *Calcaneal apophysitis, Sever Disease.* NBMC J 2015; 1 (1): 48-53

Introduction

Sever disease, first described in 1912, is a painful inflammation of the calcaneal apophysis. It is classified with the child and adolescent nonarticular osteochondroses. The calcaneal apophysis develops as an independent center of ossification (possibly multiple). It appears in boys aged 9-10 years and fuses by age 17 years; it appears in girls at slightly younger ages. During the rapid growth surrounding puberty, the apophyseal line appears to be weakened further because of increased fragile calcified cartilage.[1-3] Microfractures are believed to occur because of shear stress leading to the normal progression of fracture healing.

1. *Assistant Professor of Radiology and Imaging, North Bengal Medical College, Sirajganj.*
2. *Professor of Orthopaedics, North Bengal Medical College, Sirajganj*
3. *Junior Consultant, Department of Radiology and Imaging, BIRDEM, Dhaka.*

Correspondence *Md. Mofazzal Sharif, Email: mofazzal.sharif@gmail.com*

This theory explains the clinical picture and the radiographic appearance of resorption, fragmentation; and increased sclerosis leading to eventual union (Figure 4). The radiographs showing fragmentation of the apophysis are not diagnostic, because multiple centers of ossification may exist in the normal apophysis, as noted. However, the degree of involvement in children displaying the clinical symptoms of Sever disease appears to be more pronounced.[3] Although no exact figures on the occurrence of Sever disease are available, this condition is a relatively common problem in growing active children.[4] Although no well-recognized, long-term sequelae of untreated Sever disease exist, this condition causes pain that can limit performance and participation in sports and if left untreated, can significantly limit even simple activities of daily life.[5-6] The incidence of Sever disease is higher in boys than in girls. In a report by Micheli and Ireland, 64% of the 85 patients were male. Sever disease occurs most frequently in active 10- to 12-year-old boys. In Micheli and Ireland's report on 85 patients, the average age of presentation was 11 years 10 months for boys and 8 years 8 months for girls.[7] Physical examinations vary depending on the severity and length of involvement. Bilateral involvement is present in approximately 60% of cases. Most patients experience pain with deep palpation at the Achilles insertion and pain when performing active toe raises. Forced dorsiflexion of the ankle also proves uncomfortable and is relieved with passive equinus positioning. Swelling may be present but usually is mild. In long-standing cases, the child may have calcaneal enlargement.[5,7] Differential Diagnoses are Achilles Tendon Pathology, Calcaneus Fractures, Osteomyelitis and Tarsal Coalition.[6-8]

Radiographic findings include increased sclerosis and fragmentation of the calcaneal apophysis. However, it should be stressed that these findings are nonspecific and also are observed in asymptomatic feet. Radiographic evaluation is beneficial for excluding fracture or rare tumor. It is vital to remember that radiographic changes on plain x-ray films are neither diagnostic nor prognostic; their primary value in this setting is for exclusion of other causes of heel pain. This point should be clearly explained to patients and parents.[8-9] It must be kept in mind that if pain continues, becomes significant at rest, awakens the patient from sleep, or is associated with significant swelling, tests should be performed to look for other causes. Tarsal coalition is another hindfoot disorder that must be distinguished from Sever disease. Thus, if

reduction of subtalar motion is found on physical examination, computed tomography (CT) can be helpful in differentiating this disease from failure of the bones of the hindfoot to separate.[7,9]

Although no well-recognized, long-term sequelae of untreated Sever disease exist, the physician's role is to minimize pain and allow the child to return to normal activities as soon as possible to enhance psychosocial development. The physician also must be able to differentiate Sever disease from other causes of heel pain in the child that are potentially more serious, such as tumor or osteomyelitis.[3, 4] Treatment is initially focused on reducing the present pain and limitations and then on preventing recurrence. Limitation of activity (especially running and jumping) usually is necessary. In Micheli and Ireland's study, 84% of 85 patients were able to resume sports activities after 2 months.[1, 5, 7-9] If the symptoms are not severe enough to warrant limiting sports activities or if the patient and parents are unwilling to miss a critical portion of the sport season, wearing a half-inch inner-shoe heel lift (at all times during ambulation), a monitored stretching program, presport and postsport icing, and judicious use of anti-inflammatory agents normally reduce the symptoms and allow continued participation. If symptoms worsen, activity modification must be included. For severe cases, short-term (2-3 weeks) cast treatment in mild equinus can be used.[5, 8, 9] To prevent recurrence, patients, parents, coaches; and trainers should be instructed regarding a good pre-exercise stretching program for the child. Early in the season, encouragement should be given for a preseason conditioning and stretching program. Coaches and trainers should be educated about recognition of the clinical symptoms so they are able to initiate early protective measures and seek medical referral when necessary. Limitation of activity (especially running and jumping) usually is necessary. Failure to instruct players, parents, coaches and trainers regarding limitation of activity and proper preexercise and postexercise stretching can lead to prolonged symptoms and further limitation of performance.[2, 4, 5, 6]

Case report

A 10 year old male patient hailing from Sirajganj Sadar, Sirajganj District reported to orthopaedic OPD of North Bengal Medical College Hospital, Siraganj with the complaints of pain in left heel. This pain was made worse by sports, especially those involving jumping. The onset was usually

gradual. Often, the pain had been relieved by rest. He had history of fall from height and trauma to left heel one week earlier. On physical examination, patient experienced pain with deep palpation at the Achilles insertion and also when performing active toe raised. Disconfort was felt on forced dorsiflexion of the ankle and was relieved with passive equinus positioning. No swelling was present at time of examination.

