A Study of the Effects of Training of 61-Point Relaxation in Women Suffering from Stress of Premenstrual Syndrome

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Abstract

The abundance of more than 160 symptoms and 300 treatment modalities suggest that existing treatment modalities of premenstrual syndrome (PMS) are not effective. The need for evaluating an effective adjuvant therapy for PMS was thus felt. Due to stressful work conditions nurses suffer more from PMS. Fifty clinically healthy women volunteers in reproductive age group from above class of workers were randomly selected using a premenstrual questionnaire and were divided into PMS and control group based on symptoms.

After recording premenstrual symptoms, the basal values of heart rate, systolic and diastolic blood pressure, respiratory pattern and serum cortisol; subjects were taken through a guided 61-Point Relaxation (61-PR) yogic exercise at the same time of the day for 1 week. The symptoms and parameters were re-recorded after the last relaxation session and the data was statistically analyzed. The basal parameters in PMS group indicated presence of stress and the post relaxation values showed a reversal of the stress-induced alterations of all the recorded parameters. Also, 61-PR caused a subjective perception of stress relief, and the subjects reported a 'feel good' response. The results suggest that 61-PR as an effective adjuvant tool for relieving premenstrual stress.

Introduction

Women have since ages suffered from PMS, a condition of recurrent physical and psychological symptoms occurring in a cyclic fashion during the 7-10 days prior to menstruation, significant enough to cause disruption in family, personal, or occupational function [1].

More than 160 symptoms have been associated with the premenstrual phase of ovarian cycle, indicating the heterogeneous diagnostic criteria and ethnic variations [2]. It has also been seen that stressful working conditions contribute to the symptoms of PMS [3]. Various reports that show increased alcohol and caffeine intake in patients of PMS indicate that it is a disease related to premenstrual stress levels. When in excess, cortisol can stimulate the feeling of irritability, anger and rage [4,5]. A method of measuring stress is by estimating serum levels of glucocorticoids [6].

It has been postulated that relaxation reduces stress and thereby cortisol levels. Relaxation is a conscious and comfortable systemic process. A classical relaxation posture in yoga is known as the corpse pose or "Shavasana". The ancient Hath Yoga manual describes deeper forms of relaxation like "traveling through your own corpse". The 61 points relaxation exercise is a modified version of this technique which is used to relax the mind and body. It is a guided relaxation technique in which the subject is made to direct attention towards specific key points in the body and calm them down [7].

Presented here is an analysis of symptoms of the premenstrual syndrome among healthy paramedical workers and nurses, and the effect of '61-Points Relaxation' exercise upon the subjective feeling and premenstrual stress affecting physiological parameters.

Methods

Seventy five women from paramedical staff and nurses of reproductive age group volunteered for the study. Out of these, 50 clinically healthy subjects were shortlisted through a 'premenstrual syndrome questionnaire' [8].

Based on the presence or absence of symptoms of PMS, the subjects were divided into two groups

Group I: 30 Subjects having symptoms of PMS (PMS Group)

Group II: 20 subjects having no symptoms of PMS (Control Group)

Women with history of chronic illness like diabetes, hypertension, drug intake or surgery were excluded from the study. The experimental study protocol was explained to them and a detailed informed written consent was obtained from each subject. All the procedures except serum cortisol estimation were non-invasive and the study plan was approved by the Ethics Committee of the University.

Experimental Protocol

The subjects were asked to report 4 days prior to expected menstruation at 9 AM. Under standard clinical guidelines in supine posture, a baseline record of heart rate (HR; beats/min), non-invasive systolic blood pressure (SBP; mm Hg) and diastolic blood pressure (DBP; mm Hg) from the right arm were recorded using an automated sphygmomanometer (Panasonic Omron). An automated biofeedback apparatus (J & J Engineering) was used for recording respiratory parameters namely rhythm, pattern of breathing, abdominal dominance (Abdominal & Abdominothoracic) or thoracic dominance (Thoracoabdominal), depth of the respiration (mm); and pauses and sighs in breath. The electrodes of machine were attached to 2 belts worn

at the level of xiphisternum and naval. Baseline serum cortisol level also was quantitatively estimated on same day by direct competitive immunoenzymatic (Enzyme Linked Immuno Sorbent Assay) colorimetric method [9].

The subjects were then asked to report for 61-Point Relaxation (61-PR), 11 days before the due date for next menses. The training was done every day at the same time over a period of 1 week. The subjects lying in supine posture were individually guided by the investigator to systematically relax specified key points in the body through 61-PR. The 61 points relaxation exercise [8,10].

This was done in supine posture. The subjects were asked to follow the instructions given below:

- Lie down on the bed in a comfortable posture. Feet should be about a foot apart and palms should be facing up. Use a small pillow under the head if desired. Close your eyes.

- Observe the commands to relax over 8-10 minutes. Concentrate for about 10 seconds upon the narrated 61 points and imagine a cool, intense, sharp blue light over these points.

