Too old to exercise? Unusual muscular uptake on 99mTc methylene diphosphonate bone scintigraphy

Introduction

This article presents an interesting case of abnormal soft tissue uptake on a routine staging bone scan for malignancy, which demonstrates that sports-related injuries should not be excluded from the differential diagnosis in the elderly population.

Discussion

Soft tissue localization of bone-seeking agents can be seen in myositis ossificans, metastases, vascular calcification and infarction. Muscular uptake secondary to exercise has been reported in young athletes. However, in this 81-year-old patient undergoing a staging scan for prostatic malignancy, there was unexpected soft tissue uptake in the teres major muscles, best demonstrated on single photon emission computed tomography/computed tomography.

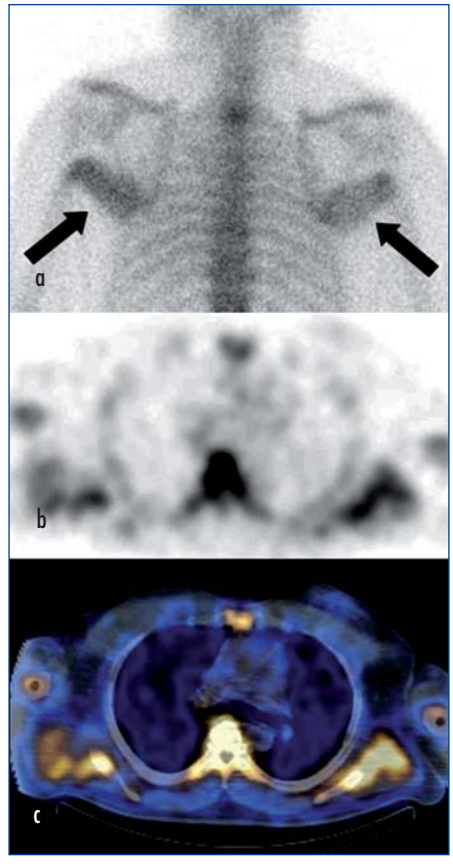
Subsequent questioning revealed that the patient had recently joined a health club and had been exercising regularly in the gym in a bid to improve his fitness.

Repeated muscular exercise and muscular trauma or rhabdomyolysis are known to cause soft tissue uptake of bone-seeking radiopharmaceuticals (Brill, 1981). The deposition of radiotracer in damaged muscle is reversible and its disappearance can be a sign of healing (Tiidus and Ianuzzo, 1983). This case illustrates that elderly patients should not be excluded from the differential diagnosis of sports-related injury. BJHM

Brill DR (1981) Radionuclide imaging of non-neoplastic soft tissue disorders. *Semin Nucl Med* **11**(4): 277–8

Tiidus PM, Ianuzzo CD (1983) Effects of intensity and duration of muscular exercise on delayed soreness and serum enzyme activity. *Med Sci Sports Exerc* **15**(6): 461–5

Figure 1. a. Bone scan planar image demonstrating increased uptake bilaterally at the inferior aspect of the scapulae, extending to the humeri. b. Functional imaging with single photon emission computed tomography demonstrating increased uptake within upper limb muscles bilaterally. c. Anatomical and functional image using single photon emission computed tomography/computed tomography demonstrating that the increased uptake is within the teres major muscles.



Case Report

An 81-year-old man was referred for bone scintigraphy. He had recently been diagnosed with prostatic carcinoma. Images obtained 3 hours after injection of technetium-99m methylene diphosphonate showed no evidence of metastatic bone disease, but symmetrical increased soft tissue uptake was seen extending from the inferior margin of the scapula to the neck of the humerus (Figure 1). This was confirmed on single photon emission computed tomography/computed tomography to lie within the teres major muscles. There was also focal radiotracer uptake within the lower cervical and first thoracic vertebral end plate, secondary to osteoarthritis (as confirmed by single photon emission computed tomography/computed tomography).

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