UDC 618.17+57.048

Psychological and stress backgrounds of forming of premenstrual syndrome

L.V. Pakharenko
SHEE «Ivano-Frankivsk National Medical University»

The objective: **of this study was to assess the type of temperament and stress load in women with premenstrual syndrome (PMS).**
***Materials and methods*. The research included 200 women with diagnosis of PMS who formed basic group. The control group consisted of 50 women without PMS. The type of temperament was determined by Eysenck's Personality Inventory test. Level of psychoemotional stress was assessed by L. Reeder's scale.**
***Results*. Sanguines predominated among healthy individuals. While among patients with PMS more than a third part was melancholic (χ^2=10.01; p=0.002) and choleric persons (χ^2=4.19; p=0.04) both, number of sanguines was in 3.20 times less compared to healthy persons (χ^2=29.44; p<0.001). The score of neuroticism in women in basic group was significantly higher on 17.03% compared to controls (p=0.002). The highest rate was found in patients with the severe course of the disease – on 27.50% (p<0.001). The average score of psychoemotional stress in women in control group was on 10.81% higher (p=0.01) than in patients in basic one. That is mean the greater level of stress in individuals with PMS.**
***Conclusion*. The following types of temperament as melancholic and choleric predominate among women with PMS (p<0.05). The level of neuroticism is significantly increased in patients with PMS (p=0.002). High level of psycho-emotional stress, which correlated with the severity of the disease is typical for this pathology (p<0.05). The greatest indicators of stress factor were found in patients with neuropsychical, cephalic and crisis forms of PMS.**
Key words: *premenstrual syndrome, temperament, stress level.*

Today the psychopathological component of any disease is not only a fashionable and modern attempt to study the genesis of the pathology, but also it is the necessity that dictates the approach of treatment taking into account individual characteristics and psychological type of the person. Of particular importance in today's conditions is the increase of women's activity in society due to excessive social, professional stressful work, which requires greater forces, rapid reaction, psychological adaptation, etc. It is known that psychological symptomatology is one of the main components of the premenstrual syndrome (PMS) manifestations [4-8]. In addition to the medical risk factors for PMS formation special urgency and social preconditions such as stressful situations, living in large cities, intellectual activity become very actual. Therefore, a differential approach to certain properties of the temperament peculiarities of patients with PMS and their stress load are necessary to be studied and included in management of disease.

The objective: of this study was to assess the type of temperament and stress load in women with PMS.

MATERIALS AND METHODS

The research included 200 women with diagnosis of PMS who formed basic group. The control group consisted of 50 women without PMS. Verification of diagnosis was performed in accordance with Order № 676 of Ministry of Health of Ukraine from 31.12.2004 [2]. The diagnosis of PMS was exhibited by the presence of cyclical manifestations of disease in the luteal phase of menstrual cycle on the basis of history taking and keeping patient's self-observation diary for 2–3 menstrual cycles (R. Moos' Menstrual Distress Questionnaire). Mild PMS was diagnosed by the appearance of 3–4 symptoms in 2–10 days before menstruation with significant severity 1–2 of them, severe PMS – the presence of 5–12 symptoms in 3–14 days before menstruation, 3–4 of them are most pronounced. The form of PMS (edematous, neuropsychical, cephalic, crisis) was determined according to V.P. Smetnik's classification [3]. The clinical study was conducted on the basis of Ivano-Frankivsk Clinical Maternity Hospital.

Inclusion criteria: reproductive age (18–44 years), regular menstrual cycles, the presence of PMS, written consent of the patient. Exclusion criteria: pregnancy, lactation, disorders of menstrual cycle, focal lesions of breast, abnormal uterine bleeding of unknown etiology, acute inflammatory processes in pelvic organs, tumors of uterus and ovaries of unknown etiology, endometrial hyperplasia, genital endometriosis, severe somatic pathology in the history, organic pathology of central nervous system, mental illness, hormonal tumors, diabetes mellitus, adrenal diseases, thyroid pathology, malignant tumors in the present or in anamnesis, premenstrual dysphoric disorder, women who took psychotropic medications or hormonal therapy within the last three months.

