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CASE REPORT

Bilateral distal fibula stress fractures in a young child

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Introduction

Stress fractures are uncommon in children in the first decade and are often confused with malignancy or osteomyelitis.^{4,5} Distal fibula stress fractures are usually seen in distance runners or dancers.^{1,5} We present an interesting case of bilateral distal fibula stress fractures in a 9-year-old girl. No such case has previously been reported in the literature.

Case report

A 9-year-old Caucasian girl presented with an 8-day history of spontaneous onset of limp and pain over her right lower leg. The pain was localised over the right distal lateral leg, worse on weight bearing and relieved with rest and painkillers. There was no history of fever or systemic upset. She was not involved in regular dancing or competitive athletic training. She denied any pain in the opposite leg or other joints. There was no known previous history of joint problems. There was no family history of joint pathology.

On examination, she was of average build and nutrition. She was afebrile and looked well but walked with an antalgic gait. Lower limb alignment was normal, with no limb length discrepancy. There

was no swelling or inflammation over the foot, ankle or leg, but there was localised tenderness at the junction of the proximal two-thirds and distal one-third of the right fibula. No soft tissue or bony mass was palpable and ankle and subtalar movements were full and painfree. Other joints were normal.

Blood tests showed a normal full blood count and inflammatory markers, normal calcium and phosphate levels but the alkaline phosphatase levels were raised. X-rays showed a doubtful periosteal reaction over the distal third of the fibula. A differential diagnoses of infection, stress fracture or malignancy were entertained.

A three-phase technetium bone scan was requested which, surprisingly, showed hot spots over both distal fibulae (Fig. 1).

The patient was reviewed in clinic after 1 week. She reported symptomatic improvement in the right leg and denied any pain in her left leg.

Repeat X-rays showed a solid periosteal reaction with evidence of a healing fracture over both distal fibulae (Fig. 2), consistent with healing stress fractures.

On closer questioning, the patient's mother volunteered that the child had been given new roller blades about 3 weeks prior to the onset of her symptoms and had been practicing with them. On close inspection, the top of the roller blade boots were seen to be level with the site of the stress fractures (Fig. 3).

She made a full recovery within 6 weeks.

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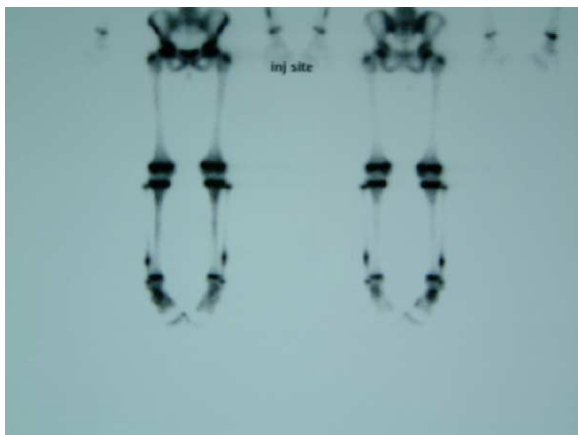


Figure 1 Three-phase technetium bone scan showing hotspots over both distal fibulae.

Discussion

Stress fractures in children are uncommon and are rarely considered as a cause of spontaneous onset localised pain. The most common site of stress fractures in children is the tibia followed by the fibula.^{3,5} Distal fibular fractures are commonest in athletes (distance runners) and ballet dancers,^{2,5} usually located 4–7 cm superior to the tip of the lateral malleolus.⁹ Serial radiographs are useful to establish the diagnosis.

Classical radiographic abnormalities seen in stress fracture are periosteal new bone formation, a visible area of sclerosis and the presence of callus or a visible fracture line. Unfortunately none of these abnormalities on radiography are likely to be seen unless symptoms have been present for at least 2–3 weeks.^{1,8} In our case, initial X-rays failed



Figure 2 X-rays of both ankles, showing stress fracture of both distal fibulae with periosteal reaction.



Figure 3 Picture of patient wearing the offending roller blades. The site of the fracture corresponded to the top of the roller blades.

to show a fracture, though subsequent films confirmed the diagnosis.

In suspicious cases with normal radiographs, a triple-phase bone scan is the next investigation. This is highly sensitive but suffers from low specificity.^{1,6,8}

Changes on bone scintigraphy may be seen as early as 48–72 h after the onset of symptoms.^{1,6} Bone scans do not, however, differentiate stress fractures from other lesions such as tumours and osteomyelitis. In our case, the bone scan picked up the asymptomatic lesion in the opposite limb. The final diagnosis was confirmed only with subsequent X-rays. CT or MR scans may be useful in differentiating a stress reaction from neoplastic conditions and infection.

Predisposing factors for stress fractures include anorexia nervosa, poor calcium intake, steroid use, genetic factors, abnormal limb alignment and delayed menarche. Our patient had not reached her age of menarche and there were no other known predisposing factors. The only recent change in her physical activity was the use of new roller skates for 3 weeks.

Change in activity or the use of new shoes has been noted to be associated with an increased risk of stress fractures.^{1,7} In this case, it appears that repetitive stress at the top of the roller blade boots predisposed to the injury. Symptoms of stress fractures usually appear 3–7 weeks after a change in training regimen.^{6,8} This would correlate with the appearance of the child's symptoms 3 weeks following the use of new roller skates. It is difficult to explain the asymptomatic nature of the left distal fibula fracture. Perhaps the restricted activity following the right sided stress fracture and the painkillers used helped to mask the symptoms in the left leg.

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