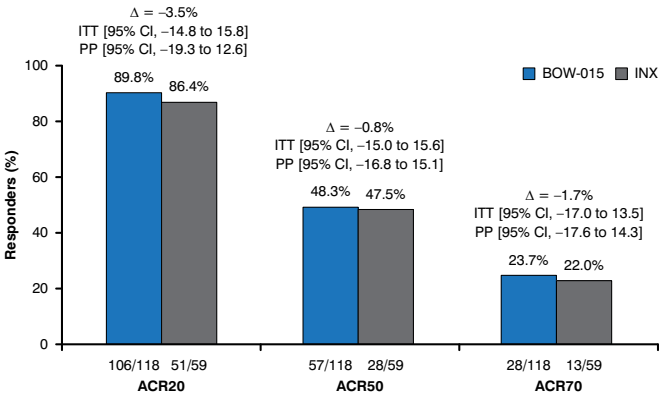
tuberculosis or evidence of latent tuberculosis were excluded. Treatment was completed by 120 patients (94%) in the BOW-015 group and 61 patients (98%) in the infliximab group. Baseline characteristics were similar between the 2 groups.

At Week 16, there were no significant differences in ACR response rates between the BOW-015 and infliximab groups. ACR20 response rates were 89.8% in the BOW-015 group, compared with 86.4% in the infliximab group (intention-to-treat [ITT] 95% CI, –14.8 to 15.8; per-protocol [PP] 95% CI, –19.3 to 12.6). ACR50 response rates were 48.3% in the BOW-015 group versus 47.5% in the infliximab group (ITT 95% CI, –15.0 to 15.6; PP 95% CI, –16.8 to 15.1). ACR70 response rates were 23.7% in the BOW-015 group, compared with 22.0% in the infliximab group (ITT 95% CI, –17.0 to 13.5; PP 95% CI, –17.6 to 14.3; Figure 1).

Figure 1. ACR Response Rates at Week 16



ACR=American College of Rheumatology; INX=infliximab; ITT=intention to treat; PP=per protocol.

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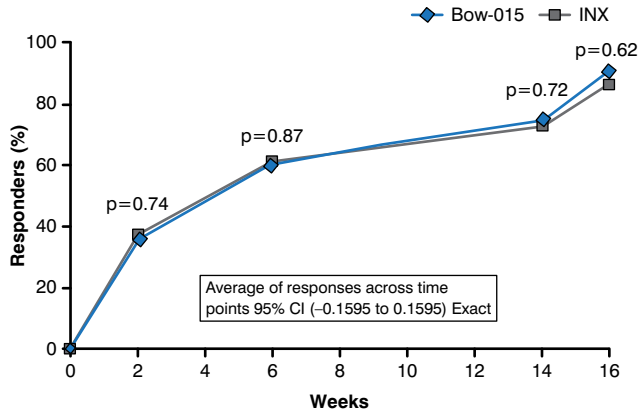
The ACR20 response rates of patients in the BOW-015 and infliximab groups were almost the same at all assessments over 16 weeks (Figure 2).

At Week 16, there were no significant differences in adverse event rates between the BOW-015 group (43%) and the infliximab group (50%; p=0.44). Tuberculosis infection was reported in 3 patients (2%) in the BOW-015 group compared with none in the infliximab group (p=0.55). Five patients (4%) in the BOW-015 group and 1 (1%) in the infliximab group discontinued the study drug due to adverse events (p=0.67).

At Week 16, the efficacy of BOW-015 and infliximab were similar and within the prespecified clinical equivalence margin. The incidence of treatment-emergent adverse events and serious adverse events was similar between the 2 groups. Rates of tuberculosis infection were lower than expected in this study population. The results of the open-label phase—including 1-year immunogenicity, safety, and long-term responder rates—will be available in fall 2014.

Figure 2. ACR20 Response Rates Over 16 Weeks (Per-Protocol Analysis)



INX=infliximab.

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Similar Efficacy Seen With Ultrasound-Guided Injections of PRP or Saline for Epicondylitis

Written by Jenny Powers

Platelet-rich plasma (PRP) was not more effective in relieving the pain due to epicondylitis (tennis elbow) compared with saline when each was delivered by ultrasound-guided injection. However, both groups showed significant decreases in pain scores from baseline at 6 months, suggesting to investigators that tendon stimulation may be the actual mechanism behind the observed lesion repair and improvement in pain symptoms.

Patrick Le Goux, MD, Rheumatology, Hôpitaux Universitaires Paris Ile-de-France Ouest, Boulogne-Billancourt, France, noted that the significant decrease in pain scores observed over the course of the trial in both groups was exciting and suggested that the healing process may actually be stimulated by the injection process, a technique known as "prolotherapy."

