A boy with a painful flat foot

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A 12-year-old boy has complained of intermittent pain in his right foot for the past 12 months, in the absence of any precipitating trauma. What is the correct diagnosis in this case?

Case presentation

A 12-year-old boy has been experiencing moderate to severe pain along the lateral aspect of his right foot for the past 12 months. There is no history of preceding trauma. His symptoms are made worse by sporting activity and with walking on uneven surfaces; ankle sprains are frequent, resulting in swelling. The pain improves with rest. He is systemically well.

Physical examination shows that the patient has a fixed valgus alignment of the heel with a flat foot. The medial longitudinal arch does not re-form when he stands on the tips of his toes. Peroneal spasm and local tenderness are present in the sinus tarsi. Ankle motion is normal but the subtalar joint is irritable and stiff.

Investigations

X-ray shows an abnormal connection between the calcaneus and navicular bones, best demonstrated on an oblique view (Figure 1). A CT scan provides more detail and helps in assessing the size of the coalition (Figure 2).

Diagnosis

This patient has a calcaneonavicular tarsal coalition. The history of pain and the asymmetrical fixed deformity should alert the physician that this is not the typical physiological flat foot of childhood. One must consider other causes of a painful flat foot, including infection, inflammatory joint disease and tumour.

Discussion

Tarsal coalitions are congenital anomalies in which two tarsal bones remain abnormally connected. Calcaneonavicular and subtalar bars are the sites most commonly involved. At birth, the abnormal connection is usually fibrous or cartilaginous. Symptoms may develop around the time of puberty, when the child begins to gain weight and the coalition begins to ossify rapidly.

Coalitions are present in 1% of the population, but many people remain asymptomatic throughout life. Symptomatic coalitions may settle by avoiding high impact activities such as running and jumping; high top supportive shoes and anti-inflammatory medication are often helpful. More severe pain requires a period of immobilisation in a short leg walking cast.

Calcaneonavicular coalitions are amenable to excision, and surgery may be necessary for recalcitrant symptoms. Results are generally good in 90% of patients, with resolution of pain and improvement in joint motion. Small subtalar coalitions may also be suitable for excision. Arthrodesis is preferable for larger bars, particularly if secondary joint degeneration is present.

Key points

- Tarsal coalition is a common cause of painful flat foot in older children.
- Oblique x-rays and a CT scan of the foot establish the diagnosis.
- Surgical excision is possible if symptoms fail to respond to conservative treatment. MT

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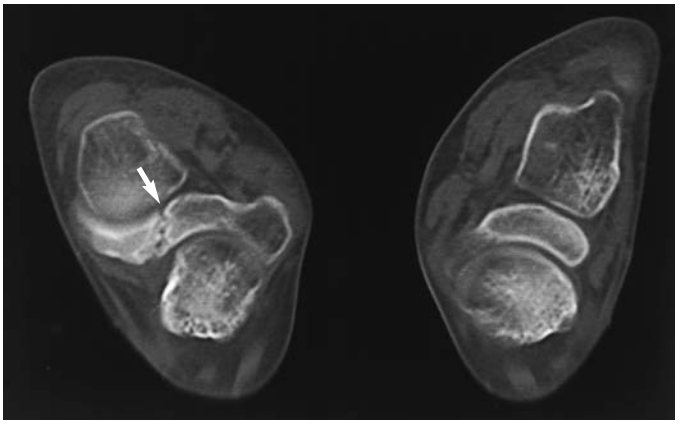

Figure 1 (above). Oblique x-ray showing a calcaneonavicular coalition.

Figure 2 (right). A horizontal CT scan showing an incomplete bony coalition in the right foot (arrow).