Effect of Spinal Stenosis on Bone Mineral Density in Patients with Osteoporosis: Comparison of Three Oral Bisphosphonate Therapies

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Introduction
- Lumbar spinal stenosis (LSS) causes various neurological symptoms and reduces the patient’s daily activity, which can negatively affect bone mineral density (BMD) in patients with osteoporosis.
- However, the effect of LSS on BMD and therapeutic efficacy depending on different types of drugs have not been different.

Purpose of this study
✓ To investigate the effect of LSS on BMD in patients treated with three different oral bisphosphonates for newly diagnosed osteoporosis

Material and Methods

Retrospective cohort study
- Initially diagnosed with postmenopausal osteoporosis from January 2004 to December 2017

Inclusion criteria
1) BMD evaluation every year for three years in patients with newly diagnosed osteoporosis
2) Oral bisphosphonates (ibandronate, alendronate, risedronate) treatment for three years

Exclusion criteria
1) Taking steroid hormones
2) Surgery or fracture of spine or lower extremities
3) Malignant tumor or medical conditions that reduced daily activities
4) Rheumatoid arthritis
5) Metabolic bone disease
6) Gait disorders due to causes other than LSS

Symptomatic LSS: obvious lumbar canal stenosis on magnetic resonance imaging (Schizas grade B and C) and clinically related neurological symptoms

Results

Group
- Group 1: osteoporosis only
- Group 2: both osteoporosis + LSS

Measurement of BMD
- Dual-energy X-ray absorptiometry (DEXA)
- Total of four BMD: initial and at 1-, 2-, and 3-year follow-ups
- Annual change of BMD = BMD in index year – BMD in the previous year
- Total change of BMD = BMD on 3-year follow-up – initial BMD

Statistical analysis
- Student’s t-test
- Pearson’s chi-square test
- ANOVA with post-hoc test

Conclusion
- Symptomatic LSS may interfere with BMD improvement in the treatment of osteoporosis.
- In patients with osteoporosis alone, ibandronate and alendronate improved BMD more than risedronate.
- In patients with both osteoporosis and LSS, ibandronate was more effective in improving BMD than risedronate.

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