Correlation between cardiovascular disease and the severity of menopausal symptoms assessed by *Menopause Rating Scale*

Dedet Steavano, Ichwanul Adenin, Dwi Faradina, Hotma P Pasaribu
M. Fidel Ganis Siregar, Riza Rivany,
Department of Obstetric and Gynecology
Medical Faculty, University of North Sumatra.

Abstract

Background: Cardiovascular disease (CVD) is the leading cause of mortality worldwide and its incidence is gradually increasing among postmenopausal women. Post-menopausal women, and more than five years (menopause) shows the risk of independent cardiovascular disease.

Aim: This study is expected to be able to show the relationship of cardiovascular disease with the severity of menopausal symptoms assessed by the *Menopause Rating Scale* at H Adam Malik Hospital, Medan.

Methods: Observational analytic study with cross sectional design was conducted on 38 menopausal women with cardiovascular disease and experiencing menopausal symptoms in the Heart Polyclinic of RSUP H Adam Malik who met the inclusion and exclusion criteria. The characteristics of the study sample were analyzed using descriptive statistics such as chi square. To assess the relationship, a normality test is carried out first. If data normally distributed, statistical analytic used Mann Whitney test.

Results: It appears that 50% of menopausal patients with heart disease have hypertensive heart disease, followed by 30% with coronary heart disease and 20% with heart failure. The incidence of coronary heart disease with a score of menopause rating scale did not have a significant relationship with p value 0.694 (p> 0.05) and there was also no significant relationship between menopause assessed by menopause rating scale with heart failure with p value 0.082 (p < 0.05). However, the value of menopause rating scale in menopausal women is associated with the incidence of hypertensive heart disease with a p value of 0.035 (p <0.05).

Conclusion: There was no significant relationship between the value of *menopause rating scale* with coronary heart disease and heart failure. However, it was found a significant relationship between the value of menopause rating scale in menopausal women associated with the incidence of hypertension heart disease (p <0.05)

Keywords: *Menopause Rating Scale*, Hypertension Heart Disease, Heart Failure, Coronary Heart Disease.

Preface

Menopause which is defined as the discontinuation of menstrual cycles for 12 months or more is a normal physiological change experienced by middle-aged women.[1] Globally, high incidence for CVD is also reported in postmenopausal women compared to men , but the number is the same with the population 10 years younger men.[2]

Every year, an estimated 25 million women worldwide will be experiencing at menopause. The number of women aging at 50 years or above will increase from 500 million to more than one billion by 2030. In Asia, according to the World Health Organization (WHO), by 2025 the number of women with old age will increase from 107 million to 373 million.[3] This is supported by higher life expentacy in older women and they are tend to be more active after menopause.[4]

The Menopause Rating Scale (MRS) is a scale to measure the quality of life during menopause, and was developed in the early 90s to measure the severity associated with age of menopause, by questioning certain relationships.[5]

Risks in pascamenopause term is associated with decreased estrogen. Postmenopause condition is often associated with hypertension, the most associated factor of coronary artery disease.[6] Previous studies involving post-menopausal women, and menopause condition for more than five years, have shown how menopause in women is associated with independent cardiovascular risk. Hormonal changes have a direct effect on blood vessels by considering the function of estrogen to provide endothelium protection against atheromatous plaque.[7]

Methods

This study was an observational analytic study with a cross sectional study design to assess the relationship of cardiovascular disease with the severity of menopausal symptoms, measured by the Menopause Rating Scale. The population of this study were all postmenopausal women with cardiovascular disease and experiencing menopausal symptoms at Heart Polyclinic of RSUP. H. Adam Malik Medan. The 38 samples are portion of the population that meets the inclusion and exclusion criteria. The characteristics of the study sample were analyzed using descriptive statistics such as chi square.

To assess the relationship of cardiovascular disease with the severity of menopausal symptoms as assessed by the Menopause Rating Scale, a normality test is first performed. If the data is normally distributed, Mann Whitney test is used. To simplify statistical calculations the researchers use SPSS software.

Results

Table 4.1 Sample characteristic

Characteristic		n (person)	Persentage
Age	40-49 years old	11	27,5
	50-59 years old	26	65
	>60 years old	3	7,5
Parity	Primipara	1	2,5
	Secundipara	16	40
	Multipara	23	57,5
	Grandemultipara	0	0
MRS	None	0	0
	Mild	7	17,5
	Moderate	20	50
	Severe	13	32,5
The use of oral conraception	Yes	31	77,5
	No	9	22,5
Body mass index (BMI)	Underweight	0	0
	Normal	16	40
	Overweight	10	25
	Obese	14	35

Table 4.1. shows that the majority of the study sample were 50-59 years old women (65%) with a history of multiparous pregnancy (57.5%) accompanied by the use of oral contraceptives (31%). The majority of MRS scores are at moderate stage (50%) with normal body weight (40%). These findings in this study fits of those in previous studies, which showed the mean age of symptomatic menopause patients was 52.2 ± 6.6 years, with 13.9% of hypertension, 4.76% of diabetes mellitus and 6.92% of hyperlipidemia. In addition, 20.68% of all patients were taking estrogen and progesterone hormone therapy.