To determine the type of temperament we used Eysenck's Personality Inventory test (EPI), which identified such types of personality as melancholic, choleric, phlegmatic and sanguine. The author used extraversion-introversion and neuroticism as indicators of the basic properties of the personality. Level of psychoemotional stress was assessed by L. Reeder's scale, which women filled in the luteal phase of the menstrual cycle. The scale consists of 7 questions, the answers to which were estimated from 0 to 4 points. A high level of psychoemotional stress was estimated by average score 1.00–1.99 points, middle level – 2.00–2.99 and low one – 3.00 points or more.

Program Statistica 6.0 was used for statistical analysis. We calculated nonparametric Mann-Whitney criterion for comparing two independent samples and criterion χ^2. The difference between the values that were compared was considered reliable at p<0.05.

RESULTS AND THEIR DISCUSSION

In basic group 72 patients had neuropsychical form of PMS, 70 persons – edematous form, 33 – cephalic and 25 – crisis one. Mild PMS was diagnosed in 119 persons, severe – in 81. The average age of women in control group was 28.82±0.76 years, in basic one – 30.13±0.36 years (p=0.08). We did not find a significant difference in the place of residence of the examined women. 6 (12.00%) controls lived in rural areas, 44 (88.00%) – in the city. A similar trend was observed in the basic group, in which these figures were 27 (13.50%) and 173 (86.50%) individuals respectively.

Table 1

Types of temperament in the examined women (abs.,%)

Groups	Melancholic	Choleric	Phlegmatic	Sanguine
Control group, n=50	5 (10.00)	10 (20.00)	7 (14.00)	28 (56.00)
Basic group, n=200	68 (34.00)*	73 (36.50)*	24 (12.00)	35 (17.50)*
Edematous form of PMS, n=70	20 (28.57)*	26 (37.14)	9 (12.86)	15 (21.43)*
Neuropsychical form of PMS, n=72	27 (37.50)*	25 (34.72)	7 (9.72)	13 (18.06)*
Cephalic form of PMS, n=33	13 (39.40)*	11 (33.33)	5 (15.15%)	4 (12.12)*
Crisis form of PMS, n=25	8 (32.00)*	11 (44.00)	3 (12.00)	3 (12.00) *

Note. * – probability of the difference of indicator relative to control group ($p<0.05$).

Table 2

Level of psycho-emotional stress in women by L. Reeder scale

Groups	Low (abs.,%)	Middle (abs.,%)	High (abs.,%)	Average score
Control group, n=50	22 (44,00)	20 (40,00)	8 (16,00)	2,59±0,10
Basic group, n=200	52 (26,00)*	82 (41,00)	66 (33,00)*	2,31±0,05*
Mild PMS, n=119	32 (26,89)*	52 (43,70)	35 (29,41)	2,35±0,06*
Severe PMS, n=81	20 (24,69)*	30 (37,04)	31 (38,27)*	2,25±0,08*
Edematous form of PMS, n=70	23 (32,86)	28 (40,00)	19 (27,14)	2,43±0,09
Neuropsychical form of PMS, n=72	17 (23,61)*	29 (40,28)	26 (36,11)*	2,27±0,08*
Cephalic form of PMS, n=33	6 (18,18)*	15 (45,46)	12 (36,36)	2,22±0,12*
Crisis form of PMS, n=25	6 (24,00)	10 (40,00)	9 (36,00)	2,19±0,11*

Note. * – probability of the difference of indicator relative to control group ($p<0.05$).

