Scintigraphic Evidence of Specific Muscle Groups: Rhabdomyolysis Secondary to Over-exertion on Bone Scan

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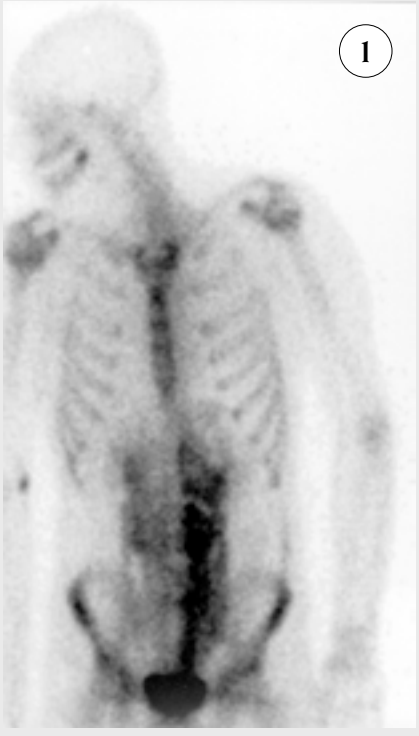
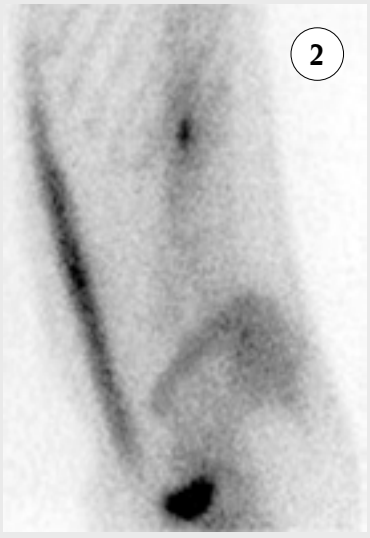
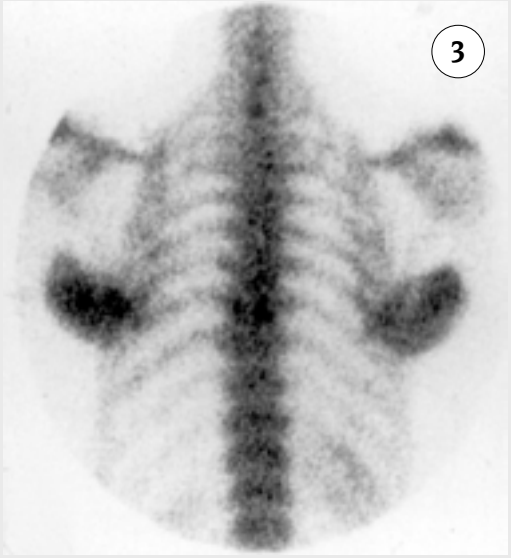
A 19 year old active military recruit suffering from low back pain following trauma was referred for bone scintigraphy. Anterior and left lateral views [Figures 1 and 2] of the Tc-99m MDP bone scan showed intense radiotracer uptake over a large area of the anterior abdominal region at the rectus abdominis muscle, with several photopenic tendinous intersections transversed on the muscle. Questioning of the soldier revealed that he had performed vigorous sit-up exercises 2 days before the bone scan and that he felt pain in the anterior abdominal wall. In another case, a 43 year old man was referred for bone scan due to shoulder pain to exclude bone abnormalities. Posterior view [Figure 3] of the Tc-99m MDP bone scan revealed symmetric bilateral intense uptake posteriorly in the teres major muscles. No bone abnormality was seen. Further questioning revealed that he had recently performed heavy weightlifting.

Following extreme physical exercise, patients are often referred for bone scan to confirm or exclude over-use bone injuries such as stress fractures and shin splints. However, the bone scan occasionally provides a specific soft tissue diagnosis not initially suspected by the referring physician, as in these two rare cases. The cause of muscle uptake in both patients is rhabdomyolysis secondary to over-exertion. The proposed mechanism of radiotracer uptake is







absorption to denaturated proteins and binding to mitochondrial calcium, which is increased in the damaged muscle cells [1]. Other causes of rhabdomyolysis include drug use, muscle trauma, exposure to toxins, infections, hyperthermia, seizures, and electrolyte abnormalities. The scintigraphic pattern reflects the specific muscle groups that sustained the injury [2–5].

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