

Bilateral stress fractures of femoral necks on bone scans

To the Editor: We consider of interest a seldom case of a 24 years old soldier with a 3-month history of bilateral hip pain, exacerbated by exercise and relieved by rest, having had completely normal results for routine blood tests and normal plain X-ray of pelvic bones, referred to us for a whole body bone scan. He had been called for conscription 6 months ago and the pain had started 3 months after initiation of service. The pain worsened at dawn. Systemic review revealed no mentioning medical problems of himself or of his family.

The perfusion phase of the scan (Fig. 1) revealed bilateral focal abnormal increased radiotracer activity of upper part of the right thigh, which intensified in the delayed, static images in the femoral necks bilaterally (Fig. 2). No other abnormal activity was seen in the rest of the skeleton. Differential diagnoses of looser fracture secondary to osteomalacia, and of stress fractures of both femoral necks was considered. To investigate the possibility of osteomalacia, plasma calcium level and serum levels of alkaline phosphatase and phosphate were examined, and the results were as follows: Calcium 2.5mmol/L, phosphate 1.3mmol/L and alkaline phosphatase 97U/L, all of which were within normal range. The results were also normal for 24hours urinary calcium collection and for serum parathyroid hormone.

The diagnosis of bilateral femoral head stress fractures secondary to strenuous training exercises was made. Bed rest and avoidance of weight-bearing exercises were recommended and the patient was pain-free after 2 months.

Stress fractures are a common finding in the bone scans of military personnel and in athletes [1, 2]. The absence of abnormal on radiographs taken in patients presenting with hip pain does not completely rule out the presence of stress fractures in the absence of abnormal radiographs [3]. Planar scintigraphy and also single photon emission tomography (SPET) bone scans with ^{99m}Tc -MDP are useful in for the initial evaluation of femoral neck stress fractures in a young military population [4]. There have been reports of bone scan showing bilateral femoral head fractures, which have eventually been found to be due to osteomalacia [5]. Plain radiographs of the hip and pelvis in stress fractures are regularly interpreted as normal or equivocal [2, 4, 6], which was the finding on our patient as well.

The literature describes very few cases of bilateral femoral neck stress fractures in healthy adolescents. There has not been reported the case within a span of 3 months of exercise [7].

Bibliography

1. Gam A, Goldstein L, Karmon Y et al. Comparison of stress fractures of male and female recruits during basic training in the Israeli anti-aircraft forces. *Mil Med* 2005; 170: 710-712.
2. Fredericson M, Jennings F, Beaulieu C, Matheson GO. Stress fractures in athletes. *Top Magn Reson Imaging* 2006; 17: 309-325.
3. Gurney B, Boissonnault WG, Andrews R. Differential diagnosis of a femoral neck/head stress fracture. *J Orthop Sports Phys Ther* 2006; 36: 80-88.
4. Bryant LR, Song WS, Banks KP et al. Comparison of planar scintigraphy alone and with SPECT for the initial evaluation of femoral neck stress fracture. *AJR Am J Roentgenol* 2008; 191: 1010-1015.
5. Roig-Vilaseca D, Moragues-Pastor C, Nolla-Solé JM, Roig-Escofet D. Reflex sympathetic dystrophy in hypophosphataemic osteomalacia with femoral neck fracture: a case report. *Rheumatology (Oxford)*. 2000; 39: 439-441.
6. Williams TR, Puckett ML, Denison G et al. Acetabular stress fractures in military endurance athletes and recruits: incidence and MRI and scintigraphic findings. *Skeletal Radiol* 2002; 31: 277-281. Epub 2002 Apr 4.
7. Romero AN, Kohart SR. 19-year-old male adolescent with bilateral femoral neck stress fractures: a case report. *Military Medicine* 2008; 173: 711-713.

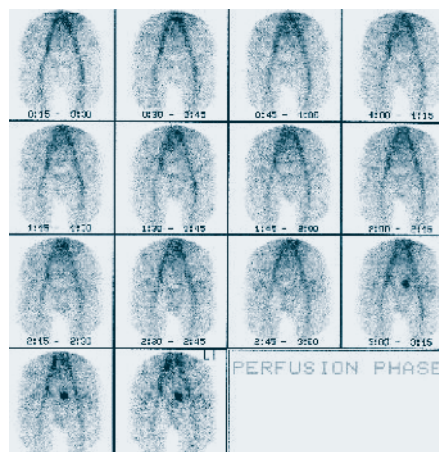


Figure 1. The perfusion phase of bone scan revealed bilateral focal abnormal, increased radiotracer activity of upper part of both thighs.

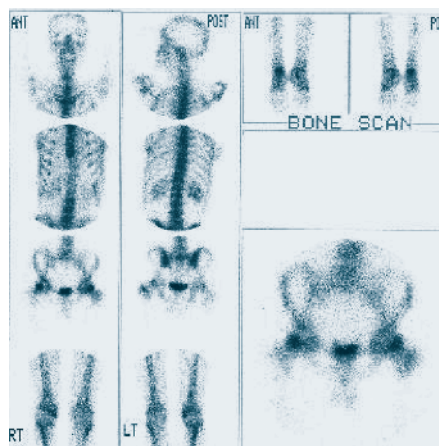


Figure 2. The delayed phase images on bone scan showed increased radiotracer activity of both femoral heads, with no further abnormalities.

Mehrossadat Alavi¹ MD, Shahideh Safavi² MD

1. Nuclear Medicine Department, Shiraz University of Medical Sciences, Shiraz, Iran.

2. Foundation doctor at South Thames Foundation School, UK

Mehrossadat Alavi MD

Nuclear, Medicine Department, Namazee, Hospital, Shiraz University of Medical Sciences, Shiraz, Iran. Tel: 0098-711-6125319, Fax: 0098-711-6263233, E-mail: alavimh@sums.ac.ir

Hell J Nucl Med 2010; 13(1): 76

Published on line: 10 April 2010