We have established some differences in rate of types of the temperament between women of control and basic groups (table 1). Thus, sanguines predominated among healthy individuals. Every fifth healthy woman was choleric, the smallest number among controls were melancholic and phlegmatic persons. While among patients with PMS more than a third part was melancholic (χ^2=10.01; p=0.002) and choleric (χ^2=4.19; p=0.04) both, number of sanguines was in 3.20 times less compared to healthy individuals (χ^2=29.44; p<0.001). We observed a similar tendency for women of all clinical forms of the disease – an increase in the rate of melancholic and choleric patients and the decrease in the quantity of sanguine individuals. Thus, the number of melancholics among women with different clinical groups of PMS was significantly higher in comparison with controls: with edematous form – in 2.86 times (χ^2=5.03; p=0.03), neuropsychical one – in 3.75 (χ^2=10.16; p=0.001), cephalic – in 3.94 (χ^2=8.46; p=0.008) and crisis form – in 3.20 (χ^2=4.20; p=0.04). Sanguine type of temperament was determined in patients with edematous form of PMS in 2.61 times less (χ^2=13.69; p<0.001) in relation to healthy individuals, with neuropsychical form – in 3.10 (χ^2=17.38; p<0.001), cephalic one – in 4.62 (χ^2=14.36; p<0.001), crisis – 4.67 times (χ^2=11.55; p<0.001).

The score of neuroticism in women in basic group (12.85±0.27) was significantly higher on 17.03% compared to controls (10.98±0.56, p=0.002). This index in patients with mild PMS (11.92±0.33) did not differ significantly relative to healthy individuals, as well as in persons with edematous form (12.43±0.49). A moderate increase of this indicator was found in women with neuropsychical and crisis PMS – on 20.67% (13.25±0.46, p=0.002) and 19.85% (13.16±0.64, p=0.008) respectively. The highest rate was found in patients with the severe course of the disease – on 27.50% (14.00±0.42, p<0.001).

The results of L. Reeder' scale demonstrated that persons with PMS have significantly higher levels of psycho-emotional stress than healthy individuals (table 2). Approximately the equal number of controls had low and middle psycho-emotional stress levels (44.00% and 40.00% respectively), while the high level of stress was noted in 2.50–2.75 times less quantity of persons (16.00%). In patients in basic group we have established another distribution of the level of psychoemotional stress – reduce amount of women with low level and the increase of the frequency with high level.

Number of controls with high level of psychoemotional stress was in 2.06 times less than persons in basic group (χ^2=4.76; p=0.03). In patients with mild PMS high level of psychoemotional stress was established in 1.84 times more often relative to healthy individuals, with severe form – in 2.39 times (χ^2=6,31; p=0.01). A similar trend in distribution of women towards an increase number with high level of stress and decrease quantity with low level was established in all clinical groups of PMS. The rate of patients with middle level of psychoemotional stress in these groups was similar to control one. A significant difference in 2.26 times greater (χ^2=4.98; p=0.03) in the quantity of individuals with high level of psychoemotional stress relative to healthy persons was found among patients with neuropsychical form. It should be noted that in women with edematous PMS these indices did not reach statistical significance.

According to the results of our research, the average score of psychoemotional stress in women in control group was on 10.81% higher (p=0.01) than in patients in basic one (table 2). That is mean the greater level of stress in individuals with PMS. In women with mild form of the disease this indicator was on 9.27% less compared to the indicator of healthy individuals (p=0.04), with severe form – on 13.13% (p=0.01). In persons with edematous form the average score of stress did not differ statistically from the score of controls. However, patients with other clinical forms of PMS (neuropsychical, cephalic and crisis ones) were characterized by the significant decrease of this index relative to healthy individuals. In individuals with neuropsychical PMS it consisted of 87.64% (p=0.02) of the index of healthy women, cephalic one – 85.71% (p=0.02). People with a crisis form of PMS have a low average score of stress – 84.56% (p=0.02) of the control one.

Thus, the results of our research suggest that for the majority of women with PMS (two thirds) typical types of temperament are choleric and melancholic (p<0.05). These dimensions are characterized by such features as touchiness, anxiety, sensibility,

impulsivity, activity, and frequent mood changes, anxiety, prudence, closeness, pessimism, and others. While among healthy women more than half were sanguines ($p<0.001$), which are characterized by fun, friendliness, serenity, sociability and so on. Therefore, respectively, the level of neuroticism in patients with PMS was significantly higher than in healthy persons ($p=0.002$), although no significant difference was observed in women with mild and edematous forms compared to controls.