Prof. Le Goux explained that local corticosteroid injections represent a standard of care for epicondylitis but may actually impair the healing process [Coombes BK et al. *JAMA* 2013].

Prof. Le Goux noted that intratendinous injections of PRP containing growth factors have been proposed to

aid tendon repair [Peerbooms JC et al. *Am J Sports Med* 2010], and the injection technique has been reported to be augmented by ultrasound guidance [Chiavaras MM, Jacobson JA *Semin Musculoskelet Radiol* 2013].

Prof. Le Goux and colleagues conducted this prospective, double-blind, placebo-controlled randomized trial from 2011 to 2012. Patients with epicondylitis lasting 3 months or fewer were enrolled. Other potential causes of pain were ruled out, and features of epicondylitis were confirmed by magnetic resonance imaging, ultrasound, or both. Patients with previous corticosteroid infiltration were excluded.

Patients received 2 ultrasound-guided injections of either PRP or saline solution at 4-week intervals and were monitored by an independent clinical evaluator, who was blinded to the treatment, at baseline and 1-, 3-, 6-, and 12-month time points. PRP was obtained from each patient, treated by centrifugation only to concentrate the material, and reinjected into the injured joint of the same patient. Injections were done in a blinded and identical manner for both treatments by using a dual-chamber syringe that penetrated 3 layers into the tendon to target the lesion without entering it.

Each treatment group comprised 25 patients following randomization; however, 3 patients in each arm withdrew from the study within 6 months, due to reasons unrelated to treatment. Patients were evaluated at 6 months for the decrease in pain score from baseline (primary evaluation criteria) using a visual analog scale (VAS; range, 0 to 10). At 6 months, pain scores were reduced by 54.7% with PRP versus 63.6% with saline (p=0.24).

Secondary endpoints included assessment of pain (yes/no) during isometric contraction of the extensor carpi radialis brevis and the extensor digitorum communis and measurement of the degree of pain using the Roles and Maudsley score (range, 1 to 4). Mean baseline Roles and Maudsley scores were 6.8 (±0.8) in the PRP group and 7 (±1) in the saline group; a mean reduction of 1.5 points was observed in both groups at 12 months.

No significant differences between treatment groups were observed at 6 or 12 months in either primary or secondary criteria.

However, significant patient benefit was observed; both groups showed a 50% reduction of pain scores within 3 to 6 months. At 6 and 12 months, respectively, 34% and 66% of all patients were asymptomatic, defined as VAS scores of 1 or less. The proportion of patients with persistent pain at 12 months was equivalent at 23.8% in both groups. No adverse events were reported.

Prof. Le Goux attributed the pain reduction observed with both treatments to the stimulating role of ultrasound-guided intratendinous injections, or prolotherapy, on the process of tendon repair. He further commented that the study was limited by not including a group of patients with epicondylitis who received no treatment so that the pain reduction observed over time with natural healing could be compared with the PRP and saline results.

Denosumab May Warrant Further Testing in Patients Receiving Long-Term GC Therapy

Written by Lynne Lederman

Although glucocorticoids (GCs) are a backbone of the treatment of rheumatic diseases, they are the major cause of secondary osteoporosis and are associated with increased fracture rate and decreased bone quality. The American College of Rheumatology guidelines for glucocorticoid-induced osteoporosis recommend bisphosphonate (BSP) treatment for most patients receiving high-dose or long-term GC therapy [Grossman JM et al. *Arthritis Care Res* 2010]. Drawbacks of BSPs include adverse events (AEs), poor adherence, and treatment failures, resulting in a need for other agents to prevent and treat osteoporosis. Denosumab is a fully humanized monoclonal antibody against the receptor activator of nuclear factor-κB ligand (RANKL), which is essential for the formation, function, and survival of osteoclasts. Denosumab inhibits osteoclast activity and has been shown to reduce the incidence of hip and spine fractures and to increase hip and spine bone mineral density (BMD) in postmenopausal women [Bone HG et al. *J Clin Endocrinol Metab* 2013; Cummings SR et al. *N Engl J Med* 2009]. A subgroup analysis of patients with rheumatoid arthritis (RA) receiving GCs suggested that denosumab increases spine and hip BMD and reduces bone turnover [Dore RK et al. *Ann Rheum Dis* 2010].

Chi Chiu Mok, MD, Tuen Mun Hospital, Hong Kong, China, reported outcomes from Denosumab in Current Users of Bisphosphonates for Glucocorticoid-Induced Osteoporosis [NCT01465568]. This 12-month, open-label, randomized trial conducted at 1 site in China assessed the effects of denosumab on BMD in adults with systemic lupus erythematosus and RA who required long-term prednisolone therapy and who had suboptimal responses to 2 years or more of BSPs. Patients had received long-term prednisolone or equivalent, defined as more than 2.5 mg daily, within 3 months of trial entry. Suboptimal response to BSP was