

Improvement of metabolic syndrome (MetS) parameters in 362 obese hypogonadal men upon long-term treatment with testosterone undecanoate (TU) injections: observational data from two registry studies

A Haider, A Yassin, G Doros, A Traish, F Saad

Introduction: Studies show inverse associations between testosterone and the MetS.

Methods: 362 men with obesity grade I (BMI 30-34.9), grade II (BMI 35-39.9) and grade III (BMI ≥ 40 kg/m²) from two prospective, cumulative registry studies of 561 hypogonadal men received TU injections for up to 6 years.

Results:

Grade I (n=185, mean age: 58.4 \pm 8.0 years): Fasting glucose (mg/dl) decreased from 107.22 \pm 30.2 to 97.87 \pm 14.42, change from baseline -8.37 \pm 1.83 mg/dl, HbA_{1c} (%) from 6.58 \pm 1.24 to 5.6 \pm 0.76, change from baseline -1.05 \pm 0.06%. Total cholesterol (TC; mg/dl) decreased from 268.43 \pm 44.24 to 191.47 \pm 16.8, LDL (mg/dl) from 158.75 \pm 32.82 to 116.26 \pm 34.65, triglycerides (TG; mg/dl) from 257.49 \pm 62.1 to 193.23 \pm 29.01. HDL (mg/dl) increased from 46.53 \pm 15.93 to 56.09 \pm 15.71. The TC:HDL ratio declined from 6.39 \pm 2.41 to 3.64 \pm 0.87. Systolic blood pressure (SBP; mmHg) decreased from 143.96 \pm 15.09 to 130.11 \pm 8.95, diastolic blood pressure (DBP) from 85.54 \pm 10.84 to 78.23 \pm 5.82. C-reactive protein (CRP, mg/L) declined from 2.11 \pm 2.36 to 0.58 \pm 0.46 (p<0.0001 for all).

Grade II (n=131, 60.6 \pm 5.6 years): Fasting glucose (mg/dl) decreased from 114.17 \pm 27.04 to 99.3 \pm 11.49, change from baseline -14.83 \pm 2.19 mg/dl, HbA_{1c} (%) from 7.63 \pm 1.31 to 5.9 \pm 0.73, change from baseline -1.69 \pm 0.07%. TC (mg/dl) decreased from 292.23 \pm 41.07 to 196.78 \pm 19.85, LDL (mg/dl) from 174.5 \pm 28.46 to 125.86 \pm 35.8, TG (mg/dl) from 292.12 \pm 61.15 to 194.19 \pm 20.66. HDL (mg/dl) increased from 57.35 \pm 19.17 to 67.41 \pm 18.82. The TC:HDL ratio declined from 5.86 \pm 2.76 to 3.2 \pm 1.12. SBP (mmHg) decreased from 159.15 \pm 14.71 to 135.26 \pm 10.97, DBP from 95.02 \pm 11.86 to 79.66 \pm 4.96. CRP (mg/L) declined from 3.34 \pm 4.6 to 0.69 \pm 0.97 (p<0.0001 for all).

Grade III (n=46, 60.3 \pm 5.4 years): Fasting glucose (mg/dl) decreased from 115.48 \pm 23.85 to 96.54 \pm 2.9, change from baseline -18.48 \pm 2.96 mg/dl, HbA_{1c} (%) from 7.57 \pm 1.38 to 6.08 \pm 0.5, change from baseline -1.61 \pm 0.13%. TC (mg/dl) decreased from 306.76 \pm 43.03 to 192.23 \pm 9.17, LDL (mg/dl) from 190.57 \pm 36.6 to 136.24 \pm 28.07, TG (mg/dl) from 326.87 \pm 60.21 to 194.4 \pm 12.59. HDL (mg/dl) increased from 62.76 \pm 18.7 to 72.55 \pm 13.34. The TC:HDL ratio declined from 5.47 \pm 2.57 to 2.75 \pm 0.59. SBP (mmHg) decreased from 161.04 \pm 14.3 to 142.05 \pm 9.57, DBP from 97.07 \pm 10.91 to 80.89 \pm 6.76. CRP (mg/L) declined from 3.96 \pm 4.31 to 0.57 \pm 0.59 (p<0.0001 for all).

Conclusions: All changes were meaningful and sustained for the full observation time. TRT seems to be effective to improve MetS and cardiovascular risk profile in obese hypogonadal men.