

## Sustained improvement of features of the metabolic syndrome upon normalization of serum testosterone in hypogonadal men. Follow-up up to 5 years

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**Objectives:** Hypogonadal men tend to increase body weight, fat mass and develop features of the metabolic syndrome. Long-term effects of normalization of testosterone in hypogonadal men on weight, waist circumference and lipid metabolism, liver functions upon treatment with parenteral testosterone undecanoate were studied.

**Methods:** A cumulative registry study of 255 men (mean age:  $60.6 \pm 8.0$  years), with testosterone levels between 0.14 –3.51 ng/mL with late onset hypogonadism (LOH).

**Results:** A remarkable progressive and sustained decline of body weight and waist circumference over 5 years was observed. Fasting glucose decreased from  $103.38 \pm 14.44$  mg/dL to  $97.54 \pm 2.34$  ( $p < 0.0001$ ). The proportion of patients who had glucose levels  $\geq 100$  mg/dL decreased from 45% at baseline to 16% at 60 months. HbA<sub>1c</sub> was measured in 125 patients and decreased from  $6.94 \pm 1.55\%$  to  $6.01 \pm 1.41\%$ . Total cholesterol decreased from  $281.58 \pm 39.8$  mg/dL to  $188.12 \pm 11.31$  ( $p < 0.0001$ ), LDL from  $163.79 \pm 41.44$  mg/dL to  $109.84 \pm 35.41$  ( $p < 0.0001$ ), triglycerides from  $276.16 \pm 51.32$  mg/dL to  $189.78 \pm 11.33$  ( $p < 0.0001$ ). HDL was stable over the first 2 years (62 mg/dL at baseline and 63.26 at 24 months) and then declined to 52.45 at 60 months ( $p < 0.0001$  vs baseline). Mean systolic blood pressure declined from  $153.55 \pm 17.6$  mm Hg to  $137.74 \pm 10.92$  ( $p < 0.0001$ ) and diastolic blood pressure from  $93.49 \pm 11.21$  mm Hg to  $79.61 \pm 7.35$  at 60 months ( $p < 0.0001$ ). At baseline, 91% of men had a systolic blood pressure of  $\geq 130$  mm Hg which declined to 80% after 60 months. At baseline, 75% of men had a diastolic blood pressure of  $\geq 85$  mm Hg declining to 22% at 5 years.

**Conclusions:** Normalization of serum testosterone leads to a sustained improvement of all components of the metabolic syndrome.