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## Original Research

# TESTOSTERONE CONCENTRATIONS IN YOUNG PATIENTS WITH DIABETES MELLITUS

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## ABSTRACT

**Objective:** We have previously shown that hypogonadotrophic hypogonadism is common in middle-aged patients with type 2 diabetes (T2D) but not with type 1 diabetes (T1D). We have now investigated the total testosterone (TT) and free testosterone (FT) concentrations in young (age 18-35 years) T1D and T2D patients.

**Research Design and Methods:** In this study carried out in a tertiary referral center, serum concentrations of TT and FT were measured in 38 T1D (mean age: 26.45 ± 0.89 years) and 24 T2D (mean age: 27.87 ± 0.97 years). The mean BMI of T1D and T2D patients was 27.41 ± 1.18 and 38.55 ± 2.04 kg/m<sup>2</sup> respectively (p < 0.001).

**Results:** The mean TT concentration of T1D and T2D patients was 22.89 ± 1.23 and 11.14 ± 0.99 nmol/l respectively (p < 0.001). The mean FT concentration of T1D and T2D patients was 0.489 ± 0.030 and 0.296 ± 0.022 nmol/l respectively (p < 0.001). 8 out of 24 (33%) of T2D patients had subnormal FT concentrations (< 0.225 nmol/l). Using an age-based reference range, 14 out of 24 (58%) of T2D patients had low FT concentrations (< 0.278 nmol/l). 3 out of 38 (8%) of T1D patients had FT concentrations below the lower limit of normal (p = 0.02 when compared to T2D). LH and FSH concentrations in T2D patients with low FT concentrations were in the normal range and were similar to those in T1D patients.

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Conclusions: Young T2D patients have significantly lower plasma concentrations of TT and FT, and inappropriately low LH and FSH concentrations with a very high prevalence of hypogonadotropic hypogonadism, when compared to T1D patients of a comparable age. The potential implications for their sexual and reproductive function in the prime reproductive years are profound.

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