- As your awareness reaches the narrated point, the part will start relaxing. Relax each of these points over the narrated sequence.

- Now slowly become aware of the surroundings and gradually open the eyes.

- Keep on lying supine while the variables are being recorded.

On the last day of training all above parameters were re-recorded and blood samples were drawn immediately after training, for serum cortisol level estimation.

The recorded data was subjected to descriptive statistics, where the data was analyzed by One- way ANOVA and Tukey Post- hoc test through the multiple comparison tool of SPSS 17.0 for Windows evaluation Version and Student's t-test for independent samples for Delta% (inter-group comparison). P values were obtained by comparison of parameters of control and PMS group subjects, and statistical significance was assigned at P < 0.05.

Observations

Of the 50 subjects of study, 27 subjects were married and 23 unmarried nurses. The subjects belonged from lower middle socio-economic class, with age ranging from 26-35 years (mean 31+3.01) in PMS group and 25-32 years (mean 27+1.61) in the control group. The body weight and BMI of both the groups fell in the normal range (Table 2). The menstrual cycles were regular in 38 but irregular in 12. The duration of the menstrual flow ranged from 3-6 days (mean 4.2). Two subjects had a history of occasionally passing clots. There was no gross difference between the symptom presentation of married and unmarried women, or in symptom presentation in nulliparous or multiparous women (Table 1).

The baseline parameters namely HR (p = 0.000), SBP (p= 0.005), DBP (p= 0.000), Serum Cortisol (p = 0.000) in the PMS group were significantly higher than controls. After 1 week of 61-PR training the HR, SBP, DBP and the serum cortisol declined in both the study groups, but with a higher statistical significance in PMS group. Data were analyzed using repeated measures analysis of variance (Table 2).

A predominance of shallow thoracic breathing with more pauses and sighs seen in PMS subjects showed a tendency towards normalization in response to 61-PR After 1 week 61-PR, the mean depth of respiration (mm) in non-PMS group increased (p = 0.182) but in the PMS group increased with a high significance (p = 7.2×10^{-6}) which was analyzed using Student's t-test for independent samples for Delta% (inter-group comparison) (Table 3).

In repeat experiments with '61-Points Relaxation Exercise' for two to three cycles in a group of five subjects, the study yielded similar results as of the first session.

Discussion

PMS is a disease known since centuries, however, not fully understood until the recent past. This study was undertaken on working women of reproductive age, whose most frequent symptoms of PMS were heaviness of breast, lower abdominal pain, low back ache and irritability (Table 1). The symptoms of premenstrual syndrome as described in the previous research series corroborate with the symptoms found in the present study, but these paramedical workers may have had a high stress hormone level for years without being aware of being stressed [2,6,8]. Stress increases the levels of cortisol. When in excess, cortisol can stimulate feelings of irritability, anger and rage as also seen in this study [11-12].

Recent studies have shown that the working conditions of nurses and paramedical workers favor development of stress related disorders like PMS; so is seen in this study [3].

The basal parameters in the present study showed significantly high heart rate and blood pressure; abnormal patterns of respiration, and a rise in serum cortisol levels in women who suffer from PMS, hence indicating the presence of stress in them. On undergoing '61-PR, a statistically significant reduction in these parameters shows that the relaxation response reduces the abnormally high sympathetic tone,

Heaviness in breast	25 (87%)	Anxiety	12 (40%)	Constipation	8 (26%)
Lower abdominal pain	25 (79%)	Headache	11 (37%)	Greasy scalp	8 (26%)
Irritability	24 (83%)	Frequency of micturition	11 (37%)	Lack of sleep	7 (23%)
Low backache	20 (70%)	Social withdrawal	11 (37%)	Nausea and vomiting	7 (23%)
Vaginal discharge	16 (50%)	Weight gain	10 (33%)	Dizziness	4 (13%)
Vague body aches	12 (40%)	Bloating of abdomen	10 (33%)	Diarrhea	3 (10%)
Depression	12 (40%)	Muscle and joint pain	9 (30%)	Swelling in feet & hands	2 (6%)
Acne	12 (37%)	More sleep	9 (30%)	Peri-orbital swelling	1 (3%)
Restriction of activity			12 (40%)		

The baseline parameters namely HR (p = 0.000), SBP (p= 0.005), DBP (p= 0.000), Serum Cortisol (p = 0.000) in the PMS group were significantly higher than controls. After 1 week of 61-PR training the HR, SBP, DBP and the serum cortisol declined in both the study groups, but with a higher statistical significance in PMS group. Data were analyzed using repeated measures analysis of variance. (Table 2)

Table 1: Symptoms of PMS.

