ORIGINAL RESEARCH PAPER

Volume-8 | Issue-6 | June-2019 | PRINT ISSN No. 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

EFFECT OF VESTIBULAR STIMULATION ON LIPID PROFILE IN PREMENSTRUAL SYNDROME.

Physiology

Ms. Neha Sara Benoy — Department of Physiology, Little Flower Institute of Medical Sciences and Research, Angamaly, Kerala, India.

Mrs. Mary Shalu Jose* — Head of the Department, Department of Physiology, Little Flower Institute of Medical Sciences and Research, Angamaly, Kerala, India. *Corresponding Author

Dr. J. K. Mukkadan — Research Director and Professor, Department of Physiology, Little Flower Institute of Medical Sciences and Research, Angamaly, Kerala, India.

ABSTRACT

The present study was undertaken to study the effect of vestibular stimulation on the lipid profile of women with premenstrual syndrome.PMS a common problem faced by the women in the reproductive age was found to affect the lipid profile. Studies have shown that total cholesterol and triglyceride level is increased and HDL level is decreased in women with PMS when compared to women without PMS. In this study a total of 30 women with PMS were selected using PMS questionnaire and was given vestibular stimulation for 2 months. Lipid profile was estimated before and after vestibular stimulation. The study showed that there is a significant decrease in the total serum cholesterol level. A decrease in the LDL and Triglyceride level and an increase in the HDL level were also found although it is insignificant.

KEYWORDS

vestibular stimulation, premenstrual syndrome, total cholesterol, HDL, LDL, Triglycerides.

INTRODUCTION

Pre Menstrual Syndrome (PMS) has become a common problem faced by approximately 30% - 40% of the women in reproductive age[1,2]. It is characterized by recurrent, moderate to severe affective, physical and behavioral symptoms like weight gain, breast tenderness, swelling, aches and pains, lack of concentration, sleep disturbance, and changes in eating pattern and thus causes severe dysfunction in social and occupational realms[1]. Even though the cause of PMS is unclear, several theories suggest that it is due to the increased sensitivity to normal hormonal changes and neurotransmitter abnormalities[2]. .Lipid profile is affected in females with PMS. Total cholesterol level and Triglyceride level in females with PMS is increased whereas High Density Lipoprotien level is decreased in women with PMS[3,4]. Unlike medications, vestibular stimulation are easy to exercise and can be incorporated into the daily life[5]. There are many benefits of vestibular stimulation which includes decreased self stimulation, decreased hypersensitivity, increased postural security, increased concentration and attentiveness, increased balance, increased body awareness, calming effects, reduction of abnormal muscle tone at slow speeds and increased alertness at high speeds[6].

METHODS AND MATERIALS

The study was conducted at Department of Physiology, Little Flower Institute of Medical Science and Research, Angamaly, Kerala. The present study was approved by institutional ethical committee of Little Flower Hospital and Research Centre, Angamaly, No EC 30 women with Pre Menstrual Syndrome was selected using PMS questionnaire among the students of LFMRC, Angamaly. The participants were recruited after obtaining written, voluntary informed consent. The participants will serve as self control.

Inclusion Criteria

1. Apparently healthy females with PMS with in age group of 18-30
2. Having regular menstrual cycles from 28 to 34 days
3. Willing participants.

Exclusion Criteria

1. Under medication including oral contraceptives
2. Following any other stress management methods
3. Suffering with any major complications

Methods of Data Collection

The 30 participants selected using the PMS questionnaire will act as self control. After recording the baseline values, vestibular stimulation was administered for 2 months and post intervention values was recorded.

Vestibular stimulation: Vestibular stimulation was administered by making the participants to swing on a swing in back to front direction (according to their comfort) for 2 minutes as standardized by previous methods[7,8].

The following Parameters were used to assess the efficacy of Vestibular stimulation.

1. Total Cholesterol
   - was estimated by cholesterol oxidase-phenol + aminophenazone (CHOD PAP) method
2. Triglycerides
   - estimated by glycerol- 3-phosphate oxidase-phenol + aminophenazone (GPO-PAP) method
3. HDL and LDL
   - Estimated by precipitation method.

Statistical Analysis

Data was entered in excel and was analyzed by SPSS 20.0 Version. Data was analyzed by using paired t test. $P<0.05$ was considered as significant.