The stress factor, both acute and chronic forms, accompanies the daily functioning of a modern woman. Premenstrual disorders as «stress-induced pathology» were studies by I.B. Ventskivska. The scientist considers the hormonal imbalance accompanying PMS as changes in estrogen and progesterone in the luteal phase of the menstrual cycle on the background of activation of the sympathoadrenal system as a manifestation of stress and the adaptive mechanism for the activity of the pathological factor [1].

CONCLUSIONS

Thus, the following types of temperament as melancholic ($\chi^2=10.01$; $p=0.002$) and choleric ($\chi^2=4.19$; $p=0.04$) predominate among women with PMS. And quantity of sanguines was in 3.20 times less than among healthy women ($\chi^2=29.44$; $p<0.001$). The level of neuroticism is significantly increased in patients with PMS ($p=0.002$). High level of psycho-emotional stress, which correlates with the severity of the disease is typical for women with PMS ($p<0.05$). The greatest indicators of stress factor were found in patients with neuropsychical, cephalic and crisis forms of disease. Edematous form of PMS was not associated with a significant increase in this indicator. These results are important for understanding the clinical features of PMS for the diagnosis of the complex of symptoms «psychopathological disorders» and for subsequent appropriate therapeutic measures.

Психологические и стрессовые предпосылки формирования предменструального синдрома

Л.В. Пахаренко

Цель исследования: оценка типа темперамента и уровня стресса у женщин с предменструальным синдромом (ПМС).
Материалы и методы. Двести женщин с диагнозом ПМС вошли в основную группу. В контрольную группу включены 50 женщин без ПМС. Тип темперамента определяли с помощью личностного опросника Г. Айзенка. Уровень психоэмоционального стресса оценивали по шкале Л. Ридера.
Результаты. Среди здоровых женщин преобладали сангвиники. В то время как среди пациенток с ПМС зафиксировано по одной трети меланхоликов ($\chi^2=10,01$; $p=0,002$) и холериков ($\chi^2=4,19$; $p=0,04$), а количество сангвиников было в 3,20 раза меньше по сравнению с контролем ($\chi^2=29,44$; $p<0,001$). Показатель нейротизма среди женщин в основной группе был значительно выше – на 17,03% по сравнению со здоровыми лицами ($p=0,002$). Наиболее высокий его уровень определен у пациентов с тяжелым течением заболевания – на 27,50% ($p<0,001$) выше контроля. Средний бал психоэмоционального стресса у здоровых женщин был на 10,81% выше ($p=0,01$), чем у пациентов в основной группе. Это означает более высокий уровень стресса у лиц с ПМС.
Заключение. Среди больных с ПМС преобладают такие типы темперамента, как меланхолик и холерик ($p<0,05$). Уровень нейротизма значительно повышен у лиц с ПМС ($p=0,002$). Высокий уровень психоэмоционального стресса, который коррелирует с тяжестью заболевания, также характерен для данной патологии ($p<0,05$). Наиболее высокие показатели стрессового фактора были обнаружены у пациенток с нейропсихической, цефалгической и кризовой формами ПМС.
Ключевые слова: *предменструальный синдром, темперамент, уровень стресса.*

