

## Long-term Testosterone Treatment with Injectable Testosterone Undecanoate in Hypogonadal Men with Inflammatory Bowel Diseases (M. Crohn and Colitis ulcerosa)

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**Objective:** Testosterone (T) has anti-inflammatory effects. T treatment has been found to be beneficial in rheumatoid arthritis and chronic obstructive pulmonary disease. We had reported effects of two years of T treatment in a small group of hypogonadal men with Crohn's disease (Haider A et al., *Horm Mol Biol Clin Invest* 2010; 2(3): 287–292).

**Methods and Design:** 48 men with Crohn's disease and 2 men with Colitis ulcerosa with T  $\leq$  12 nmol/L from 2 centers in Bremerhaven, Germany and Aleppo, Syria received treatment with parenteral testosterone undecanoate on day 1, after 6 weeks and thereafter every 12 weeks for up to 60 months. 12 hypogonadal men of similar age with Crohn's disease who did not receive T served as a control group. The Crohn's Disease Activity Index (CADI) was assessed as an indicator of the severity of the disease every 3 months. In addition, highly sensitive C-reactive protein (hsCRP) and leukocyte count as markers of inflammatory activity were measured.

**Results:** T levels at baseline were  $2.83 \pm 0.34$  ng/mL in the T group and  $3.1 \pm 0.11$  in the control group. During treatment, T increased to  $5.27 \pm 0.46$  and remained stable at  $3.01 \pm 0.1$  in the control group. hsCRP (mg/dL) levels at baseline were  $16.45 \pm 9.97$  in the T-treated group vs  $7.43 \pm 0.92$  in the control group. They decreased to  $3.82 \pm 2.46$  after 60 months in the T-treated group and increased to  $9.25 \pm 1.61$  in the control group. The CADI decreased from  $220.61 \pm 49.1$  to  $72.78 \pm 2.64$  in the treated group and increased from  $196.82 \pm 7.17$  to  $213.18 \pm 14.19$  in the control group. Leukocyte count decreased from  $13.17 \pm 2.7$  to  $5.94 \pm 0.73$  in the treated group and remained unchanged in the control group (from  $11.43 \pm 1.34$  to  $11.08 \pm 1.46$ ).

**Conclusion:** Normalization of T in hypogonadal men with Crohn's disease led to improvements of the CADI, hsCRP and a reduction of leukocytes. The mechanism of this improvement may be through anti-inflammatory and immunosuppressive effects of testosterone, reducing chronic inflammation of the intestinal wall in CD.