Introduction: Vasomotor symptoms are considered to be the cardinal symptoms during menopause. According to the Study of Women's Health Across the Nation (SWAN), 60-80% of women experience vasomotor symptoms during menopause. Hot flashes are associated with biochemical changes and alterations in hormonal concentration in the gonads, gonadotropins and neurotransmitters. The findings demonstrate that hot flashes are associated with subclinical cardiovascular disease.

Objective: To establish the existing association between vasomotor symptoms and clinical and biochemical markers of cardiovascular disease in menopausal women who are treated at the Biological Service of Human Reproduction of the Hospital Juarez de Mexico in Mexico City.

Patients and methods: We carried out an observational, descriptive, cross-sectional, and ambispective study. We included patients with early and late menopause according to the STRAW + 10 classification with vasomotor symptoms identified by the Greene scale and the questionnaire proposed by Gast et al. in the year 2008. We excluded patients with a history of type 1 and 2 diabetes mellitus, chronic systemic arterial hypertension, coronary heart disease, cerebrovascular disease, clinically manifested peripheral arterial disease, chronic or end-stage renal disease, smokers and patients treated with hormone replacement therapy. Measures of descriptive and inferential statistics [Pearson coefficient of linear correlation (r)] were applied for the statistical analysis; p < 0.05 was considered significant.

Results: We included 50 patients with an average age of 51 years; 68% of the patients were in early menopause and 32% in late menopause. In 50% of the patients, menopause was induced with the main reason being uterine fibroids. After determining the body mass index of the patients, it was found that 22% had normal weight, 48% were overweight, 22% with grade I obesity, 6% with grade II obesity and 2% with grade III obesity. Central obesity with a waist measurement of >88 cm was noted in 76% of the patients (38 cases). In 36% of the population studied (18 cases), insulin resistance was found using the HOMA (Homeostasis Model Assessment) scale based on the measurement of fasting insulin and serum glucose, using a cutoff point of 2.6. After evaluation of the lipid profile, it was found that 56% of the patients had a total cholesterol value of >200 mg/dL; 46% had triglycerides >150 mg/dL, 46% had high-density lipoprotein cholesterol (HDL-c) <50 mg/dL and 80% showed levels of low-density lipoprotein cholesterol (LDL-c) >100 mg/dL. Castelli's atherogenic index was calculated (total cholesterol/HDL-c) with the following findings: 70% of the patients (35 cases) had a low atherogenic index and 30% (15 cases) with a moderate atherogenic index. The evaluation of patient symptomatology was done using two scales: the first was the Greene scale that found that 56% of the patients had absent to mild vasomotor symptomatology and 44% had moderate to severe values. When the questionnaire proposed by Gast et al. was applied for the evaluation of hot flashes and night sweats, it was found that >50% of
the studied population reported having moderate to severe vasomotor symptomatology (56 and 62%, respectively). Based on these results, it was found that variables such as the Castelli atherogenic index were increased in patients with central obesity along with increased levels of LDL-c, total cholesterol and triglycerides, as well as in those patients with insulin resistance. In this same group of patients, HDL-c levels were decreased. The atherogenic index was also found to be more elevated in relationship with the time of evolution of the menopause. There was no statistically significant correlation when comparing the results of the vasomotor symptomatology scales with the different parameters studied.

Conclusions: The intensity of the vasomotor symptoms did not correlate with clinical or biochemical parameters. The questionnaire proposed by Gast et al. for vasomotor symptomatology allowed for a more precise evaluation of hot flashes and night sweats compared with the Greene scale. Central obesity was associated with consequences adverse to good health. It is possible that patients with a waist circumference >88 cm may have an elevated Castelli atherogenic index and a higher risk of a variety of cardiometabolic diseases. The time of evolution of the menopause may be a determining factor for the increase in body fat with an abdominal or central distribution and with an increase in cardiovascular risk. In our population, 80% of postmenopausal patients had high levels of LDL-c, thereby significantly increasing the cardiovascular risk. For this reason it is suggested that, in postmenopausal patients, initiation of positive health practices should be started during early stages with the goal of avoiding endothelial and cardiovascular disorders inherent to cardiometabolic diseases.

Key words: Hot flashes, night sweats, atherogenic index, lipids, cholesterol, menopause, obesity.