Психологічні та стресові передумови формування передменструального синдрому

Л.В. Пахаренко

Мета дослідження: оцінювання типу темпераменту та рівня стресу у жінок з передменструальним синдромом (ПМС).
Матеріали та методи. Двісті жінок з діагнозом ПМС увійшли до основної групи. У контрольну групу включено 50 жінок без ПМС. Тип темпераменту визначали за допомогою особистісного опитувальника Г. Айзенка. Рівень психоемоційного стресу оцінювали за шкалою Л. Рідера.
Результати. Серед здорових жінок переважали сангвініки. Тоді як серед пацієнток з ПМС зафіксували по одній третині меланхоліків ($\chi^2=10,01$; $p=0,002$) та холериків ($\chi^2=4,19$; $p=0,04$), а кількість сангвініків була у 3,20 разу меншою порівняно з контролем ($\chi^2=29,44$; $p<0,001$). Показник нейротизму серед жінок в основній групі був значно вище – на 17,03% порівняно зі здоровими особами ($p=0,002$). Найбільший його рівень встановлено у пацієнток з тяжким перебігом хвороби – на 27,50% ($p<0,001$) вище контролю. Середній бал психоемоційного стресу у здорових жінок був на 10,81% вищий ($p=0,01$), ніж в осіб основної групи. Це означає більш високий рівень стресу у хворих з ПМС.
Заключення. Серед жінок з ПМС переважають такі типи темпераменту, як меланхолік і холерик ($p<0,05$). Рівень нейротизму значно підвищений в осіб з ПМС ($p=0,002$). Високий рівень психоемоційного стресу, який корелює з тяжкістю захворювання, також характерний для даної патології ($p<0,05$). Найбільші показники стресового навантаження встановлено у пацієнток з нейропсихічною, цефалгічною та кризовою формами ПМС.

Ключові слова: *передменструальний синдром, темперамент, рівень стресу.*

Сведения об авторе

Пахаренко Людмила Владимировна – Кафедра акушерства и гинекологии Ивано-Франковского национального медицинского университета, 76018, г. Ивано-Франковск, ул. Галицкая, 2; тел.: (097) 430-69-21. *E-mail: ludapak@ukr.net*

LITERATURE

1. Венцківська І.Б. Функціональний стан гіпофізарно-овариальної системи у хворих з передменструальними розладами / І.Б. Венцківська // Репродуктивное здоровье женщины. – 2005. – № 4 (24). – С. 125–127.
2. Про затвердження клінічних протоколів з акушерської та гінекологічної допомоги [Електронний ресурс]: наказ М-ва охорони здоров'я України № 676 від 31.12.2004 р. – Режим доступу : URL : http://www.moz.gov.ua/ua/portal/ dn_20041231_676.html. – Назва з екрана.
3. Сметник В.П. Неоперативная гинекология: Руководство для врачей. Книга 1 / В.П. Сметник, Л.Г. Тумилович. – СПб.: СОТИС, 1995. – С. 129–138.
4. Abnormal Spontaneous Brain Activity in Women with Premenstrual Syndrome Revealed by Regional Homogeneity / Liao H., Pang Y., Liu P. [et al.] // Front. Hum. Neurosci. – 2017. – Vol. 11. – Art. No 62. doi: 10.3389/fnhum.2017.00062.
5. Affective temperaments and emotional traits are associated with a positive screening for premenstrual dysphoric disorder / Câmara R.A., Köhler C.A., Maes M. [et al.] // Compr. Psychiatry. – 2016. – Vol. 71. – P. 33–38. doi: 10.1016/j.comppsych.2016.08.008.
6. Cortical and subcortical changes in patients with premenstrual syndrome / Liu P., Wei Y., Fan Y. [et al.] // J. Affect. Disord. – 2018. – Vol. 235. – P. 191–197. doi: 10.1016/j.jad.2018.04.046.
7. Larger volume and different functional connectivity of the amygdala in women with premenstrual syndrome / Deng D., Pang Y., Duan G. [et al.] // Eur. Radiol. – 2018. – Vol. 28, N 5. – P. 1900–1908. doi: 10.1007/s00330-017-5206-0.
8. Sex Hormones and Processing of Facial Expressions of Emotion: A Systematic Literature Review / Osório F.L., de Paula Cassis J.M., Machado de Sousa J.P. [et al.] // Front. Psychol. – 2018. – Vol. 11, N 9. – Art. No 529. doi: 10.3389/fpsyg.2018.00529.

Статья поступила в редакцию 06.07.2018