RESULT

Table 1: t-test to compare pre-test and post-test of Total Cholesterol

Test	Mean	S.D.	n	Mean difference	T	df	Significance (p-value)
Pre-test	189.17	20.58	30	2.27	3.95	29	0.01
Post-test	186.9	19.92					

The mean column in the t test table displays the average total cholesterol in the pre-test and post-test (189.17 & 186.9). The standard deviation column displays the standard deviation of total cholesterol in the pre-test and post-test. Mean difference 2.27 is the difference between mean pre-test and post-test. Since the significance (p-value) is less than 0.05, there is significant change in the total cholesterol in the post-test.

Graph 1: Comparison of the pre-test and post-test Total Cholesterol

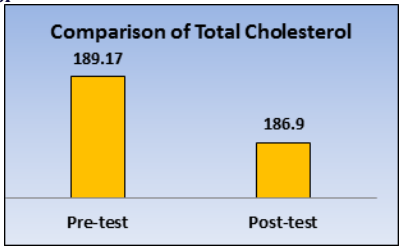


Table 2: t-test to compare pre-test and post-test of HDL

Test	Mean	S.D.	n	Mean difference	t	df	Significance (p-value)
Pre-test	58.83	6.1	30	0.64	2.003	29	0.055
Post-test	59.47	6.6					

The mean column in the t test table displays the average HDL in the pre-test and post-test (58.83 & 59.47). The standard deviation column displays the standard deviation of HDL in the pre-test and post-test. Mean difference 0.64 is the difference between mean pre-test and post-test. Since the significance (p-value) is greater than 0.05, there is no significant change in the HDL in the post-test.

Graph 2: Comparison of the pre-test and post-test of HDL

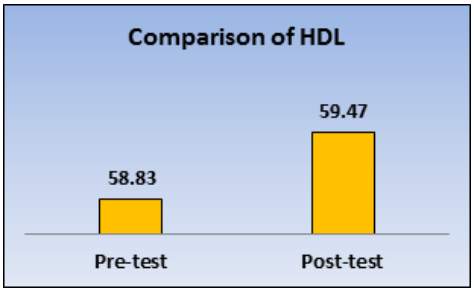


Table 3: t-test to compare pre-test and post-test of LDL

Test	Mean	S.D.	n	Mean difference	t	df	Significance (p-value)
Pre-test	113.1	14.9	30	0.3	0.96	29	0.343
Post-test	112.8	14.4					

The mean column in the t test table displays the average LDL in the pre-test and post-test (113.1 & 112.8). The standard deviation column displays the standard deviation of LDL in the pre-test and post-test. Mean difference 0.3 is the difference between mean pre-test and post-test. Since the significance (p-value) is greater than 0.05, there is no significant change in the LDL in the post-test.

Graph 3: Comparison of the pre-test and post-test of LDL

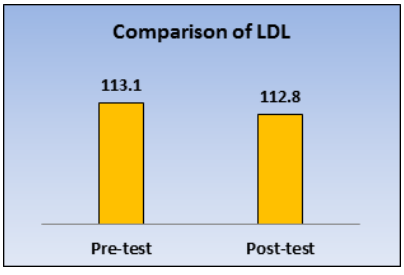
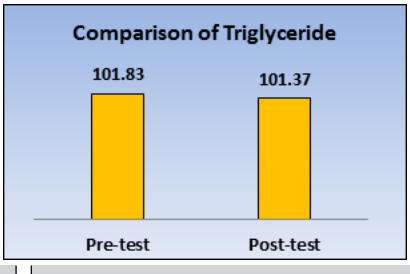


Table 4: t-test to compare pre-test post-test of Triglyceride

Test	Mean	S.D.	n	Mean difference	t	df	Significance (p-value)
Pre-test	101.83	22.7	30	0.46	1.54	29	0.133
Post-test	101.37	22.7					

The mean column in the t test table displays the average Triglyceride in the pre-test and post-test (101.83 & 101.37). The standard deviation column displays the standard deviation of Triglyceride in the pre-test and post-test. Mean difference 0.46 is the difference between mean pre-test and post-test. Since the significance (p-value) is greater than 0.05, there is no significant change in the Triglyceride in the post-test.

Graph 4: Comparison of the pre-test and post-test Triglyceride



DISCUSSION

The present study was undertaken to evaluate the effect of vestibular stimulation on the lipid profile in women with PMS. It shows that there is significant decrease in the total cholesterol level after vestibular stimulation is given (p=0.01). It also shows that LDL and Triglycerides level decreases whereas HDL level is increased, but the changes are insignificant.

