Background and Aim: To evaluate postmenopausal physiological bone marrow changes with hormone replacement therapy (HRT) of the lumbar spine using magnetic resonance (MR) imaging.

Materials and Methods: BMD measurement and lumbar spine MR imaging performed in 110 postmenopausal women (PW). Women were classified as normal, osteopathic and osteoporotic. These patients grouped according to women who were and women who were not receiving HRT. Mean intensity from the center of each lumbar vertebrae at the mid-sagittal plane in a region of interest (ROI), measured and calculated from MR image data. Correlation between T1 and T2 intensities with age and BMD evaluated using Pearson’s correlation coefficient.

Results: No significant positive correlation found between BMD and T1, T2 intensity among all PW and PW who were not using HRT. However there was a correlation between T1, T2 intensities and BMD in PW receiving HRT. BMD was inversely correlated with age. No significant correlation found between the T1, T2 intensities of bone marrow at the center of the vertebrae and BMD.

Conclusion: The center of the lumbar vertebrae is probably less and lately affected from fatty transformation by the help of HRT. This study may show that postmenopausal hormone therapy may protect vertebrae from compression fractures.