CLINICAL CHARACTERISTICS OF PREMENSTRUAL PAINS

Dobrokhotova YuE[1], Friptu VG[2], Grishin II[1], Saprykina LV[1], Mazur IA[1,2,3] ✉

[1] Department of Obstetrics and Gynecology, Faculty of General Medicine,
Pirogov Russian National Research Medical University, Moscow, Russia

[2] Department of Obstetrics and Gynecology,
Nicolae Testemiţanu State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

[3] Medsi Group, Moscow, Russia

Premenstrual syndrome (PMS) profoundly affects a woman's quality of life, causing physical and emotional distress. This study aimed to describe premenstrual pains in reproductive-age women (18–45 years). The main group included 136 women with moderate and severe PMS; the control group consisted of 136 healthy females with only sporadic premenstrual symptoms. We encouraged the participants to rate their symptoms using the menstrual distress questionnaire by Rudolf H. Moos and to keep a symptom diary over the course of 3 menstrual cycles. We also used the visual analogue scale, which allows estimating pain intensity. In the main groups the participants scored an average of 47.14 ± 3.67 total points on the distress questionnaire (moderate PMS), whereas the controls scored 10.28 ± 1.94 points (mild PMS) ($p < 0.05$). Among the most typical premenstrual symptoms observed in the main group and the controls were: headaches (66.17 % vs. 22.79 %, respectively; $p < 0.001$); breast tenderness/pain (83.08 % vs. 49.26 %, respectively; $p < 0.001$); pelvic pain (70.58 % vs. 35.29 %, respectively; $p < 0.001$); bloatedness/stomach ache (64.7 % vs. 25.73 %, respectively; $p < 0.001$), and muscle/joint pain (51.47 % vs. 21.32 %, respectively; $p < 0.001$). The average number of premenstrual symptoms observed in the main group was 5.62 ± 0.92, of which 2.47 ± 0.68 represented intense pains determining PMS severity. The results of our study suggest that premenstrual symptoms should be monitored prospectively over at least 2 consecutive menstrual cycles using a diary, because retrospective data are unreliable.

Keywords: menses, premenstrual syndrome, premenstrual symptom, pain, pain symptome, menstrual distress questionnaire, symptom diary

✉ **Correspondence should be addressed:** Inna Mazur
ul. Yuzhnaya 14, kv.181, Drozhzhino, Leninsky district, Moscow region, 142718; mazur_ina@mail.ru

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КЛИНИЧЕСКИЕ ОСОБЕННОСТИ БОЛЕВЫХ СИМПТОМОВ ПРИ ПРЕДМЕНСТРУАЛЬНОМ СИНДРОМЕ

Ю. Э. Доброхотова[1], В. Г. Фрипту[2], И. И. Гришин[1], Л. В.Сапрыкина[1], И. А. Мазур[1,2,3] ✉

[1] Кафедра акушерства и гинекологии, лечебный факультет,
Российский национальный исследовательский медицинский университет имени Н. И. Пирогова, Москва

[2] Кафедра акушерства и гинекологии,
Государственный университет медицины и фармации имени Н. Тестемицану, Кишенев, Молодова

[3] ГК «Медси», Москва

Предменструальный синдром (ПМС) — патология, которая может значительно ухудшать качество жизни женщины, влияя на ее физическое и эмоциональное состояние. Целью исследования являлось определение особенностей болевых проявлений при ПМС у женщин репродуктивного возраста (18–45 лет). В основную группу включили 136 женщин с ПМС средней/тяжелой степени, в контрольную — 136 здоровых женщин с единичными предменструальными симптомами. Для оценки болевых проявлений использовали Менструальный дистресс-опросник Рудольфа Муса, менструальный дневник (в течение 3 последовательных циклов) и визуальную аналоговую шкалу (позволяет оценить интенсивность болей). Средняя общая оценка по дистресс-опроснику в основной группе составила 47,14 ± 3,67 балла (ПМС средней тяжести), а в контрольной — 10,28 ± 1,94 балла (ПМС легкой степени) ($p < 0,05$). Среди болевых предменструальных симптомов встречались: головные боли — в 66,17 % случаев в основной группе и в 22,79 % случаев в контрольной группе ($p < 0,001$); тяжесть/боль в молочных железах — в 83,08 % и 49,26 % случаев ($p < 0,001$); тазовые боли — в 70,58 % и 35,29 % случаев ($p < 0,001$); вздутие/боли в животе — в 64,7 % и 25,73 % случаев ($p < 0,001$); боли в мышцах и суставах — в 51,47 % и 21,32 % случаев соответственно ($p < 0,001$). В среднем в основной группе у пациенток отмечали 5,62 ± 0,92 предменструальных симптома, из них 2,47 ± 0,68 были болевыми выраженной интенсивности, определяя степень тяжести ПМС. Полученные результаты указывают на то, что симптомы ПМС следует подтверждать проспективными ежедневными оценками в течение не менее 2 последовательных циклов, т. к. ретроспективный анамнез не является достаточно надежным.

