

[2007] [SAT0299] INCREASE IN FEMORAL NECK BONE MINERAL DENSITY IS ASSOCIATED WITH DECREASE IN VERTEBRAL AND HIP FRACTURE INCIDENCE DURING A 3-YEAR TREATMENT WITH STRONTIUM RANELATE

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Objectives: Strontium ranelate (SR) has been shown, in two large prospective randomised placebo-controlled trials to increase bone mineral density (BMD) and to reduce the incidence of vertebral, hip and other non-vertebral fractures in postmenopausal women with osteoporosis. However, the relationship between BMD changes and fractures incidence during treatment with SR is unknown. The objective of this study was to analyze the association between 3-year changes in BMD and vertebral and hip fractures risk during 3 years of treatment with SR.

Methods: BMD, assessed at baseline and after a follow-up of 3 years at the lumbar spine, femoral neck (FN) and total hip was performed in patients receiving SR from the Spinal Osteoporosis Therapeutic Intervention study (SOTI) and the Treatment of Peripheral Osteoporosis study (TROPOS). Vertebral fractures were assessed with a semiquantitative visual assessment. Only documented hip fractures were taken into account in the statistical analysis.

Results: the logistic regression analysis, including age, body mass index and baseline BMD as covariates, showed that 3-year increase in FN changes was statistically associated with a reduction in the incidence of new clinical vertebral fractures ($p < 0.001$). For each increase of 1% in FN BMD, the risk of a new clinical vertebral fracture after 3 years decreased by 4% (95%CI 2%-7%) and the risk of a new vertebral fracture after 3 years decreased by 3% (95%CI 1%-5%). Using absolute BMD changes, for each 0.010 g/cm² increase in FN BMD during strontium ranelate treatment, the incidence of a new vertebral fracture was reduced by 6% (3%-10%). The reduction reaches 9% (5%-13%) when considering new clinical vertebral fractures. The 3-year changes in FN BMD explained 76% of the reduction in vertebral fractures observed during treatment with strontium ranelate. After controlling for covariates, patients with an improvement of at least 3% in FN BMD were at a lower risk to experience new vertebral fractures (OR 0.62 [0.42-0.81]) compared to patients without such improvement. In patients experiencing a hip fracture over 3 years of treatment with SR, FN BMD increased by (mean [SEM]) 3.41 (1.02) % compared to 7.23 (0.81) % in patients without hip fracture ($p = 0.02$ between the two groups).

Conclusion: Over 3 years of SR treatment, a greater increase in femoral neck BMD is associated with a greater reduction in incidence of clinical vertebral and hip fractures. This suggests that femoral neck BMD increases with SR are indicative of anti-fracture efficacy.

Osteoporosis

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