

Inadvertent Labeling of Perimenopausal Females as Hypertension during Vasomotor Symptoms, Experience at a Tertiary Care Hospital

Perimenopausal
Females as
Hypertension
during
Vasomotor
Symptoms

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ABSTRACT

Objective: Hypertension is among the leading cause for cardiovascular and cerebrovascular morbidity and mortality, essential hypertension being the commonest reason. Vasomotor symptoms during perimenopausal period are well known to adult females. Hot flushes, palpitation and cold sweating phase is accompanied by a temporary swing in BP leading to erroneous labelling as Hypertension. This aims at separating essential Hypertension from temporary rise in BP as part of vasomotor symptoms in perimenopausal females.

Study Design: Observational Cross sectional study

Place and Duration of Study: This study was conducted at the Rai Medical College Teaching Hospital, Sargodha from January to October, 2022.

Materials and Methods: After securing for presence of perimenopausal symptoms informed consent was taken. BP was recorded as per standard protocol, if possible during and after the symptoms at the office as per JNC7 protocol with cutoff value of 140/90 mm Hg. Patients continued the routine antihypertensive medication if any. These patients were asked to record their BP at home multiple times, half of the times while experiencing the symptoms or within a short time afterwards and half of the time at least one hour after the perimenopausal symptoms of hot flash, palpitation and sweating. This record was reviewed at 2 weeks. If BP remained normal in between the symptoms, antihypertensive medicines were stopped. They were asked to continue recording BP for another 2 weeks on same pattern. Patients were instructed to report early if BP is high one hours after the vasomotor symptoms.

Results: We had 378 eligible and volunteering females enrolled in this study during the study period. All claimed to be hypertensive, 42% (n 158) were taking antihypertensive medicines regularly and rest 58% (n219) were taking irregularly mostly as on demand during the VSM symptoms. The study population was divided in < 40, 40-49, 50-59 and >60 years age groups. There is a clear-cut evidence that there was a significant drop in BP when the females are not experiencing the VSM symptoms, a drop of 70 mmHg in systolic BP and a drop of 10 mmHg in diastolic BP was observed at initial assessment when VSM symptoms has waned off. At first follow-up, 228 out of 378, 60% remained normotensive when not experiencing VSM symptoms. The patients who were still hypertensive were advised to continue their antihypertensive medicine. 10% in 40-49 years and 7% in 50-59 years age group stayed normotensive even after stopping the antihypertensive medicines. 18% stayed normotensive even after discontinuing their medicine patients in >60 years age group.

Conclusion: It becomes very apparent that BP returned to normal in 100% of women in <40 years group, 73% of women in 40-49 years group, 51% of women in <50-59 years group and 18% of women in >60 years group when they were not experiencing the VSM symptoms on the basis of home monitoring for 2 weeks. 60% remained normotensive when not experiencing VSM symptoms, these were inadvertently labelled as hypertensive when this VSM phenomenon was not considered. In these 60% of patients reassurance and explanation of the phenomenon of VSM symptoms complex and temporary rise in BP being part of it helped to calm them. These were inadvertently labelled as hypertension as VSM phenomenon was not considered in these patients. We conclude that up-shoots in BP during the perimenopausal years must be considered as part of VSM phenomenon and shall not be labelled as hypertension

Key Words: Vasomotor symptoms, Hypertension, Perimenopausal Symptoms

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INTRODUCTION

Hypertension (HTN) is one of the commonest cause of morbidity and mortality in middle ages. Essential HTN

is the most common type. Single or even few readings of high Blood Pressure (BP) are not sufficient to label a person as hypertensive unless and until all precautions of a standard recommended protocols are observed.⁽¹⁾

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Vasomotor symptoms during perimenopausal period is well known to adult females. Hot flushes, palpitation and cold sweating phase is accompanied by a temporary swing in BP leading to erroneous labeling as Hypertension. Reassurance and explanation of the phenomenon of VSM symptoms complex and temporary rise in BP being part of helps to calm these women. VSM phenomenon must be considered in all perimenopausal females to avoid these temporary upshoots in BP being labeled as hypertension. Though females with hypertensive spike during VSM complex are more likely to develop HTN in late post-menopausal years but it's not a rule. The patients with other components of the metabolic syndrome (MS) i.e. central obesity, hyperglycemia and hypertriglyceridemic are more likely to develop HTN in late transitional MNP phase and during post MNP years. Recently menopause was added as the female-specific CVD risk factors along with gestational diabetes and pregnancy-induced hypertension by the American Heart Association. The genetically susceptible normotensive and pre-hypertensive females in the presence of components of MS quickly become hypertensive over a 4 year period after menopause. Early screening for these factors after the childbearing years is important to identify and interfere early for the CVD risk factors²

MATERIALS AND METHODS

We invited all the females presenting in OPD for the treatment or assessment of HTN between the ages of 30-70 years. After securing informed consent, basic biodata, body parameters for the components of metabolic syndrome along with family history of each component, age at onset of menarche, gynecological and obstetrics history including history of HTN during and after pregnancies and perimenopausal symptoms were recorded as per standard.²

Trained paramedical staff recorded the information in the prescribed proforma. Patient with perimenopausal VSM, as per proforma were enrolled in the study. We applied STRAW staging system to assign the stage of menopause their initial BP was recorded as per standard protocol, if possible during and after the symptoms at

the office as per JNC7 protocol with cutoff value of 140/90 mm Hg.

