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Original Research

Assessment of cardiovascular risk factors in postmenopausal women

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***ABSTRACT*:**
Background: Menopause is a permanent physiological state with cessation of menstruation attributable to the loss of ovarian function and reduction in the production of estrogen. The present study was conducted to assess cardiovascular risk factors in postmenopausal women. **Materials & Methods:** 56 post- menopausal women were assessed for height, weight, body mass index (BMI), waist circumference, waist-hip ratio (WHR), blood pressure was measured. Risk factors were also recorded. **Results:** The mean age was 50.6 years, life style was active in 30 and sedentary in 26, diet was vegetarian in 34 and mixed in 22 and 40 were literate and 16 were illiterate. Common risk factors was diabetes in 62%, hypertension in 30%, BMI >25 kg/m2 in 74%, dyslipidemia in 45%, high TC in 32%, high LDL in 28%, low HDL in 23%, high TG in 47%, metabolic syndrome in 28%, CRP positive in 54%, uric acid >6.5 mg/dl in 3%, smoking in 7% and alcoholism in 4%. The difference was significant (P< 0.05). **Conclusion:** Common risk factors was diabetes, hypertension, BMI >25 kg/m2, dyslipidemia, high TC, high LDL, low HDL, high TG, metabolic syndrome, CRP positive, uric acid >6.5 mg/dl, smoking and alcoholism.
Key words: Diabetes, Hypertension, Postmenopausal

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INTRODUCTION

Menopause is a permanent physiological state with cessation of menstruation attributable to the loss of ovarian function and reduction in the production of estrogen. The average age of menopause is reported to be 51 years but the age of natural menopause may vary from 40 to 58 years.[1] This phase is characterized by variety of changes in socio-cultural, physiological and psychological states. These changes culminate into myriad of symptoms including insomnia, sweating, hot flashes, depressive mood, vaginal dryness and general discomfort.[2]

Cardiovascular risk is poorly managed in women, especially during the menopausal transition when susceptibility to cardiovascular events increases. Clear gender differences exist in the epidemiology, symptoms, diagnosis, progression, prognosis, and management of cardiovascular risk.[3] The key risk factors that need to be controlled in the perimenopausal woman are hypertension, dyslipidemia, obesity, and other components of the metabolic syndrome, with the careful control of diabetes. Hypertension is a particularly powerful risk factor and lowering of blood pressure is pivotal. Hormone replacement therapy (HRT) is acknowledged as the gold standard for the alleviation of the distressing vasomotor symptoms of the menopause, but the findings of the Women's Health Initiative (WHI) study generated concern for the detrimental effect on cardiovascular events.[4]

Estrogen is known to possess both anti-atherogenic and cardioprotective effect by maintaining high levels of high-density lipoprotein (HDL-C) coupled with decreasing low-density lipoprotein cholesterol (LDL-C), and triglycerides (TG). Several factors, including diabetes, hypertension, and atherosclerosis among others can lead to CVD in women. The World Health Organization (WHO) has ranked CVDs as the number one cause of death, with global estimation of about 17.7 million deaths in 2015.[5] The present study was

conducted to assess cardiovascular risk factors in postmenopausal women.

MATERIALS & METHODS

The present study comprised of 56 post-menopausal women. All were informed regarding the study and their consent was obtained. Data such as name, age, etc. was recorded. Height, weight, body mass index (BMI), waist circumference, waist-hip ratio (WHR), blood pressure was measured in all. Risk factors such as BMI, Diabetes, hypertension, smoking, alcohol, metabolic syndrome, CRP positive, high uric acid etc. were recorded. Results thus obtained were subjected to statistics. P value less than 0.05 was considered significant.

