

LETTERS

Sequential Magnetic Resonance Imaging Changes in Osteoporotic Compression Fractures: Can It Be Used as a Risk Predictor for Nonunion?

TO THE EDITOR:

Re: Tadao Tsujio, Hiroaki Nakamura, Hidetomi Terai, et al. Characteristic radiographic or magnetic resonance images of fresh osteoporotic vertebral fractures predicting potential risk for nonunion. *Spine* 2011;36:1229–35.

Dr. Tsujio *et al*¹ reported that diffuse low intensity on T2-weighted magnetic resonance (MR) images of fresh vertebral fractures can predict a high risk of nonunion. We have a question about this finding.

To make a correct diagnosis of spinal disease, we need to use the information from several pulse sequences (T1-weighted image, T2-weighted image, short-tau inversion recovery sequence, and contrast-enhanced T1-weighted image) of MR to make the diagnosis; sometimes we also need the information from plain radiographs. Only T2-weighted image alone cannot make the diagnosis.

Low-intensity signal in T2-weighted image represents fibrosis, air, or osteonecrosis.² Sung *et al*³ classified the signal intensity of vertebral compression fracture on MR imaging into 4 types. Type I (fracture age about 0–3 months) was characterized by hypointensity on T1-weighted image, and hyperintensity on T2-weighted image. Type II was focally hypointense in the compressed vertebral body on all pulse sequences. The fracture age at type II was about 3 to 5 months. The MR imaging of acute vertebral fracture should be hyperintensity on T2-weighted image. The image of diffuse low intensity in Figure 3 should be the type II pattern, and the fracture age is about 3 to 5 months. The low intensity in T2-weighted image is a late result of compression fracture, and should not be used as a predictor in fresh fracture.

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