Non obese women with PCOS have lower high-density lipoprotein cholesterol unrelated to glucose metabolism and body composition but sex hormone-binding globulin.

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In order to clarify the background that deteriorates the health of non-obese women with PCOS, we investigated all the associated biochemical factors as well as androgen and sex hormone-binding globulin (SHBG) that are main component of polycystic ovary syndrome (PCOS) *per se*. Twenty-six premenopausal non-obese (BMI 18.2-26.7 kg/M^2) Taiwanese women with PCOS were recruited as Subject, while another 11 normal non-obese (BMI 18.3-25 kg/M^2) as age and BMI matched Control. The waist circumference (WC) and waist-hip ratio (WHR) were significantly higher in women with PCOS despite lack of percentage difference in body fat. HDL-C level was lower with a tendency of less SHBG and high sensitive C reactive protein (hsCRP). The androstenedione testosterone ratio was related to both glucose metabolism using multiple linear regressions in both groups but only related to hsCRP in PCOS group. Serum SHBG was positively related to HOMA, HDL-C, hsCRP and androgen in all the subjects. The relationship between SHBG and glucose metabolism is more pronounced in women with PCOS. Although level of HDL was affected by SHBG, fasting insulin, and HOMA rather than androgen in both two groups, it was not related to body composition in PCOS group as in control group. Women with PCOS developing metabolic syndrome or cardiovascular disease are more affected by androgen and SHBG than Control.