

# 156 Hypogonadal Men With Obesity And Type 2 Diabetes Achieve Weight Loss And Improved Glycaemic Control Upon Treatment With Testosterone Undecanoate Up To 6 Years: A Subgroup Analysis from Two Observational Registry Studies

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**Background:** Obesity is a major risk factor for type 2 diabetes (T2D). In men, both diseases have a high prevalence of testosterone deficiency (hypogonadism). Testosterone replacement treatment (TRT) has been shown to improve weight and T2D. Numerous mechanisms have been identified as to how testosterone impacts glycaemic control (for review: Kelly and Jones, Testosterone: a metabolic hormone in health and disease. J Endocrinol 2013; 217: R25–R45). We studied the effects of TRT in obese hypogonadal men with T2D.

**Methods:** Cumulative, prospective, observational registry studies of 561 hypogonadal men from two urological centers. From these registries, we selected all men with obesity and T2D for subgroup analysis. All men received testosterone undecanoate injections for up to six years. All men were treated for their T2D by their respective family physician.

**Results:** 156 men (28% of all patients) met our criteria. Mean age was 61.2±6.2 years at start of treatment.

Mean weight (kg) decreased from 113.56±11.53 to 97.18±9.04. This decrease was statistically significant vs baseline ( $p<0.0001$ ) and each year compared to previous year. The model-adjusted mean change from baseline was  $-17.49\pm0.58$  kg. The mean per cent weight loss (%) was  $15.04\pm0.48$  after 6 years.

Mean waist circumference (cm) declined from 114±8.69 to 102.52±7.93. This was statistically significant vs baseline ( $p<0.0001$ ) and each year compared to the previous. The mean change from baseline was  $-11.56\pm0.34$  cm.

Mean BMI ( $\text{kg}/\text{m}^2$ ) decreased from 36.31±3.51 to 31.19±2.6. This change was statistically significant vs baseline ( $p<0.0001$ ) and each year compared to previous year. The mean change from baseline was  $-5.59\pm0.18$   $\text{kg}/\text{m}^2$ .

Mean fasting glucose (mg/dl) decreased from 128.37±31.63 to 101.55±17.02 ( $p<0.0001$  vs. baseline, significant for the first two years vs. previous year). The mean change from baseline was  $-27.14\pm2.48$  mg/dl.

HbA<sub>1c</sub> decreased from 8.08±0.9 to 6.14±0.71% ( $p<0.0001$  vs. baseline, significant for the first 5 years vs. previous year and approaching significance

from year 6 to year 5 at  $p=0.0635$ ). The mean change from baseline was  $-1.93 \pm 0.06\%$ .

At baseline, 25 (16%) of all patients had an  $HbA_{1c} \leq 7.0\%$  and 12 (7.7%) an  $HbA_{1c} \leq 6.5\%$ . At the end of the observation period, 128 (82.05%) had reached an  $HbA_{1c}$  target of  $\leq 7.0\%$  and 106 (67.95%) an  $HbA_{1c}$  target of  $\leq 6.5\%$ .

**Conclusions:** Correcting hypogonadism by testosterone treatment with testosterone undecanoate injections in obese hypogonadal men with T2D resulted in significant and sustained improvements in weight, waist circumference, fasting glucose and  $HbA_{1c}$  over the full 6 years of the study.