RESULTS

Table I: Demographic characteristics

Characteristics	Value	P value
Mean age (years)	50.6	-
Life style		
Active	30	0.12
Sedentary	26	
Diet		
Vegetarian	34	0.17
Mixed	22	
Education		
Literate	40	0.05
Illiterate	16	

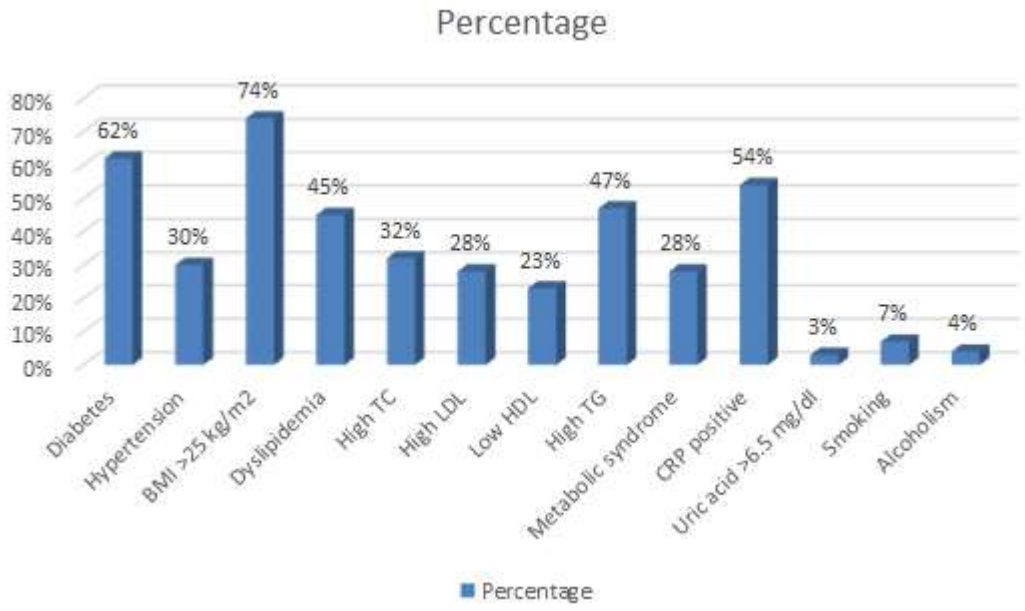
Table I shows that mean age was 50.6 years, life style was active in 30 and sedentary in 26, diet was vegetarian in 34 and mixed in 22 and 40 were literate and 16 were illiterate. The difference was non- significant (P> 0.05).

Table II Cardiovascular risk factors

Risk factors	Percentage	P value
Diabetes	62%	0.02
Hypertension	30%	
BMI >25 kg/m^2	74%	
Dyslipidemia	45%	
High TC	32%	
High LDL	28%	
Low HDL	23%	
High TG	47%	
Metabolic syndrome	28%	
CRP positive	54%	
Uric acid >6.5 mg/dl	3%	
Smoking	7%	
Alcoholism	4%	

Table II, graph I shows that common risk factors was diabetes in 62%, hypertension in 30%, BMI >25 kg/m2 in 74%, dyslipidemia in 45%, high TC in 32%, high LDL in 28%, low HDL in 23%, high TG in 47%, metabolic syndrome in 28%, CRP positive in 54%, uric acid >6.5 mg/dl in 3%, smoking in 7% and alcoholism in 4%. The difference was significant (P< 0.05).

Graph I Cardiovascular risk factors



DISCUSSION

The global burden of cardiovascular diseases (CVDs) is rapidly increasing. CVD is the leading cause of death in women around the world.[6] Hypertension affects more men than women until 55 years of age, but after age 55, the percentage of women is higher. Estrogen deficiency has been linked to the rapid increase in CVD in women who have undergone natural or surgical menopause.[7] Every year, CVD claims the lives of females more than males. More than 450,000 women succumb to heart disease annually, and 250,000 die of coronary artery disease.[8] CVD risk increases after the menopause, which may be related to metabolic and hormonal changes.

Menopause is a risk factor for CVD because estrogen withdrawal has a detrimental effect on cardiovascular function and metabolism.[9] The menopause compounds many traditional cardiovascular disease risk factors (CVRFs), including changes in body fat distribution from a gynoid to an android pattern, reduced glucose tolerance, abnormal plasma lipids, increased blood pressure, increased sympathetic tone, endothelial dysfunction, and vascular inflammation.[10] The present study was conducted to assess cardiovascular risk factors in postmenopausal women.

