

## X-ray quiz: a woman with foot pain

X 光照片猜謎：一名腳痛的女士

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### Case

A 64-year-old woman complained of left foot pain for one week. There was no history of trauma. On

clinical examination, there was mild tenderness over the foot dorsum. Hallux valgus deformity was noted. Radiographs of the left foot were taken (Figures 1 & 2).



Figure 1. Oblique radiograph of left foot.

### Questions

1. What is the abnormality and diagnosis?
2. What is the treatment?
3. Any further investigations?



Figure 2. Anteroposterior radiograph of left foot.

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## Answers

1. Periosteal reactions are noted over the shaft of the 2nd, 3rd and 4th metatarsals (Figures 3 & 4). The diagnosis is stress fracture of the metatarsals. Hallux valgus deformity is seen.
2. Treatment includes reduction of weight bearing on the involved foot with initial use of crutches and a wooden shoe or other commercially available supportive shoe or boot. Casts are rarely needed. Healing usually takes 3 to 12 weeks.<sup>1</sup>
3. Technetium diphosphonate bone scanning may be needed for definitive diagnosis. Women with recurrent stress fractures may have osteoporosis<sup>1</sup> and should undergo dual-energy X-ray absorptiometry.

## Discussion

The metatarsal bones are frequent sites of fracture, which may be caused by marching, ballet dancing, prolonged standing, foot deformities and surgical resection of adjacent metatarsal bones. In our patient, hallux valgus

deformity may be a predisposing condition. The middle and distal portions of the shafts of the 2nd and 3rd metatarsal bones are affected most often, but any metatarsal bone can be involved.<sup>2</sup> The radiological finding of periosteal reaction of the involved metatarsal bones and proper clinical history such as increased intensity, duration or frequency of exercise or use of new footwear can often help to arrive at the diagnosis.<sup>3</sup>

## References

1. Stress fractures of the foot. The Merck Manuals Online Medical Library. [updated 2003 Feb]. [cited 2009 Apr 14]. Available from: <http://www.merck.com/mmhe/sec05/ch075/ch075b.html?qt=Metatarsal%20Stress%20Fracture&alt=sh>.
2. Resnick D, Goergen TG. Physical injury: concepts and terminology. In: Resnick D, Kransdorf MJ, editors. Bone and joint imaging, 3rd ed. Philadelphia, Pa: Elsevier Saunders; 2005. Ch 56: p. 798.
3. Perron AD. Metatarsal stress fracture. eMedicine. [updated 2007 Sep 26]. [cited 2009 Apr 14]. Available from: <http://emedicine.medscape.com/article/85746-overview>.



Figure 3. Oblique radiograph of left foot: the sites of periosteal reactions are indicated by arrows.



Figure 4. Anteroposterior radiograph of left foot: the sites of periosteal reactions are indicated by arrows.