

Sever's Disease in Young Athletes

Background

1. Definition

- Sever's disease - injury to calcaneal apophysis
- Microtrabecular injury to calcaneal metaphyseal/apophyseal junction

2. General info

- An apophysis is a growth center not involved in linear growth of a bone
 - Also typically a bony prominence that is the site of attachment for a tendon
- Sever's disease is an overuse injury
 - Commonly seen during rapid growth spurts in young children
 - Linear bone growth more rapid than muscles/tendons during this age resulting in more tension on these structures
 - Leads to incr strain on fibrous structures and stress on attachment site at growth center
 - Similar to Osgood-Schlatter Disease seen in knee
 - Occurs in young athletes in sports such as:
 - Basketball, soccer, jumping and running activities
 - Pediatric heel pain

Pathophysiology

1. Pathology of dz

- Calcaneal apophysis develops as a separate ossification center
 - Appears at age of 5-7 in girls; fuses at age 13
 - Appears at age 7-8 in boys; fuses at age 15
- Caused by incr shearing forces on apophyseal plate, metaphysis and apophysis
- Pain originates from micro-trauma due to repetitive forces
 - No strong evidence for the existence of inflammation

2. Incidence/ prevalence

- Commonly seen during growth spurts
- More common in boys than in girls
- Reported between ages 7-15
- Most often between ages 10-12

3. Risk factors

- Rapid growth spurt
- At start of new season or sport
 - Basketball, soccer, gymnastics, running, jumping
- Tight achilles
- Poor fitted shoes with not enough padding
- Possibly overweight

4. Morbidity/ mortality

- No well recognized long term complications
- Untreated Sever's dz can cause persistent foot pain
 - May limit activities of daily life
 - May require crutches for ambulation
 - Can reduce sports performance/ limit participation

Diagnostics

1. Diagnosis based on Hx and PE, rarely requires X-ray
2. History
 - Chief complaint and HPI:
 - Heel pain worse with activities involving running and jumping
 - Pain usually resolves with rest
 - Pain usually follows start of a new sports season or sport
 - Can involve one or both heels
 - May present with a limp or heel swelling
3. Physical exam
 - Most characteristic feature
 - Marked heel pain elicited by medial and lateral compression of heel (SOR C)
 - Heel pain may get worse upon standing on tip-toes (positive Sever's test)
 - May be associated with limited dorsiflexion of ankle due to tight gastrosoleus muscles
4. Dx testing
 - Lab evaluation
 - Not required
 - Dx imaging
 - X-ray
 - Not required to make a Dx, helpful in excluding other causes of heel pain
 - May show fragmentation or sclerosis on X-ray, which can be normal
 - If late teen, consider X-ray and/or bone scan to differentiate from calcaneal stress fracture
 - MRI
 - Not indicated, has been used in research and recalcitrant cases
 - Can show bone "bruising" or edema in calcaneal metaphysis
 - This MRI finding is consistent with trabecular microfracture

Differential Diagnosis

1. Key Diff Dx
 - Plantar fasciitis
 - Achilles tendonitis
 - Calcaneus stress fracture
 - Fat pad syndrome
2. Extended Diff Dx
 - Haglund's deformity
 - Retro-calcaneal bursitis
 - Tibialis posterior/ peroneal tendonitis
 - Inferior calcaneal nerve entrapment
 - Foreign body

Therapeutics

1. Acute tx

- Relative rest
 - Can continue to play if can run without limp
 - May need to decr frequency and/or duration of activity
 - Ice
 - NSAIDs
 - Heel lift/cup (SOR C)
 - Severe cases may require casting and use of crutches
2. Long-term Care
- Stretching of gastrosoleus/ achilles tendon complex and plantar fascia
 - Modalities
 - Ultrasound
 - Iontophoresis
 - Ice
 - Laser
 - Consider shoe inserts or customized orthotics to correct underlying biomechanical abnormalities
 - Supportive shock absorbing shoes; shoes with soft heel counters

Follow-Up

1. Return to Office
 - Usually in 2-4 weeks
 - Determine effectiveness of interventions including medical and physical therapy
2. Refer to Specialist
 - Not indicated unless diagnostic uncertainty or recalcitrant case
3. Admit to Hospital
 - Not indicated

Prognosis

1. Usually a self-limiting condition
 - No long term complications
 - Symptoms typically resolve at 2-8 weeks
2. May have recurrence despite proper care
3. Heel pain usually resolves with complete ossification of heel bone
4. Overuse syndrome resolves without surgery in nearly all cases (SOR C)

Prevention

1. Maintain good flexibility of achilles and ankle dorsiflexion
2. Well-fitted shoes with adequate heel padding

Patient Education

1. Handout from (AAFP) Sever's disease: A Common Cause for Heel Pain
 - <http://familydoctor.org/online/famdocen/home/healthy/physical/injuries/158.html>

References

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