

MRI for diagnosis of metatarsal osteonecrosis

A case report

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A 12-year-old girl with forefoot pain for 1 month was suspected of having a metatarsal stress fracture. Plain radiographs were negative. MRI revealed the

characteristic changes of osteonecrosis of the second metatarsal head.

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We present a case of metatarsal head osteonecrosis in which the clinical history and symptoms suggested stress fracture, until MRI revealed the condition.

Case report

A 12-year-old girl was seen with a history of 6 weeks pain in her forefoot. She had started dancing lessons a few weeks earlier. The only clinical finding was slight tenderness of the second metatarsus on palpation. Radiographs were normal (Figure 1). A stress fracture of the metatarsus was suspected. However, the symptoms persisted and repeat clinical and radiographic examinations were done 8 weeks later. There was no soft tissue swelling, and the metatarsophalangeal joint was unaffected. Plain radiographs were again normal

and without signs of callus formation. Osteonecrosis of the metatarsal head was suspected. MRI examination with an Instrumentarium MEGA4 operating at 0.1 T revealed necrosis of the second metatarsal head. Follow-up radiography 7 months after onset of symptoms demonstrated a typically flattened, condensed and fragmented metatarsal head.

Discussion

MRI can reveal osteonecrosis before it is detectable by radiography; indeed, even before they become symptomatic (Sartorius and Resnick 1987, Jacobsen 1989, Mitchell 1989, Björkengren et al. 1990, Hodler et al. 1990). Therefore, MRI is commonly used in the differential diagnosis of early osteonecrosis. However, to

Figure 1. A 12-year-old girl with forefoot pain.



Plain radiograph shows normal bone density and structure in the second metatarsal bone.



MRI 3 months after onset of symptoms reveals decreased signal intensity in the whole metatarsal head, corresponding to widespread vascular impairment.



7 months after the initial radiograph soft tissue swelling is present around the second metatarsophalangeal joint. The head of the 2nd metatarsus is collapsed, the bone is dense and partly fragmented.

our knowledge, there have been no reports on early diagnosis with MRI of osteonecrosis of the metatarsal head.

The possibility of osteonecrosis of the metatarsus in a child with forefoot pain should be considered besides stress fracture. If symptoms persist and plain radiography remain negative, MRI should be considered.

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