Long-term treatment with testosterone undecanoate injections results in substantial weight loss in hypogonadal men

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Character count: 1842; Maximum characters: 2500

Introduction: Obesity is the major risk factor for type 2 diabetes. Obesity is associated with reduced testosterone, and low testosterone induces weight gain. This study analyzed the effects of normalization of serum testosterone in mainly elderly, hypogonadal men.

Methods: Open-label, single-center, cumulative, prospective registry study of 255 men (aged 38 – 83 years, mean 60.6 ± 8.0 years), with testosterone levels between 1.7 – 3.5 ng/mL (mean: 2.87 ± 0.4). Cut-off point for diagnosing testosterone deficiency was serum testosterone ≤ 3.5 ng/mL). 215 men were studied for at least 2 years, 182 for 3 years, 148 for 4 and 116 for at least 5 years. They received parenteral testosterone undecanoate 1000 mg/12 weeks after an initial interval of 6 weeks. Weight and waist circumference as a measure of visceral fat were assessed every three month and BMI calculated.

Results: At baseline, 5% of the patients had normal weight (BMI ≤ 24.9 kg/m^2), 24% were overweight (BMI 25-29.9), 57% obese (BMI 30-40) and 14% morbidly obese (BMI ≥ 40). After 5 years the following changes were observed: weight (kg) decreased by 16.15 kg 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 loss over the full observation period. 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, kg/m^2) 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 ± 3.48%, after 2 years 7.47 ± 5.01%, after 3 years 9.01 ± 6.5%, after 4 years 11.26 ± 6.76% and after 5 years 13.21 ± 7.24%. At baseline, 96% of men had a waist circumference of ≥ 94 cm. This proportion decreased to 71% after 5 years.
At 60 months, 94.8% of men had lost any weight, 31.0% had lost ≥ 20 kg, 53.4% ≥ 15 kg, 75.9% ≥ 10 kg, 89.7% ≥ 5 kg, and 5.2% had gained weight. At 60 months, 97.4% had any reduction in waist circumference, 6.9% had lost ≥ 15 cm, 45.7% had lost ≥ 10 cm, 86.2% ≥ 5 cm, and 2.6% had an increase in waist circumference.

Conclusions: Raising serum testosterone to normal resulted in loss of body weight, waist circumference and BMI. These improvements were progressive over the full 5 years of the study. More than 95% of hypogonadal men responded to testosterone replacement therapy by improving their body composition.