Table 4.2 *Menopause rating scale* (MRS)

Characteristic		Point	Percentage	Mean SD
Somatic-vegetative symptoms	None	**3**	**7,5**	
	Mild	2	8	
	Moderate	25	62,5	**2,75±0,74**
	Severe	4	10	
Psychologic symptoms	None	**2**	**5**	
	Mild	10	25	
	Moderate	25	62,5	**2,73±0,67**
	Severe	3	7,5	
Urogenital symptoms	None	**0**	**0**	
	Mild	10	25	
	Moderate	25	62,5	**2,88±0,61**
	Severe	5	12,5	
Total score	None	**0**	**0**	
	Mild	8	20	
	Moderate	19	47,5	
	Severe	13	32,5	

Table 4.2. shows that the mean score of vegetative somatic complaints was 2.75 ± 0.74, psychological complaints was 2.73 ± 0.67, urogenital complaints was 2.88 + 0.61. Overall, 62.5% of all patients were on moderate intensity scores

Table 4.3. Frecuency distibution of cardiovascular disease in menopause women

Cardiovascular Disease	N	Percentage
Coronary heart disease	12	30
Hypertensive heart disease (HHD)		50
Heart failure	8	20
Total	40	100%

Table 4.3 shows that 50% of menopausal patients with heart disease have hypertensive heart disease, followed by 30% with coronary heart disease and 20% with heart failure.

Table 4.4. Analysis of the incidence of coronary heart disease in menopausal women using the MRS

	MRS	N	%	P value*
Menopause Rating Scale	None	0	0	
	Mild	2	16	
	Moderate	7	58	0,694
	Severe	3	26	
	Total	12	100	

*Mann Whitney Test

Table 4.4. shows that the incidence of coronary heart disease with menopause rating rating scale did not have a significant relationship with p value 0.694 (p> 0.05)

Table 4.5. Analysis of the incidence of HHD in menopausal women using the MRS

	MRS	n	%	P value*
Menopause Rating Scale	None	0	0	
	Mild	2	10	0,035
	Moderate	8	40	
	Severe	10	50	
	Total	20	100	

*Mann Whitney Test

Table 4.5. points out that the value of the menopause rating scale in menopausal women is related to the incidence of hypertensive heart disease with a p value of 0.035 (p <0.05).

Table 4.6. Analysis of the incidence of CHF in menopausal women using the MRS

MRS		n	%	P value*
Menopause Rating Scale	None	0	0	0,082
	Mild	3	37,5	
	Moderate	5	62,5	
	Severe	0	0	
Total		8	100	

*Mann Whitney Test

Table 4.6. shows that there was no significant relationship between menopause assessed with the menopause rating scale with heart failure with a p value of 0.082 (p <0.05).

Discussion

The majority of menopause rating scale scores are at moderate stage (50%) with normal body weight (40%). These results fits with those of previous studies which showed the mean age of symptomatic menopause patients was 52.2 ± 6.6 years with 13.9% patients have hypertension, 4.76% patients have diabetes mellitus and 6.92% patients have hyperlipidemia. In addition, 20.68% of all patients took estrogen and progesterone hormone therapy.[8]

Analysis of the ROC curve determined that the optimal cut-off score on the MRS to show the need for treatment was 14 (the area under the curve was 0.86, p <0.0001). This score reaches a sensitivity of 76.5% and a specificity of 83.6%. With this cut-off score, 97.1% of women consider that they need treatment for at least one of the symptoms experienced.[9,10]

One of nine women aged 45-64 years suffers from various cardiovascular diseases and after 65 years the ratio increases to 1:3. Estrogen deficiency after menopause causes women to be more susceptible to risk factors for heart failure, and evidence from animal models shows that a decrease in estrogen levels directly or indirectly play a role in diastolic dysfunction and hypertensive heart disease in postmenopausal women.[11]

Increased rates of coronary heart disease in postmenopausal women are found to be related due to the partial loss of protection by endogenous estrogen. This finding is supported by the dramatic increase in coronary heart disease seen in postmenopause women after they were induced by surgery.[12]

Previous studies have observed that postmenopausal women with metabolic syndrome show higher total MRS scores and higher subscale scores for somatic symptoms. In addition, the association of androgenic obesity with hypertension, hypertriglyceremia and insulin resistance included in the metabolic syndrome can also strengthen the occurrence of cardiovascular disease during the postmenopausal period.[13]

Conclusion

The incidence of coronary heart disease did not have a significant relationship (p > 0.05) with menopause rating scale.There was no significant relationship between menopause assessed with the menopause rating scale and heart failure (p > 0.05). However, the value of the menopause rating scale in menopause women is related to the incidence of hypertensive heart disease (p < 0.05).

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