

A painful foot in a young boy

A 12-year-old white boy presented to the emergency department with a history of recurrent painful left foot. In the past, he had noticed vague dull ache in his left hindfoot, which occasionally became painful on severe exertion. Analgesics and rest for a few days eased his pain during these acute episodes. A detailed history and physical examination of his left foot found mild swelling and tenderness over the dorsum of the foot and in the mid-tarsal region. He had the full range of movements in all the joints of his forefoot and mid-foot. Movement in his hind-foot was slightly restricted (figure).

Questions

- (1) What are the features seen on the plain radiograph?
- (2) What are the differential diagnoses for his hindfoot pain?
- (3) What is the diagnosis?
- (4) What is tarsal coalition? And what are the types of tarsal coalition?
- (5) What is the line of management?

Answers

- (1) The plain x ray image of the foot shows a slightly decreased medial arch, and the bones of the forefoot look normal. The bony anatomy of the mid-foot is normal, and, in the hindfoot, a bony bar (bridge) can be seen between the talus and the calcaneum. The posterior talocalcaneal joint space is slightly narrowed.
- (2) The differential diagnoses for intermittent hindfoot pain in this case include soft tissue injury, weak tibialis posterior muscle, ligamentous laxity, peroneal spastic flat foot, plantar fasciitis, and tarsal coalition.
- (3) The diagnosis in this case is talocalcaneal tarsal coalition.

Fig 1 Plain radiograph of oblique view of the boy's left foot



tion.

(4) Tarsal coalition is a congenital deformity that results in the connection of two or more bones in the foot that share a common synovial joint lining.

(5) Treatment in tarsal coalition is usually guided by the severity of the symptoms. Asymptomatic chance findings of a tarsal coalition do not require any treatment. Patients with mild and moderate symptoms are initially managed non-operatively with foot supports and a shoe wedge. When the symptoms become severe or unresponsive to conservative methods, surgery is considered.

Discussion


The intermittent pain in the hindfoot in our patient was secondary to tarsal coalition. Tarsal coalition can be asymptomatic and go unnoticed. It is important to remember this especially when assessing preadolescent children who present with a painful foot. A detailed history, especially about the type of pain, any associated spasm, and a proper meticulous examination of the hind-foot, would have been the clue to the diagnosis.

Tarsal coalition

Tarsal coalition is a congenital deformity, and the reported incidence in the general population is about 1%. Tarsal coalition has been seen in different generations of the same family. One researcher, after studying families of 31 Scottish patients, concluded that it is a multifactorial disorder of autosomal dominance.¹ Tarsal coalition can be fibrous (syndesmosis), cartilaginous (synchondrosis), or osseous (synostosis). It can be partial or complete and sometimes an osseous bridge can be acquired secondary to tumour or arthritis.

The two most common forms of tarsal coalition involve the calcaneum and talus (talocalcaneal) or the calcaneus and navicular (calcaneonavicular). Talocalcaneal coalitions are slightly more common and account for most of the symptomatic feet. Pain or discomfort is the most common presenting symptom, usually not severe and present during the preadolescent age when the bar is ossifying. Pain is usually due to the restricted range of motion and sometimes may be secondary to peroneal muscle spasm.

Clinical examination will find tenderness around the bar and decreased or absent movement in the subtalar joint. Stiffness and pes planovalgus is usually associated with tarsal pain.² A valgus deformity of the heel may be noted. Severe cases may lead to atrophy of the calf muscles, and patients find it difficult to stand on tiptoes. Anteroposterior, lateral, oblique, and axial views of the painful feet usually show the condition.³ Computed tomography scans are recommended in cases where plain radiography is normal. Magnetic resonance imaging is usually not indicated except in cases where soft tissue bridge is suspected.

Most tarsal coalitions are asymptomatic or minimally symptomatic. The severely symptomatic ones are initially treated by non-operative methods using foot supports and shoe heels to correct the deformity, which helps to relieve pain, along with analgesics. Surgical treatment is indicated in patients for whom the conservative treatment fails. The surgical options vary according to the location and type of coalition. A minimal surgical option includes the resection of the bony bar. In severe cases and in patients who are still symptomatic after bar resection, triple arthrodesis is the treatment of choice. 

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- 2 Harris RI, Bleath T. Etiology of peroneal spastic flatfoot. *J Bone Joint Surg Br* 1948;30:624.
- 3 Epeldegui T. Tarsal coalition. In: Fitzgerald RH, Kaufer H, Malkani AL, eds. *Orthopaedics*. St Louis: Mosby, 2002:676-7.