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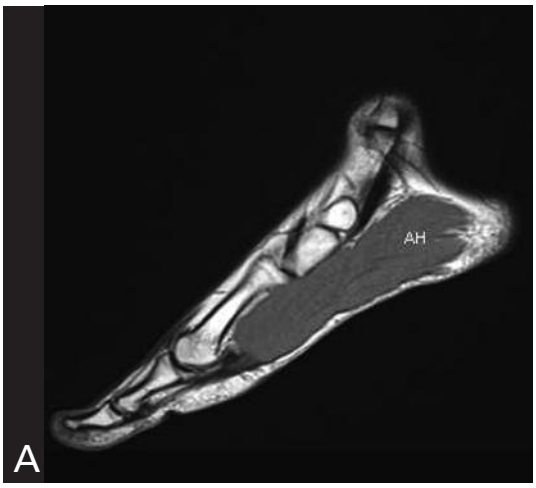
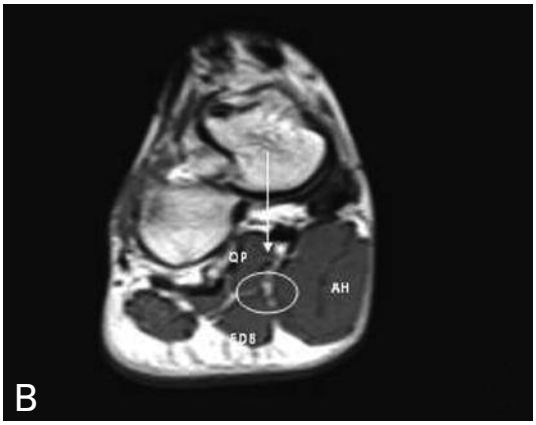
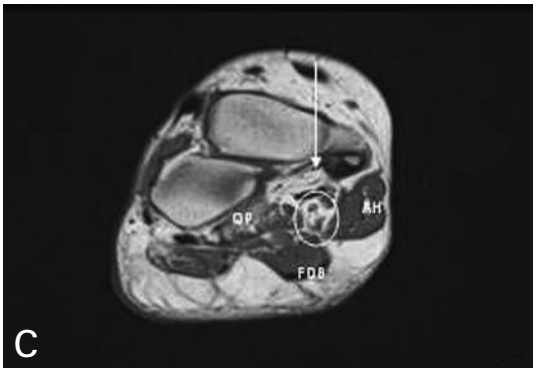
IMAGES IN CLINICAL RADIOLOGY







Hypertrophic abductor hallucis muscle with nerve compression syndrome

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A 13-year-old girl presented with a soft tissue swelling at the posteromedial side of the foot. This swelling had been present since birth but recently started to cause discomfort and radiating pain to the plantar aspect of the first and second toes. A magnetic resonance imaging (MRI) showed a soft tissue mass (2,6 x 3,7 x 13 centimetres) at the posteromedial side of the foot with signal-intensity similar to the intensity of muscle tissue on all the different sequences. There was no pathological contrast enhancement. Anatomically this mass was located at the abductor hallucis muscle (AH), representing a prominence or hypertrophy of the abductor hallucis muscle (Fig A). The diagnosis was made of a hypertrofic abductor hallucis muscle with narrowing the space for the medial plantar branches of the tibial nerve (circle) at the crossover between the flexor hallucis longus and flexor digitorum longus tendons (arrow), the quadratus plantae muscle (QP) and flexor digitorum brevis muscle (FDB) (Fig B). Example of a normal fibromuscular tunnel (Fig. C). Our patient was treated conservatively first and referred to a foot surgeon.

Comment

Muscle hypertrophy is a relative rare anatomic entity which can be responsible for nerve entrapment syndromes, as in this case. For anatomical description purpose, the abductor hallucis lies along the medial side of the foot and covers the origins of the plantar vessels and nerves. It arises from the medial process of the tuberosity of the calcaneus and the flexor retinaculum and inserts, together with the medial tendon of the flexor hallucis brevis, into the tibial side of the base of the first phalanx of the big toe. It flexes and abducts the big toe and supports the medial longitudinal arch. Muscle bulks can best be demonstrated on axial MR images which shows the relation between the fibro-osseous tunnel and the adjacent soft tissue. The signal characteristics are similar to muscle tissue on T1 and T2 images. In some cases they can have an edema-type signal best appreciated on STIR-images. For treatment there are a number of nonsurgical options like adapted footwear but when a patient does not respond to conservative treatment surgery with nerve release is indicated. More typical causes of nerve entrapment are acute or repetitive minor trauma, cysts or bone and joint abnormalities.
Awareness of less common causes and knowledge of the complex anatomic structures of fibro-osseous and fibro-muscular tunnels can aid early diagnosis and treatment.

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