

Metabolic parameters in 46 hypogonadal men with obesity grade III improve upon long-term treatment with testosterone undecanoate injections: observational data from two registry studies

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

Maximum 250 words

**Introduction:** There are inverse associations between testosterone and all components of the metabolic syndrome.

**Methods:** From two cumulative, prospective, registry studies of 561 hypogonadal men, 46 men with obesity grade III were selected. All men received parenteral testosterone undecanoate 1000 mg/12 weeks for up to 6 years. 46 men were followed for two years, 43 for three years, 37 for four years, 34 for five years, and 24 for six years. Declining numbers are result of the registry design.

**Results:** The mean age was  $60.28 \pm 5.39$  (min 43; max 69).

Mean fasting glucose (mg/dl) decreased from  $115.48 \pm 23.85$  to  $96.54 \pm 2.9$  ( $p < 0.0001$ ). Mean change from baseline was  $-18.48 \pm 2.96$  mg/dl. HbA<sub>1c</sub> (%) decreased from  $7.57 \pm 1.38$  to  $6.08 \pm 0.5$ . Mean change from baseline was  $-1.61 \pm 0.13\%$ .

Total cholesterol (mg/dl) decreased from  $306.76 \pm 43.03$  to  $192.23 \pm 9.17$  ( $p < 0.0001$ ). LDL (mg/dl) decreased from  $190.57 \pm 36.6$  to  $136.24 \pm 28.07$  ( $p < 0.0001$ ). Triglycerides (mg/dl) decreased from  $326.87 \pm 60.21$  to  $194.4 \pm 12.59$  ( $p < 0.0001$ ). HDL (mg/dl) increased from  $62.76 \pm 18.7$  to  $72.55 \pm 13.34$  ( $p < 0.0001$ ). The ratio of total cholesterol : HDL declined from  $5.47 \pm 2.57$  to  $2.75 \pm 0.59$  ( $p < 0.0001$ ).

Systolic blood pressure (mmHg) decreased from  $161.04 \pm 14.3$  to  $142.05 \pm 9.57$ , diastolic blood pressure from  $97.07 \pm 10.91$  to  $80.89 \pm 6.76$ .

Liver enzymes AST and ALT (U/L) decreased from  $42.39 \pm 17.84$  to  $20.33 \pm 1.9$  and from  $43.52 \pm 20.68$  to  $20.43 \pm 2.75$ , respectively ( $p < 0.0001$  for both), suggesting reductions in liver fat content.

C-reactive protein (CRP, mg/L) declined from  $3.96 \pm 4.31$  to  $0.57 \pm 0.59$  ( $p < 0.0001$ ).

**Conclusions:** Testosterone replacement therapy in excessively obese hypogonadal men resulted in significant and sustained improvements in all features of the metabolic syndrome, consistent with the changes in anthropometry observed in the same cohort.