Intensive insulin therapy increases sex hormone-binding globulin in newly diagnosed type 2 diabetic patients.

OBJECTIVE: Many studies have shown that low sex hormone-binding globulin (SHBG) is associated with insulin resistance, but only few studies have examined how serum SHBG is regulated by insulin in humans. This interventional study aimed to investigate the effect of insulin therapy (IT) on serum SHBG levels in newly diagnosed type 2 diabetic patients.

METHODS: A total of 80 newly diagnosed type 2 diabetic subjects were enrolled and randomly grouped into a 2-week intensive IT with/without metformin. Serum SHBG, total testosterone, glucose, liver enzymes, lipids, insulin, and C-peptide levels were measured before and after IT.

RESULTS: Before IT, serum SHBG levels were negatively correlated with BMI, waist circumference (WC), alanine aminotransferase (ALT), gamma-glutamyl transpeptidase (γ-GT), triglyceride (TG), fasting insulin, and C-peptide, and homeostatic model assessment of insulin resistance (HOMA-IR), and positively with HDL-C (all P for trend <0.05), after adjustment for age and sex. IT increased serum SHBG levels from 26.5±14.5 to 33.2±15.0 nmol/l (P<0.001), increased by 25.2% (95% CI, 20.3 to 30.9%, P<0.001). In a multiple linear regression model adjusting for age, sex, BMI, and WC, the decreases in ΔALT (standardized regression
Intensive insulin therapy increases sex hormone-binding globulin in newly diagnosed type 2 diabetic patients. 

Coefficient $\beta = -0.374$, $P = 0.012$) and $\Delta TG$ ($\beta = -0.380$, $P = 0.020$) were independent contributors to the increase in $\Delta SHBG$.

**CONCLUSIONS:** IT increases serum SHBG likely through improving insulin resistance and liver function.

DOI: 10.1530/EJE-13-0557


PubMed ID: 24194532