Köhler's Bone Disease

This is defined as osteochondrosis of the tarsal navicular bone.

Pathogenesis

Osteochondroses are noninflammatory, noninfectious derangements of bony growth at various ossification centres occurring during times of great developmental activity. They affect the epiphyses.

Other osteochondroses include:
- Freiberg's disease - head of 2nd metatarsal
- Panner's disease - capitulum\(^1\)
- Blount's disease - proximal tibia
- Sever's disease - calcaneus
- Sinding-Larsen and Johansson syndrome - patella

Aetiology

The aetiology of Köhler's disease is unknown. Theories have included vascular trauma and retarded bone age, but none has been proven.\(^2\)

Epidemiology

Köhler's bone disease is rare.

- It commonly affects children aged 3 to 5 years old, but is seen any time between age 2 and 10 years.\(^3\)
- It is more common in boys; however, girls with this condition are often younger than boys with the disease. This is probably due to the onset of ossification in girls, which occurs at age 18-24 months. In boys ossification occurs at age 24-30 months.

Presentation

Children present with:
- A unilateral antalgic gait (a limp, avoiding putting weight on painful structures)
- Local tenderness of the medial aspect of the foot, over the navicular bone

The child is able to walk by taking the majority of their weight on the lateral aspect of the foot. Frequently, there is swelling and redness of the soft tissues.

Investigations

Plain X-ray

X-rays comparing the affected with the unaffected side help assess progression.

- The navicular bone is initially flattened and sclerotic. Later it becomes fragmented and then re-ossifies.\(^4\)
- The lateral view shows a flat tarsal scaphoid.
- The space between the talus and the cuneiforms is preserved.

MRI/CT scanning

This is used if pain persists 6 months after casting. This is necessary to exclude a tarsal coalition. This is when the bones fuse and is a frequent cause of painful flatfoot in the older child or adolescent.
Management
The mainstays of treatment are:

- Rest
- Avoiding excessive weight bearing
- Analgesia

Immobilisation in a short leg cast moulded under the longitudinal arch, speeds up recovery.[5, 6] Treating all patients for at least 6 weeks is recommended.

- If pain persists after a 6-week period of casting, a new cast must be applied for 6 supplementary weeks.
- Other causes of foot pain (including talar coalition or an accessory navicular) should be excluded if the pain does not disappear after the cast has been in place.

Prognosis
The course is chronic, but rarely lasts longer than 2 years.[4] Symptoms in treated patients can last for less than 3 months.

Further reading & references
1. Panner’s Disease; Wheeless’ Textbook of Orthopaedics
3. Vargas-Barreto B, Claye M. Köhler Disease. eMedicine, February 2009; Good clinical images

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