VSM phenomenon and the associate temporary up-shot in BP was explained. Patients continued the routine antihypertensive medication if any. These patients were asked to record their BP at home multiple times, half of the times while experiencing the symptoms or within a short time afterwards and half of the time at least one hour after the perimenopausal symptoms of hot flash, palpitation and sweating.³

We requested the patients to report for follow-up at 2 weeks' time to review the home BP readings to note the maximum, minimum and average BP. We compared the BP readings in both phases i.e. during or immediately after the symptoms and one hour after the symptom. If a clear-cut inference could be drawn on the basis of multiple home readings that BP shoots up only during the symptoms and returns to baseline then antihypertensive medication if in use were stopped. Patients were reassured by sharing the fact that it is only a temporary rise in BP and the upshot still occur even with the use of antihypertensive medication. They were required to keep recording the BP on similar pattern and report back after another 2 weeks to be reassessed on same pattern. By analyzing the relationship, we could separate the temporary rise in BP during the symptoms and the permanent rise in BP and for these patients antihypertensive medications if in use were stopped. Patients were instructed to report early if BP is high one hour after the vasomotor symptoms. The patients were asked to continue home BP monitoring on same pattern for next 2 weeks and report for second follow-up.

Sample Size and Sampling Technique: A minimum sample size of 295 patients was calculated to maintain a 5 percent margin of error, a 95 percent confidence interval and a 75 percent response distribution, using a raosoft sample size calculator.

Statistical Analysis: Data analysis was conducted using Microsoft Excel version 2016 and Statistical Package for Social Sciences software version 25. Descriptive statistics (i.e. frequency distribution, percentages, mean and standard deviations) were the primary analytical methods.

Inclusion Criteria: Any female patient from 30-75 years of age presenting with the diagnosis or evaluation of HTN were enlisted for further workup. All were assessed for the presence of perimenopausal vasomotor symptoms. Patients not menstruating due to surgical hysterectomy but still having vasomotor symptoms were included.

Exclusion Criteria: Pre-menopause, anxiety, depression, panic disorder, bipolar disorder, major psychiatric disorders, comorbid conditions, seriously sick patient.

RESULTS

We had 378 eligible and volunteering females enrolled in this study during the study period. All claimed to be hypertensive, 42% (n 158) were taking antihypertensive medicines regularly and rest 58% (n219) were taking irregularly mostly as on demand during the VSM symptoms. The study population was divided in < 40, 40-49, 50-59 and >60 years age groups.

Table No.1: N 378, BP reading during and after VSM, initial visit

		BP during symptoms	BP 1 hour after symptoms
<40	3%	160/105 mmHg	130/85 mmHg
40-49 Y	52%	220/120 mmHg	145/100 mmHg
50-59 Y	34%	215/120 mmHg	155/105 mmHg
>60	11%	195/110 mmHg	160/100 mmHg

There is a clear-cut evidence that there was a significant drop in BP when the females are not experiencing the VSM symptoms.

Table No. 2: N 378, home BP without active VSM, 1st follow-up visit at 2 weeks with antihypertensive medicine

		Hypertensive without active VSM	Normotensive without active VSM
<40	3% (n 11)	0%	100% (n 11)
40-49 Y	52% (n 196)	27% (n 53)	73% (n 143)
50-59 Y	34% (n 129)	49% (n 63)	51% (n 66)
>60	11% (n 42)	82% (n 34)	18% (n 8)

Table No. 3. Home BP without active VSM, 2nd follow-up visit at 4 weeks without antihypertensive medicine

		Hypertensive without active VSM	Normotensive without active VSM
<40	3%	0%	100% (n 11)
40-49 Y	52% (n 196)	17% (n 33)	83% (n 163)
50-59 Y	34% (n 129)	42% (n 14)	58% (n 115)
>60	11% (n 42)	82% (n 34)	18% (n 8)

The return of BP after VSM have waned away was clearly reconfirmed on home monitoring of BP. This further drop can be easily explained by the effect of reassurance and explanation given to the patients during the initial assessment. The patients who were still

hypertensive are the genuine cases who will most likely require continuous medication and assessment. These were advised to continue their antihypertensive medicine.