Parameters	Control		PMS	
	Pre-relaxation	Post-relaxation	Pre-relaxation	Post-relaxation
	(n=20)	(n=20)	(n=30)	(n=30)
Age	27±1.61	27±1.61	31±3.01	31±3.01
BW (Kg)	59.6±6.56	59.6±6.56	60.17±7.51	60.17±7.51
BMI (Kg/m^2)	23.04±3.20	23.04±3.20	24.02±3.32	24.02±3.32
HR (beats/min.)	82.06 $\pm$ 4.67	78.19 $+$ 5.53	90.61 $\pm$ 8.46[***,###]	81.58 $\pm$ 4.11[fff]
SBP (mm Hg)	115.95 $\pm$ 8.23	108.05 $\pm$ 11.85[µ]	122.5 $\pm$ 11.52[***,###]	114.53 $\pm$ 9.70[fff]
DBP (mm Hg)	81.53 $\pm$ 2.42	77.95 $\pm$ 3.57	85.53 $\pm$6.26[***,###]	78.46 $\pm$ 4.68[fff]
S. cortisol (ng /ml)	107.66 ± 34.26	87.85 ± 14.25[µµ]	169.29 $\pm$ 43.0[***,###]	99.08 ±27.07[##, fff]

Data presented are mean±SD. Analysis of data was done by one-way ANOVA and post-hoc by Tuky-Krammer test. The * depicts comparison with control pre-relaxation; the # depicts comparison with control post-relaxation, *f* depicts comparison of PMS pre-relaxation with post- relaxation, and the µ depicts comparison of Control pre-relaxation with post relaxation
µ $P < 0.05$, ##, µµ$P < 0.01$; ***,###,fff $P < 0.001$

Table 2: Age, anthropometric, cardiovascular and S. Corisol profile of different study group subjects.

Respiratory patterns before and after 61-points relaxation		Regularity (No of cases)		Type (No of cases)			Mean Depth (mm)	Pauses (No. of cases)	Sighs (No. of cases)
		Regular	Irregular	A	AT	TA			
Non-PMS	Pre-Relaxation	13	7	8	9	3	8.95	6	7
	Post-Relaxation	16	4	11	7	2	9.65***	5	1
PMS	Pre-Relaxation	7	23	7	7	16	7.76	18	21
	Post-Relaxation	22	8	19	10	1	11.5***	6	1

A= Abdominal respiration
AT= Abdominothoracic
TA = Thoracoabdominal
The values are expressed as means
*P < 0.05   **P < 0.01   ***P < 0.001
P values are comparisons between basal parameters and the effect of 61-PR on the parameters
(Automated Biofeedback Apparatus: J & J Engineering)

Table 3: Effect Of 61-PR On Pattern Of Respiration

thus reinforcing the observations of previous studies [7,12,13]. The statistically highly significant reduction in systolic and diastolic blood pressure in the women of PMS group shows that 61-PR can be used as an effective tool in treating the hypertension associated with stress disorders.

A key component of stress management is the assessment of breathing pattern. The breath is both a mirror of an individual's autonomic nervous system and a tool for its direct modulation. The basal breathing pattern in PMS group in the present study showed irregularity, thoracic dominance; and shallow breaths along with more pauses and sighs as compared to controls; indicating presence of stress. On 61-PR, the subjects of PMS group responded by showing a shift to abdominal breathing pattern and an increase in the depth of respiration (p = 7.2X10^{-6}); and the number of pauses and sighs also reduced, corroborating with other relaxation technique [14].

One of the first physiological effects of stress is a shift from abdominal dominant breathing to a thoracic and an irregular and uncoordinated breathing pattern. On the other hand, a shift from thoracic to abdominal dominance is seen in response to relaxation, bringing homeostasis to the autonomic nervous system.

Serum cortisol estimation is an efficient parameter to assess the degree of stress. Investigators monitoring hormonal stress responses in women with PMS have found cortisol imbalances as an offshoot of impaired stress regulation [15].

In response to the same stress, women in the second half of the menstrual cycle produce significantly more ACTH, vasopressin and glucose than in first half. In response to stress, corticotropin-releasing factor is secreted from the hypothalamus which acts on anterior pituitary to trigger release of ACTH. Once ACTH is released, it acts on the adrenal cortex to stimulate the synthesis of glucocorticoids [16].

In present study, the level of serum cortisol in PMS group is significantly higher than controls indicating that PMS is associated with stress. After 61-PR, a significant decrease in serum cortisol was observed in all subjects though in PMS group, reduction was statistically highly significant. These findings suggest that relaxation response over all decreases the HPA axis activity, much more so in the stress of PMS. These effects are attributed to a comprehensive change in the body physiology by altering parameters governed by autonomic nervous system.

The future studies involving 61-PR must take into cognizance the scarcity of available scientific studies and it would necessitate monitoring of other subtle enzyme assays indicating stress and its release.

Conclusion

61 PR is a deeply relaxing technique objectively and subjectively and is easy to be done by working women. It promotes an enhanced sense of well being in all recipients and repeated practice yields the same benefit each time. More is the severity of PMS; more effective is the relief with the relaxation response. Therefore, the 61-PR can be safely recommended as an adjuvant to medical therapy to these paramedical workers and nurses who suffer from PMS.

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