Studies have shown that 58% of females have PMS occasionally whereas 42 % have frequent PMS. In India 20% of the female population shows PMS of which 8% have severe symptoms. There are also reports showing suicide intentions in about 10% of the females.[9]

Vestibular stimulation was found to be effective in relieving stress and symptoms of PMS. Earlier studies have also shown that vestibular stimulation can regulate food intake and taste aversion.[10]

Cheng SH et al (2013) in their study "Factors associated with premenstrual syndrome - a survey of new female university students" proved that serum cholesterol level is higher in women with PMS than women without PMS.[11] Higher Triglyceride level (p=0.006) and lower HDL level(p=0.04) were found in women with PMS in the study "Comparison of Metabolic and Hormonal Profiles of Women With and Without Premenstrual Syndrome: A Community Based Cross-Sectional Study" conducted by Somayeh Hashemi et al.(2016). A slight reduction in the LDL levels and serum cholesterol level was also found in the study, although it is insignificant.[3] Previous studies on animals, used caloric vestibular stimulation on an animal model of hyperlipidemia and was found that there was a significant decrease in total cholesterol and triglycerides and also a significant decrease in the HDL and LDL levels.[12] So far no studies on humans have shown the effect of vestibular stimulation on lipid profile in women with PMS.

CONCLUSION

Vestibular stimulation was found to be effective in relieving stress and also in relieving symptoms of PMS. In the present study it was found that there is a significant decrease in the total cholesterol level followed by vestibular stimulation. A slight increase in the HDL level and a slight decrease in the LDL and Triglyceride level were also found, although it was not significant. We recommend further detailed studies in this area for a better understanding of vestibular influence on lipid profile to develop a simple, novel alternative therapy for the management of metabolic disorders.

REFERENCES

1. Johny M, Kumar SS, Rajagopalan A, Mukkadan JK. Vestibular stimulation for management of premenstrual syndrome. J Nat Sc Bio and Med. 2017; 8: 82-86.
2. Ryu A, Kim T H. Premenstrual syndrome: A mini review. Maturitus. 2015; 82(4):436-40.
3. Hashemi S, Ramezani Tehrani F, Mohammadi N et al. Comparison of Metabolic and Hormonal Profiles of Women With and Without Premenstrual Syndrome: A Community Based Cross-Sectional Study. Int J Endocrinol Metab. 2016; 14(2):e28422.
4. Hsiao MC, Liu CY, Hsu SC, Hsiao CC, Lin YH, Hsieh TT. Elevated serum cholesterol levels in women with premenstrual dysphoric disorder. Int J Psychiatry Med. 2011; 42(1): 85-92.
5. Mukkadan JK, Kumar Sai Sailesh, Archana R, Josena Jose, Udaya Kumar. Reddy. Effect of different types of vestibular exercises on blood pressure in healthy females.World Journal of Pharmaceutical Sciences. 2016; 4(4): 162-165.
6. Kumar Sai Sailesh, Mukkadan J K. Can controlled vestibula stimulation reduce Stress? Health Sciences. 2013; 2(3): 1-13.
7. Sailesh KS, Mukkadan JK. Controlled Vestibular Stimulation, Standardization Of A Physiological Method To Release Stress In College Students. Indian J. Physiol Pharmacol. 2015 Oct-Dec; 59(4):436-41.
8. Kumar Sai Sailesh , Archana R, Mukkadan J K. Controlled vestibular stimulation: A Physiological Method of Stress Relief. J.Clin Diagn Res.2014; 8(12): BM01 – BM02.
9. Shruti Brahmbhatt B.M, Sattigeri, Heena Shah, Ashok Kumar, Devang Parikh, A prospective survey study on premenstrual syndrome in young and middle aged women with an emphasis on its management, Int J Res Med Sci, 1 (2), 2013, 69-72.
10. Brozek G. Electrophysiological analysis of conditioned taste aversion in rats. Acta Neurobiol Exp (Wars) 1982; 42:29-41.
11. Shu-Hui Cheng ,Chi-Chen Shih , Yen-Kuang Yang etal. Factors associated with premenstrual syndrome — A survey of new female university students. Kaohsiung J Med Sci. 2013 Feb; 29(2):100-5.
12. Sadanandan NN, Archana R, Sailesh KS, Antony NJ. Antihyperlipidemic effect of vestibular stimulation in wistar albino rats. Int J Res Ayurveda Pharm 2015;6:509-12.