Principal component analyses were then conducted that combined those variables with significant treatment effect to assess the difference between treatment groups. The composite outcome composed of FVC% predicted, QLF, HAQ-DI, and TDI demonstrated a strong treatment effect favoring cyclophosphamide (p=0.0005). Another analysis was performed that eliminated FVC% from the composite outcome, combining TDI, HAQ-DI, and QLF-ZM; this did not change the overall treatment effect (p=0.0004). Both composite outcome measures demonstrated a more robust treatment effect than FVC% predicted alone.

Limitations to this analysis include a possible bias arising from selecting only patients with complete outcome data, although Dr. Volkmann commented that there were no differences in baseline characteristics between patients included in this analysis and all patients in SLSI. The quantitative imaging analysis used in this study is a novel approach and is currently not widely available for clinical use.

A composite outcome with structural (QLF), physiologic (FVC% and TDI), and patient-oriented (HAQ-DI) outcomes may serve as a more comprehensive measure of treatment response in SSc–ILD than the current standard of FVC%. The most robust treatment effect was observed in the composite outcome that included QLF, TDI, and HAQ-DI but did not include FVC%. Analysis of additional data sets is needed to validate this model.

Teriparatide for Patients With RA and Osteoporosis Requires More Study

Written by Lynne Lederman

Early intensive treatment with methotrexate (MTX) and biologic agents is effective in rheumatoid arthritis (RA), but comorbidities, such as osteoporosis, also require treatment to reduce morbidity and improve quality of life. One treatment, discussed by Yuji Hirano, Toyohashi Municipal Hospital, Toyohashi, Japan, is daily teriparatide [European League Against Rheumatism 2014 (abstract OPO276)]. Osteoporosis in patients with RA is multifactorial; excess inflammatory cytokines, corticosteroids used to treat the disease, decreased activity due to joint pain, and postmenopausal osteoporosis are contributory factors.

The investigators determined the efficacy of teriparatide treatment for osteoporosis (20 μg/day subcutaneously) for 2 years in patients with RA. They also looked for predictors of efficacy and the effect of teriparatide combined with biologics because teriparatide upregulates osteoclasts, whereas the biologics used in RA downregulate these cells. Of 33 patients enrolled, 28 completed 2 years of treatment; results are reported for these 28 patients. Every 6 months, bone mineral density (BMD) was measured by dual-energy x-ray absorptiometry at the lumbar spine (LS) and proximal femur (PF), and 4 bone turnover markers (BTMs) of bone formation and resorption were measured.

All but 1 patient enrolled were women the mean age was 72 years, and the mean RA duration was 20.2 years. More than 80% of patients had previous fractures; only 5 patients had not received prior treatment for osteoporosis. Most patients (69.7%) had received MTX, and 42.4% had received a biologic disease-modifying antirheumatic drug.

Teriparatide significantly improved LS and PF BMD compared with baseline ($p<0.05$ for both) in the 28 patients observed for 2 years. Significant improvement was seen starting at 6 months, and BMD continued to increase, although the most rapid improvement was in the first year. LS BMD increased by 12.5% and PF BMD increased by 5.8% at 2 years.

BTMs increased rapidly during the first 6 months (Table 1) and remained elevated at 2 years. The increase of N-terminal type I procollagen propeptide (P1NP) at 384% was maximum among the BTMs.

Table 1. Time Course of BTMs

BTM	6 Months
BAP	56.8%
P1NP	384.0%
TRACP-5b	81.2%
NTX	82.7%

BAP=bone-specific alkaline; BTM=bone turnover marker; NTX=N-terminal telopeptide of type I collagen; P1NP=N-terminal type I procollagen propeptide; TRACP-5b=tartrate-resistant acid phosphatase.

When patients were divided into positive and negative outcome groups on the basis of increased LS or PF BMD, there were no significant differences between these groups in nearly all baseline characteristics, history of fracture, fractures during the study, or BTMs at 6 months.

Increases in BTMs were higher in patients treated with biologics; these differences were significant for BAP at 6 and 12 months and for P1NP and TRACP-5b at 6, 12, and 18 months (p values not shown).

In this small study, teriparatide was an effective therapy in osteoporosis for patients with RA. Early response in BMD was the only predictor of BMD at 2 years; BTMs did not predict response to teriparatide. There is some indication that teriparatide may interfere with the activity of biologics in patients with RA.