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## Thyroid

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### ***Teprotumumab Markedly Improves Disease-related Quality of Life: Lessons From Two Randomized, Placebo-controlled Trials***

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**Background:** Thyroid eye disease (TED) can result in eye-bulging (proptosis) and double-vision (diplopia) and inflammation, which frequently impacts quality of life (QoL). Teprotumumab, an insulin like growth factor-1 receptor inhibitory antibody, improves TED outcomes and QoL<sup>1</sup> as measured by the Graves Ophthalmopathy-Quality of Life (GO-QoL) questionnaire and its appearance (AP) and visual function (VF) subscales. The primary factors driving QoL improvement in TED are unknown; therefore, we examined outcomes associated with improvement as observed in 2 placebo-controlled trials.

**Methods:** Data from Phase 2/3 placebo-controlled trials of teprotumumab were examined with a mixed-effect model with change in overall GO-QoL, AP, and VF scores as dependent variables to explain within-patient variability. Independent variables included demographics, visits, treatment, symptoms (Gorman diplopia scores [0-3], proptosis change (mm), spontaneous orbital pain, gaze-evoked orbital pain). Variability between subjects was tested over the 24-week study.

**Results:** Teprotumumab treatment significantly correlated with improved overall GO-QoL, VF and AP scores. Improvements in diplopia, proptosis, gaze-evoked and spontaneous orbital pain were associated with those in overall GO-QoL score (coefficient -4.01, -1.00, -31.21 and -4.37, respectively, all  $p < 0.001$ ). Improvements in diplopia scores and spontaneous orbital pain were significantly correlated with higher VF scores (coefficients -5.51 and -6.66, respectively, both  $p < 0.001$ ). Improvements in diplopia and proptosis correlated significantly with higher AP scores (coefficients -2.98, -1.62, both  $p < 0.001$ ). Patients with pain had lower AP scores (coefficient -38.21,  $p < 0.001$ ). Increasing age was positively correlated with higher GO-QoL AP scores (coefficient 0.41,  $p < 0.001$ ), but negatively correlated with GO-QoL VF scores (coefficient -0.29,  $p < 0.001$ ). Variability between subjects was considerable, accounting for >60% of random variance.

**Conclusions:** Improvements in diplopia, proptosis, and pain drove improvements in QoL. In older patients, changes in AP impacted QoL to a lesser degree, while reduced VF had a greater negative impact on QoL.

**References** Kahaly et al, Lancet Diabetes and Endocrinol 2021; 9(6): 360-372

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