tions, back pain, headache, constipation, dizziness and arthralgia. There was one case in the romosozumab group (10 mg/kg SC) with severe non-specific hepatitis developed one day after dosing that was, however, completely resolved three weeks later (on the 26th day). Mild decreases in ionized calcium were seen in the romosozumab group and were associated with increases in PTH, but this was a transient effect. In this study, romosozumab increased bone formation and decreased bone resorption, leading to significant gains in BMD and thus supporting further clinical investigation.

In the first phase 2 randomized, placebo-controlled parallel group, multicenter study, administration of romosozumab SC at various doses was tested in terms of efficacy and safety over a 12-month trial in approximately 400 postmenopausal women. Participants were aged between 55-85 years with lumbar spine, total hip or femoral neck T-score ≤–2.0 and ≥–3.5 and administration of romosozumab was compared to SC placebo, open label alendronate or open label teriparatide.

The dose of 210 mg of romosozumab monthly significantly increased bone mass at all skeletal sites (11.3% at the spine, 4.1% at the hip and 3.7% at the femoral neck). Moreover, romosozumab induced greater increases in bone mass not only compared to placebo but also compared to alendronate and teriparatide.

Increase in markers of bone formation was reported from the very first week of treatment with romosozumab, reaching maximum levels after one month and decreasing to baseline or lower between the second and the ninth month. The marker of bone resorption beta-crosslaps (β-CTX) in the serum decreased significantly in the first week and remained reduced during the 12-month trial in the romosozumab group. There were no significant differences in the adverse events between the romosozumab and the placebo group except for reactions related to the injection. In particular, the incidence of severe adverse events in the group receiving the highest dose of romosozumab was 10% compared to 14% seen in the placebo group.

At this year’s ASBMR meeting, the researchers McClung and colleagues presented data from the second year of romosozumab treatment followed by one year of denosumab or placebo. Monthly administration of 210 mg romosozumab continued to significantly increase BMD in the lumbar spine (15.7%) and total hip (6%) through the second year, while bone turnover markers procollagen type 1 N-terminal propeptide (P1NP) and β-CTX remained below baseline levels.

Women who switched to denosumab after two years continued to increase BMD at a rate similar to that observed during the second year of treatment with romosozumab. In women who switched to placebo, however, BMD decreased significantly, reaching pre-treatment levels at the end of the third year. These results were comparable to those reported in the DATA-Switch study where denosumab prevented bone loss and further increased BMD in women who were pre-treated with teriparatide for two years (results by Benzamin L and colleagues presented at the same ASBMR meeting in 2014).

Computed tomography scans for L1 vertebrae and high resolution quantitative computed tomography (HR-qCT) scans of T12 vertebral bodies were performed in a subset of women treated with romosozumab in order to evaluate the effect of treatment on cortical and trabecular compartment parameters; these results were also presented by Whitmarsh T et