Hypogonadal patients with Crohn's disease benefit from treatment with testosterone – data from an ongoing, long-term, observational registry study

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Background: Anti-inflammatory effects of testosterone (T) have been demonstrated in numerous studies. T treatment has been found to be beneficial in rheumatoid arthritis and chronic obstructive pulmonary disease. Protective effects of T have been shown in experimental studies (e.g., Fijak M et al., J Immunol 2011, 186: 5162-5172). We previously 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: In a prospective, cumulative, observational registry study, 73 hypogonadal men with Crohn's disease (n=71) and Colitis ulcerosa (n=2) with T ≤ 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 75 months. 12 hypogonadal men of similar age with Crohn's disease who did not receive T served as an untreated control group. In total, 73 men received T and 12 hypogonadal men remained untreated. The Crohn's Disease Activity Index (CDAI) was assessed every 3 months. In addition, highly sensitive C-reactive protein (hsCRP) and leukocyte count were measured. The Aging Males' Symptoms Scale (AMS) was used as a self-administered quality of life (QoL) instrument. 5 patients in the T group had osteoporosis.

Results: T levels at baseline were 9.37 ± 1.08 nmol/l in the T group and 10.75 ± 0.36 in the control group. During treatment, T increased to 15.72 ± 0.53 and slightly declined in the control group. The CDAI decreased from 231.3 ± 35.96 to 75.0 in the treated group and increased from 196.25 ± 7.11 to 210.0 in the control group. hsCRP (mg/dl) levels at baseline were 14.01 ± 9.18 in the T group vs 7.3 ± 0.98 in the control group. They decreased to 2.63 ± 1.91 after 72 months in the T group and increased to 13.7 in the control group. Leukocyte count decreased from 12.42 ± 2. 46 to 5.97 ± 0.51 x 10^3 cells/µl in the treated group and remained unchanged in the control group (from 11.38 ± 1.29 to 12.7). AMS improved from 49.47 ± 8.11 in the T group to 17.33 ± 0.58.

In the control group, AMS remained unchanged from 47.17 ± 1.03 at baseline to 48 at the end of the observation period. 5 patients in the T group had osteoporosis. T-scores in these patients improved from approximately -2.9 to approximately -1.8.

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