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Associations of sex hormone-binding globulin and testosterone with diabetes among men and women (the Saku Diabetes study): A case control study.

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Abstract: Background: Sex hormone-binding globulin (SHBG) levels and sex hormones have been implicated in the pathogenesis of type 2 diabetes and cardiovascular diseases. As fatty liver has been suggested to be a major determinant of SHBG levels, we examined whether the associations of SHBG and testosterone with diabetes were independent of fatty liver.Methods: We conducted a case-control study that included 300 diabetes cases (215 men and 85 women) and 300 matched controls from the Saku cohort study. Diabetes was defined by either fasting plasma glucose levels ΓëÑ126 mg/dL, 2-h post-load glucose levels ΓëÑ200 mg/dL after a 75 g oral glucose tolerance test, or diabetes diagnosed by physicians. We fitted conditional logistic regression models to examine the associations between SHBG and total testosterone levels with diabetes by sex. To evaluate the impact of fatty liver, we used the fatty liver index (FLI), a validated measure derived from serum triglyceride levels, body mass index (BMI), waist circumference, and +¦-glutamyltransferase levels.Results: After adjusting for age, family history of diabetes, smoking, physical activity, BMI, and FLI, SHBG levels were inversely associated with diabetes among women (odds ratio [OR] comparing the highest with the lowest quartiles, 0.13 [95% confidence interval {CI}, 0.02-0.96]), but not among men. Similar patterns were observed in a subgroup analysis restricted to postmenopausal women"(OR, 0.12 [95% CI, 0.01-1.17]). In contrast, testosterone levels were inversely associated with diabetes among men (OR, 0.45 [95% CI, 0.23-0.89]), but not among women.Conclusions: Our findings suggest that SHBG in women and testosterone in men may be inversely associated with diabetes. -® 2012 Goto et al.; licensee BioMed Central Ltd