

Methods

Thirty patients with CVD aged between 48-63 years (55 ± 8.9 , mean \pm SD) were recruited from Al-Imamain Al-Kadhimiyan Medical City during the period from January to April 2012. Another 25 apparently healthy postmenopausal women were involved as a control group with matching age and body mass index (BMI) to the patient group (53.3 ± 6.7 years, mean \pm SD). None of them had a history of thyroid disease, polycystic ovary syndrome (PCOS), diabetes mellitus, renal impairment, or any other severe illness or infection, and not taking any drug (including hormone replacement and any estrogenic, anti hypertensive or lipid lowering medication) or had any operation in the ovary. Ten mls of blood were collected in a plain tube in postprandial state (2-3 hours after breakfast). The serum was obtained after centrifugation at 3200 rpm for 10 min. and divided into small aliquots.

a- Immediate measurements of serum glucose, lipid profile, were done using the enzymatic colorimetric methods.

b- The rest was stored at -20°C until assayed for hormones analysis (luteinizing hormone (LH), follicular stimulating hormone (FSH), and estradiol (E2)) by mini VIDAS Kit (Biomérieux, France), while testosterone and sex hormone binding globulin (SHBG) were estimated by manual Eliza kit.

c- Free Androgen Index (FAI) was calculated by using the formula total testosterone (mmol/L) / SHBG (mmol/L).

d- Body mass index (BMI) was calculated by weight (Kg) / sq height (m)

e- The atherogenic index = $\text{LDL-C} / \text{HDL-C}$

Results

The results show highly significant elevations in the postprandial TG, TC LDL-C, and atherogenic index, with a highly significant reduction in HDL-C (p -value = 0.0001) in the postmenopausal women with CVD as shown in table 1 when compared to their healthy controls.

Table 1. Demographic features of postmenopausal women with cardiovascular disease and the control group

Parameters	Women with CVD N = 30	Control group N = 25
Age (year)	55 ± 8.9	53.3 ± 6.7
BMI (kg/m^2)	30.9 ± 2.4	29 ± 3.1
Triglyceride	$3.82 \pm 0.85^*$	2.45 ± 0.34
Total cholesterol	$6.41 \pm 0.48^*$	5.17 ± 0.11
HDL-C	$0.65 \pm 0.26^*$	0.93 ± 0.06
LDL-C	$3.82 \pm 0.44^*$	3.13 ± 0.14
Atherogenic index	$4.93 \pm 1.48^*$	3.37 ± 0.68

* $P \leq 0.0001$, CVD = cardiovascular disease BMI = body mass index, HDL-C = high density lipoprotein cholesterol, LDL-C = low density lipoprotein cholesterol.

As shown in table 2 there was no significant differences in testosterone, LH, FSH and E2 levels in postmenopausal women with CVD and postmenopausal women without CVD ($p = 0.62$, 0.78 , 0.27 and 0.057 respectively), with a highly

significant reduction in SHBG levels ($P = 0.0001$), however, the free androgenic index was significantly higher in the postmenopausal women with CVD than their controls (menopausal women without CVD, $P = 0.001$).