MRI in calcaneal apophysitis
(Sever's disease) – A case report
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Section: Musculoskeletal system
Area of Interest: Musculoskeletal bone
Procedure: Diagnostic procedure
Imaging Technique: MR
Special Focus: Acute Case Type: Clinical Cases
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Patient: 14 years, male

Clinical History:

A 14-year-old boy presented with a history of heel pain and inability of weight bearing on the heel for three months.

Imaging Findings:

There was evidence of ill-defined hypointensities across the calcaneal epiphysis of the right foot on the T1 W sequence becoming hyperintense on the PDFS sequences. It appeared intermediately hyperintense on the T2W sequence. These bone marrow oedematous signals were seen to extend onto the adjacent calcaneal tuberosity and posterosuperior aspects of the calcaneum. Mild cortical erosions were also seen across the calcaneal tuberosity. The tendo-achilis tendon and its insertion onto the calcaneum appeared normal in signal intensities. Also seen were ill-defined oedematous signals across the talus. Mild joint effusion was also noted across the tibio-talar joint.

Discussion:

Calcaneal apophysitis, also known as Sever’s disease or avascular necrosis of calcaneal epiphysis, is a commonly encountered entity amongst athletic children and is frequently undiagnosed [1]. It is an inflammation caused by the traction of the achilles tendon on the unossified calcaneal apophysis. It is usually seen in the age group of 8-15 years at the peak of growth spurt when children begin to actively participate in new sports. Clinically no obvious swelling, skin changes, erythema or local abnormalities are seen. The child typically presents with heel pain and inability of weight bearing.

The initial diagnostic approach of X-ray and ultrasound are nonspecific. On plain radiograph the apophysis may appear normal or may reveal mild irregularity and fragmentation of the apophyseal margin. Osteoporotic patches, sclerosis, and mild widening of the involved apophyseal area can also be seen in some cases. Radiographs are often obtained to exclude other conditions like fracture, tumours, osteomyelitis, etc. [2, 3]. On ultrasound apophysis is seen as a heterogeneous vascularized pseudomass, representing the inflamed apophysis. Nuclear scintigraphy findings in apophysitis are nonspecific. Increased radiotracer uptake in the apophysis on blood pool and delayed images has been described. CT findings usually show epiphyseal widening, irregularity, and fragmentation of the apophyseal margin. MR evaluation of apophysitis should be done in two planes: axial and sagittal or coronal. A combination of fast spin-echo T1-weighted and fat-suppressed fast spin-echo T2-weighted or STIR sequences should be performed [2]. On MR there is increased signal intensity on watersensitive sequences in the apophysis, subjacent bone marrow, and adjacent muscle and fibrous periaphysseal structures (tendon, ligaments, capsule, bursae). There is contrast enhancement of the apophysis, epiphyseal plate, subjacent bone, and surrounding soft-tissue structures [2]. The condition usually resolves within two weeks of conservative treatment. In more severe cases nonsteroidal anti-
inflammatory drugs may be given.

**Differential Diagnosis List:** Sever’s disease or calcaneal apophysitis., Calcaneal epiphyseal fracture, Osteomyelitis

**Final Diagnosis:** Sever’s disease or calcaneal apophysitis.

**References:**


Description: Sagittal PDFS sequence shows hyperintensities across the calcaneal apophysis with erosions to the adjacent calcaneal tuberosity. Oedematous signals are also seen across the talus and the posterosuperior aspects of calcaneum with minimal effusion. Origin: Department of radiodiagnosis, KIMS, Narketpally, India
Description: Sagittal T2 W sequence demonstrates intermediate hyperintensities across the calcaneal apophysis. The calcaneal tuberosity cortical irregularity with erosions is also better seen. Origin: Department of radiodiagnosis, KIMS, Narketpally, India
Description: T1 W axial sequence demonstrates ill-defined hypointensities across the calcaneal apophysis. Origin: Department of radiodiagnosis, KIMS, Narketpally, INDIA