

Testosterone replacement therapy in middle-aged to elderly hypogonadal men leads to continuous weight loss and reduction of waist circumference over five years

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Background and aims: Obesity in men is frequently associated with testosterone deficiency. Adipose tissue is an active endocrine organ producing substances (e.g., estrogens, cortisol, leptin, inflammatory cytokines) which suppress the production of endogenous testosterone at the hypothalamic-pituitary level and at the testicular level. This study aimed at investigating the effects of testosterone replacement in hypogonadal men on parameters of obesity.

Materials and methods: Open-label, single-center, cumulative, prospective registry study of 255 men (mean age 60.6 ± 8.0 years), with testosterone levels ≤ 3.5 ng/mL (12 nmol/L) receiving parenteral testosterone undecanoate 1000 mg at baseline, after 6 weeks and thereafter at 12-week intervals.

Results: After a maximum treatment duration of five years, the following changes occurred: testosterone increased from 2.87 ± 0.4 to 5.26 ± 0.44 ng/mL. Body weight (kg) decreased from 106.22 ± 16.93 (minimum: 70, maximum: 139) to 90.07 ± 9.51 (min 74.00, max 115). The statistical significance was $p < 0.0001$ vs baseline and vs the previous year over 5 years indicating a continuous weight reduction. Waist circumference (cm) declined from 107.24 ± 9.14 (min 86, max 129) to 98.46 ± 7.39 (min 84, max 117) ($p < 0.0001$ vs baseline and vs the previous year over 5 years). Body mass index (BMI, m/kg²) declined from 33.93 ± 5.54 (min 21.91, max 46.51) to 29.17 ± 3.09 (min 22.7; max 36.71) ($p < 0.0001$ vs baseline and vs the previous year over 5 years). The mean per cent weight loss after 1 year was $4.12 \pm 3.48\%$, after 2 years $7.47 \pm 5.01\%$, after 3 years $9.01 \pm 6.5\%$, after 4 years $11.26 \pm 6.76\%$ and after 5 years $13.21 \pm 7.24\%$. At baseline, 96% of men had a waist circumference of ≥ 94 cm. This proportion decreased to 71% after 5 years.

Conclusions: The normalization of testosterone in hypogonadal men resulted in progressive loss of weight, waist circumference and BMI over the full 5 years of the study.