Then his parents were advised to do X ray both ankles lateral views. X ray report (Figure 1) revealed dense left calcaneal apophysis with a lucent area within. Right calcaneal apophysis appeared normal. Rest of the bones and joint spaces of both ankles were unremarkable.

Considering his history, clinical examination and x-ray findings he was diagnosed as a case of left sided calcaneal apophysitis or Sever Disease. Further x ray (Figure 2) of left ankle two weeks later revealed denser calcaneal apophysis than the previous which confirmed diagnoses of calcaneal apophysistis or Sever disease.

Figure 1: X ray of Both ankles both lateral views showing dense left calcaneal apophysis with a lucent area within. Right calcaneal apophysis appears normal. Rest of the bones and joint spaces of both ankles were unremarkable.

Figure 2: X ray of left ankle lateral view two weeks later showing denser calcaneal apophysis compared to previous one.

Figure 3: Sever disease. Lateral radiograph of foot in symptomatic 9-year-old male soccer player. Sclerosis is not diagnostic of Sever disease but is a characteristic radiographic finding[7].

Figure 4: Labeled MRI depicts the anatomy and mechanical forces responsible for the development of Sever disease (shear stress at the calcaneal apophysis)[9].

Discussion

Previous study revealed incidence of Sever disease is higher in boys than in girls. Sever disease occurs most frequently in active 10- to 12-year-old boys.[7] In our present case, the patients was a 10 years old boy. Present case had history of fall from height and trauma to left heel one week earlier. On physical examination the patient experienced pain with deep palpation at the Achilles insertion and also when performing active toe raised. Disconfort was felt on forced dorsiflexion of the ankle and was relieved with passive equinus positioning. No swelling was present at time of examination. Previous tudies revealed that most patients with Sever disease experienced pain with deep palpation at the Achilles insertion and pain when performing active toe raises. Forced dorsiflexion of the ankle also proved uncomfortable and is relieved with passive equinus positioning. Swelling might be present but usually is mild. In long-standing cases, the child might have calcaneal enlargement.[5,7] Comparable studies showed radiographic findings included increased sclerosis and fragmentation of the calcaneal apophysis (Figure 3) in Sever disease. However, it should be stressed that these findings are nonspecific and also are observed in asymptomatic feet.[7] Radiographic

evaluation was beneficial for excluding fracture or rare tumor. It is vital to remember that radiographic changes on plain x-ray films are neither diagnostic nor prognostic; their primary value in this setting is for exclusion of other causes of heel pain. [8-9] Our present study revealed same radiographic findings of dense left calcaneal apophysis with a lucent area within.

References

1. Sever JW. Apophysitis of the Os Calcis. Am J of Orthopaedics. 1917; 15: 659.
2. Pappas AM. The osteochondroses. Pediatr Clin North Am. 1967; 14(3):549-570.
3. Katz JF. Nonarticular Osteochondroses. Clinical Orthopaedics and Related Research. 1981; 158: 70.
4. Pizzutillo PD, Sullivan JA, Grana WA. Osteochondroses, Chapter in The Pediatric Athlete, American Academy of Orthopaedic Surgeons Seminar, Oklahoma City Oklahoma, November 1998.
5. Roy DR. Accessory Navicular and Osteochodroses of the Foot and Ankle in the Child and Adolescent. Foot and Ankle Clinics. Philadelphia: WB Saunders; 1998.
6. Becerro-de-Bengoa-Vallejo R, Losa-Iglesias ME, Rodriguez-Sanz D. Static and dynamic plantar pressures in children with and without sever disease: a case-control study. Phys Ther. 2014; 94(6): 818-826.
7. Micheli LJ, Ireland ML. Prevention and management of calcaneal apophysitis in children: an overuse syndrome. J Pediatr Orthop. 1987; 7(1): 34-38.
8. Tu P, Bytomski JR. Diagnosis of heel pain. Am Fam Physician. 2011; 84(8): 909-916.
9. Rachel JN, Williams JB, Sawyer JR, Warner WC, Kelly DM. Is radiographic evaluation necessary in children with a clinical diagnosis of calcaneal apophysitis (sever disease)?. J Pediatr Orthop. 2011; 31(5): 548-550.