There was a further group 10% in 40-49 years and 7% in 50-59 years age group who stayed normotensive even after stopping the antihypertensive medicines.

DISCUSSION

By 2030, 1.2 billion of women are projected to be peri- or postmenopausal with annual increase of around 4.7 million. Of these 76% will be in developing countries. 50.3% to 82.1% of menopausal women experience VMS, and the intensity and duration of these symptoms also vary. Hot flashes can be caused by systemic diseases, neurological diseases, drinking alcohol, using food additives, and medications. Medical and Iatrogenic conditions that can masquerade as Hot Flushes are Anxiety disorders, Autoimmune disorders, Carcinoid syndromes, Diabetic autonomic dysfunction/hypoglycemia, Epilepsy, Infection, Insulinoma / pancreatic tumors, Leukemia/lymphoma mast-cell disorders, New-onset hypertension, Thyroid disease, Tuberculosis, Use of selective-reuptake inhibitors or serotonin norepinephrine-reuptake inhibitors.⁴

Since menopausal symptoms can vary greatly between women, they might help identify women at greater risk for developing HTN and CVD that could benefit from effective preventative strategies.⁵

Multiparity is positively and early menarche is negatively associated with premature menopause.⁶ Data from the National Health and Nutrition Examination Survey (NHANES) showed that the prevalence of high BP rose significantly with age; from 2.7% in women aged 20-34 years to 18.4% in women aged 40-44 years. Unlike men, women show an abrupt increase in BP around the fifth decade of life, and by sixth decade, surpasses men in the incidence of primary hypertension.⁷

In this study there is a clear-cut evidence that there was a significant drop in BP when the females are not experiencing the VSM symptoms, a drop of 70 mmHg in systolic BP and a drop of 10 mmHg in diastolic BP was observed at initial assessment when VSM symptoms has waned off. At first follow-up, 228 out of 378, 60% remained normotensive when not experiencing VSM symptoms, these were inadvertently labeled as HTN when this VSM phenomenon was not considered. The return of BP after VSM have waned away was clearly reconfirmed on home monitoring of BP. There was a further group, 10% in 40-49 years and 7% in 50-59 years age group, who stayed normotensive even after stopping the antihypertensive medicines. All those patients in >60 years age group who were proven to have HTN on the basis of home monitoring were advised to continue their antihypertensive medicines the rest 18% stayed normotensive even after discontinuing

their medicine. It becomes very apparent that BP returned to normal in 100% of women in <40 years group, 73% of women in 40-49 years group, 51% of women in <50-59 years group and 18% of women in <40 years group when they were not experiencing the VSM symptoms on the basis of home monitoring for 2 weeks. In these 60% of patients reassurance and explanation of the phenomenon of VSM symptoms complex and temporary rise in BP being part of it helped to calm them. These were inadvertently labeled as HTN as VSM phenomenon was not considered in these patients.

As up to 20% of CHD events in women occur in the absence of conventional risk factors, better risk assessment among women is warranted. Female-specific CVD risk factors such as gestational diabetes and pregnancy-induced hypertension and more recently menopause have been implicated for CVD risk classification among women by the American Heart Association.⁸ The genetically susceptible normotensive and pre-hypertensive females in the presence of components of MS quickly become hypertensive over a 4 year period after menopause. Early screening for these factors after the childbearing years is important to identify and interfere early for the CVD risk factors including HTN.⁹

The underlying physiologic mechanisms for VMS episodes suggest transient changes in core body temperature and vascular function to cause a rise in peripheral temperature leading to skin vasodilation, increased skin blood flow and heat dispersion. This autonomic dysregulation may link VMS with incident HTN.¹⁰ Menopausal females are likely to have higher BMI, less likely to exercise, more likely to have positive family history of diabetes, stroke and/or myocardial infarction and usually are unaware of HTN symptoms.¹¹ The most important hormonal change after menopause is the decrease of estrogen, which could influence the risk of CVD through lipid and carbohydrate metabolism, coagulation parameters, HTN and so on.¹² Surgical menopause at same ages has greater risk of CVD than natural menopause women^{13,14}.

CONCLUSION

It's a well-known fact that after menopause females become as likely to become hypertensive as males and females with perimenopausal symptoms especially severe and/or with history of gestational hypertension are more likely to develop hypertension. We conclude that up-shoots in BP during the perimenopausal years must be considered as part of VSM phenomenon before labeling them as essential HTN thereby avoiding unnecessary medication. This shall be taken as an indication for early screening and lifestyle modification of the CVD risk factors.

Author's Contribution:

Concept & Design of Study:	Mohammad Mohsin Rana
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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