**Osteoporosis Treatment With Romosozumab Results in Fewer Fractures Than Treatment With Alendronate Alone**

Osteoporotic women treated with 1 year of romosozumab followed by alendronate were less likely to have new fractures than those treated solely with alendronate

Daniel Kiridly, MD, MBA

Women with osteoporosis and a prior fragility fracture who were treated with 1 year of romosozumab followed by alendronate were 48% less likely to have a new vertebral fracture and 19% less likely to have a new nonvertebral fracture compared with those treated with alendronate alone.

Kenneth Saag, MD, with the University of Alabama at Birmingham, and colleagues reported their findings in the October 12, 2017, issue of the *New England Journal of Medicine.*

Osteoporotic fragility fractures, such as vertebral and hip fractures, result in significant morbidity and mortality in elderly patients. Shifting demographics in the US and other western countries have led to a rise in osteoporosis and its sequelae. Treatment with medications that reduce bone resorption, such as alendronate, has previously been shown to significantly reduce the risk of fragility fractures.

Romosozumab is a new osteoporosis medication that directly inhibits sclerostin, resulting in both decreased bone resorption and increased new bone formation. A randomized, controlled trial previously showed that romosozumab treatment resulted in a lower risk of new vertebral fracture compared to placebo. However, prior to this study, romosozumab had not been compared to existing osteoporosis treatment.

A cohort of 4093 female patients with osteoporosis and 1 or more prior fragility fractures was randomized on a 1:1 basis to receive either 1 year of romosozumab followed by alendronate or alendronate alone. The primary outcomes assessed were new vertebral fracture in 24 months and new clinical fracture (defined as a symptomatic vertebral fracture or any nonvertebral fracture) within the primary analysis period (defined as a time point after 24 months in which at least 330 patients had experienced clinical fractures).

The researchers found a 48% decreased risk in new vertebral fractures in the romosozumab group at 24 months (6.2% vs 11.9%; risk ratio, 0.52; 95% CI, 0.40-0.66; *P* < .001). The authors also reported a 27% reduction in the risk of clinical fracture in the romosozumab group at the time of primary analysis (9.7% vs 13.0%; hazard ratio [HR], 0.73; 95% CI, 0.61-0.88; *P* < 0.001)

Treatment with romosozumab also resulted in improved secondary outcomes, including a lower risk of nonvertebral fracture (8.7% vs 10.6%; HR, 0.81; 95% CI, 0.66-0.99; *P* = .04) and a lower risk of hip fracture (2.0% vs 3.2%; HR, 0.62; 95% CI, 0.42-0.92; *P* = .02).

However, treatment with romosozumab may confer some increased risks in certain patients. The romosozumab group was found to have a higher risk of serious cardiovascular adverse events (2.5% vs 1.9%; odds ratio [OR], 1.31; 95% CI, 0.85-2.00), cardiac ischemic events (0.8% vs 0.3%; OR, 2.65; 95% CI, 1.03-6.77), and cerebrovascular events (0.8% vs 0.3%; OR, 2.27; 95% CI, 0.93-5.22) during the study period.

Overall, the authors felt their study showed treatment with romosozumab-to-alendronate to be superior to alendronate alone in the prevention of osteoporotic fragility fractures, concluding “rapid gains in bone mineral density from bone-forming therapy with romosozumab were associated with a lower risk of fracture than with alendronate within 1 year and over the course of romosozumab followed by alendronate.”

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