In present study, mean age was 50.6 years, life style was active in 30 and sedentary in 26, diet was vegetarian in 34 and mixed in 22 and 40 were literate and 16 were illiterate. Afrifa et al[11] conducted a comparative cross-section of 150 women (75 pre-menopausal women and 75 post-menopausal women). Socio-demographic and clinical characteristics of participants were obtained with the aid of a structured questionnaire. Blood pressure (BP) was measured and lipid profile was estimated using fasting blood samples. Other markers of cardiovascular risk such as BMI, AIP, VAI, BAI and CRI-I were estimated. Elevated levels of total cholesterol (TC) ($p<0.0001$), low density lipoprotein (LDL) ($p<0.0001$), very low-density lipoprotein (VLDL) ($p=0.0021$), triglycerides (TG) ($p<0.0001$) and non-high-density lipoprotein (non-HDL-C) cholesterol ($p<0.0001$) in post-menopausal women compared with pre-menopausal women. High-density lipoprotein (HDL) ($p<0.0001$) was, however, decreased in post-menopausal women. Mean AIP ($p<0.0001$), VAI ($p< 0.0001$), BAI ($p< 0.0038$) and CRI-I ($p<0.0001$) were significantly increased in post-menopausal women compared to pre-menopausal women. We also report a positive correlation of TC, TG, VLDL and non-HDL with atherogenic markers AIP, VAI and CRI-I in post-menopausal women. A negative correlation of HDL with AIP, VAI, and CR in post-menopausal women was also observed.

We found that common risk factors was diabetes in 62%, hypertension in 30%, BMI >25 kg/m2 in 74%, dyslipidemia in 45%, high TC in 32%, high LDL in 28%, low HDL in 23%, high TG in 47%, metabolic syndrome in 28%, CRP positive in 54%, uric acid >6.5 mg/dl in 3%, smoking in 7% and alcoholism in 4%. Tondon et al[12] found that mean number of menopausal symptoms was 6.70 ± 5.76, and mean duration since menopause was (MDSM = 4.70 years)). Fatigue, lack of energy (70%), cold hand and feet, rheumatology-related symptoms (60%) cold sweats, weight gain, irritability, and nervousness (50%), palpitation of heart, excitable/anxiety (30%) each were common complaints. Hypertension was diagnosed or a person was a known hypertensive (56%). Diabetes was diagnosed or a person was known diabetic in 21%, and BMI was found to be 25 kg/m^2 in 78%. Truncal obesity with waist-hip ratio >0.8 in 68% females, whereas abdominal obesity with waist size >88 cm was in 60% women. Dyslipidemia was seen in 39%. It was defined by the presence of high TC (=200 mg/dL) in 30%, high LDL-c (=130 mg/dL) in 27%, low HDLc (<40 mg/dL) in 21% or high TG (=150 mg/dL) in 31%. Metabolic syndrome was present in 13% of cases. CRP was found positive in 12 out of 39 total evaluated women, and serum uric acid was found >6.5 mg/dL in 4%. Smoking (0.5%), alcohol (0%,), tobacco chewing (4%), and family history of premature heart disease (9%) were recorded. Lifestyle was active in 35%, hectic in 10%, and sedentary in 55% of postmenopausal women (PMWs). Only 5% of women were receiving HRT, 0.5% isoflavone-containing phytoestrogens, 0.4% tibolone, 24% anti-HT, 9% anti-diabetic, 8% lipid-lowering drugs, and only three patients were on anti-obesity along with dietary and lifestyle management.

CONCLUSION

Authors found that common risk factors was diabetes hypertension, BMI >25 kg/m2, dyslipidemia, high TC, high LDL, low HDL, high TG, metabolic syndrome, CRP positive, uric acid >6.5 mg/dl, smoking and alcoholism.

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