Juvenile Osteochondroses

Nathalie Gaulier, MD
Sports Medicine Physician
Cook Children’s Medical Center

Definition
- General term for disorders that affect one or more ossification centers in children
- Encompasses traction apophysitis and avascular necrosis
- Exact etiology unknown
- Radiographic picture show pattern of fragmentation, collapse, sclerosis and reossification

Apophysitis
- Apophysis - secondary ossification center which acts as an insertion site for a tendon
- Apophysitis usually develops due to chronic repetitive stress or traction
- Usually occurs during growth spurts
- Clinical diagnosis, though imaging may be helpful to rule out other conditions
- General treatment includes rest, activity modifications, PT and play as symptoms tolerate
Osgood-Schlatter’s

- Affects tibial tubercle apophysis
- Ages 10-14
- Up to 30% will have bilateral involvement
- Usually due to repetitive traction of the patellar tendon
- Insidious onset, though sometimes triggered by traumatic event
- Self-limiting process. Treat with activity modification, stretching, NSAIDs

Sinding-Larsen-Johannson

- Affects inferior pole of patella
- Ages 10-13
- Exacerbated by jumping or direct pressure
- Treat similarly to Osgood-Schlatter’s. Can immobilize temporarily if symptoms severe enough
Sever’s Disease

- Affects calcaneal apophysis
- Worse with activity, particularly at the beginning of the season or during growth spurts
- Ages: 8-12, more common in males
- Bilateral in 60%
- Tenderness in calcaneus and at Achilles insertion site. Often with tight heel cords and weakness with dorsiflexion
- Treatment with rest, ice, activity or shoe modification, heel cushions, heel stretches
Iselin’s Disease

- Affects base of the fifth metatarsal where the peroneus brevis attaches
- Ages 8-14
- Usually insidious onset but may start after an ankle injury (inversion)
- Point TTP at base, may be assoc with swelling, pain with resisted eversion or with passive plantarflexion/inversion
- Self-limiting

Traction Apophyses of the Hip

- Hip and pelvis are sites of multiple apophyses
- Ages: 9-15
- Apophysitis – more subacute presentation, localized pain worsened with activity
- Avulsion injury – usually acute injury usually during forceful contraction during activities such as sprinting, kicking, hurdles, etc. Often athlete will report feeling a ‘pop’ and have immediate
Traction Apophyses of the Hip

- Iliac Crest: abdominals (internal/external oblique and transversus)
- ASIS: sartorius
- AIIS: rectus femoris
- Greater Trochanter: gluteals
- Lesser Trochanter: iliopsoas
- Ischial Tuberosity: hamstring
- Inferior pubic ramus: adductors
Little Leaguer Shoulder
- Injury to the proximal humeral physis due to repetitive stress
- Mimics a Salter Harris I fracture
- Males ages 11-14
- Presents with pain with overhead throwing, decreased throwing velocity, accuracy and distance
- Point TTP over humeral physis, painful ROM

Risk Factors
- Inadequate rest
- Playing for multiple teams
- Pitching while fatigued
- Excessive throwing while not pitching
- Throwing curveballs and sliders at a young age
- Showcases
- Use of radar guns
Treatment

- REST!!
- PT and progressive throwing program
- Correction of pitching mechanics
- Education on prevention

Medial Epicondyle Apophysitis

- “Little Leaguer Elbow”
- Usually due to repeated valgus stress (pitchers)
- Presents with pain, decreased velocity
- Typically normal radiographs
- Acute presentation may indicate avulsion fracture or UCL sprain
- Treatment rest and PT, work on throwing mechanics
Legg-Calvé-Perthes

- AVN of femoral head
- Usually occurs in children aged 4-10
- 4:1 male predilection and up to 20% bilateral
- Unknown cause
- Classic presentation is painless limp and limited ROM
- Treatment usually involves rest, off-loading and PT to preserve ROM
- Younger age of presentation correlates with better prognosis

Panner Disease

- Affects capitellum
- Thought to be related to lateral compression overuse injury
- Ages 5-12, more common in males
- Presents with lateral elbow pain worsened with activity, may have stiffness/decreased ROM
- Treatment: activity modification, NSAIDs
Freiberg Disease

- Affect the head of the second metatarsal
- Causes pain in forefoot, exacerbated by weight-bearing and athletic activities
- Often seen in adolescent females and dancers
- Bilateral in <10%
- Treatment: activity modification, metatarsal pads, and well-padded shoes

Köhler’s Disease

- Affects tarsal navicular
- Uncommon. Affects children aged 5-10
- Can present with persistent mid-foot pain and antalgic gait
- Conservative management

References

- Weinstein SL. Legg-Calvé-Perthes syndrome. In: Lovell and Winter's