Discriminatory ability of magnetic resonance T2* measurements in a sample of postmenopausal women with low-energy fractures: a comparison with phalangeal speed of sound and dual x-ray absorptiometry

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RATIONALE AND OBJECTIVES:
We sought to assess the ability of magnetic resonance T2* measurements to discriminate between patients with and without osteoporotic fracture and compare the results with the discriminatory ability of speed of sound (SOS) measured at the phalanx and axial bone mineral density (BMD).

MATERIALS AND METHODS:
T2* measurements of lumbar spine were obtained at 1.5 T in 26 postmenopausal women with osteoporotic fractures and 28 age-matched healthy control subjects. A multiecho gradient echo (MEGRE) pulse train sequence was used with echo times of 2.70-74.93 milliseconds using 2.33-millisecond interecho intervals. BMD measurements were made in the axial skeleton. SOS also was measured at the finger phalanges.

RESULTS:
The in vivo short-term reproducibility for T2* was 1.85%. T2*, spinal BMD, total hip BMD, and SOS measurements were found to give comparable discrimination between normal and osteoporotic women with odds ratios of 2.6, 2.6, 3.2, and 2.2, respectively.

CONCLUSIONS:
T2* measurements of lumbar spine are reproducible and capable of differentiating between postmenopausal women with and those without osteoporotic fractures.