Ключевые слова: менструация, предменструальный синдром, предменструальный симптом, боль, болевой симптом, менструальный дистресс-опросник, менструальный дневник

✉ **Для корреспонденции:** Мазур Инна Александровна
ул. Южная, д. 14, кв. 181, д. Дрожжино, Ленинский р-н, Московская область, 142718; mazur_ina@mail.ru

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Premenstrual syndrome (PMS) is a pathology associated with the menstrual cycle. PMS adversely affects the physical and emotional state of women of childbearing age; there is a variety of related somatic and psychoemotional symptoms that express during the luteal phase of menstrual cycle and disappear when menstruation begins [1].

Russian researchers identify four forms of PMS: neuropsychiatric, cephalic, edematous and crisis. Manifestations of the neuropsychiatric form include irritability, depression, weakness, aggression; those of the edematous form are severity and pain in mammary glands, edema of upper and lower extremities and face, flatulence, abdominal pain, sweating; manifestations of the cephalic form are severe headache, nausea, vomiting, depression, chest pain, sweating; and the crisis form calls forth sympathetic attacks (hypertension, chest pain, tachycardia) that occur in the evening or night and can be triggered by stress, overstrain. Besides, there are atypical forms of PMS: vegetative-ovarian cardiomyopathy, hyperthermia, ophthalmoplegia, cyclic allergic reactions [2].

In Europe, one of the most popular PMS classifications is that developed by the Royal College of Obstetricians and Gynecologists (UK). According to this classification, PMS is a combination of neuropsychiatric and somatic symptoms. Domination of some of these symptoms allows identifying neuropsychiatric, somatic and mixed forms of premenstrual syndrome [3].

Many researchers believe that pain always accompanies PMS, and that pain affects women from both clinical and social viewpoints: it determines severity of the syndrome, their psycho-emotional and general state, influences their behavior in the family and at work, decreases their working efficiency [4]. Pain syndromes most often associated with PMS include: headache (migraine) — 50–86 % of cases, mastalgia — 85–96 %, pelvic pains and abdominal pains — 63–80 %, joints and heart pain — 15–17 % [5].

Besides clinical forms of PMS, there are 3 degrees of its severity: mild, moderate and severe. Mild degree of PMS means there are 1–4 low intensity symptoms manifesting that require no treatment; moderate/severe degrees cause manifestation of a number of pain symptoms accompanied by vegetative and affective symptoms (5 to 12 of them), quite noticeable and significantly worsening the woman's condition and requiring treatment [6].

This study aims to identify clinical characteristics of pain associated with PMS in women of reproductive age.

METHODS

The study was conducted in 2010–2013. 272 women took part in it: 136 of them suffered from moderate to severe PMS (treatment group) 136 more experienced PMS only occasionally (control group). The inclusion criteria were reproductive age (18–45 years old), regular menstrual cycle (25–35 days, 3–7 days of menstruation), no combined oral contraceptives taken, no pregnancy or breastfeeding, no organic pathologies of reproductive and/or nervous systems, no mental illnesses.

Diagnostic criteria accepted by the international medical community were applied to diagnose PMS [3, 6, 7]. Outpatient records, personal questionnaires (age, social status, anamnesis, the nature of menstrual function, reproductive function indicators) and special questionnaires allowed assessing clinical characteristics of pain symptoms and medical and social particularities of participants of the study.

The researchers make extensive use of the Menstrual Distress Questionnaire (MDQ, R. Moos) [8] that consists of 8 clusters uniting 47 symptoms. The symptoms listed in this questionnaire reveal the clinical picture and allow determining dominant premenstrual symptoms (vegetative, endocrine and emotional). The participants filled the questionnaire during the luteal phase of their cycles, when the symptoms' manifestations were maximal.

They kept menstrual diaries for 3 consecutive menstrual cycles; notes contained therein allowed assessing clinical nature and timing of the symptoms' manifestations.

The intensity of pain was assessed with the help of the visual analogue scale (VAS) [9]: 0 points — no pain, 1–3 — mild pain, 4–6 — moderate pain, 7–9 — intense pain, 10 points — very severe pain.

Clinical examination included general and gynecological examination and ultrasound examination of pelvic organs and mammary glands. Additionally, the researchers conducted oncocytological examination of cervix and microscopic examination of vaginal discharge. The above studies aimed to reveal the state of reproductive system organs and find organic pathologies of that system, if any, that could stimulate development or magnification of premenstrual symptoms.

Statistica 7.0 (StatSoft, USA) software was used for statistical processing of the data acquired. Average values were calculated for the indicators studied. Student t-test allowed determining reliability of differences seen between groups ($p < 0.05$).

The study got the approval of the Research Ethics Committee of the Nicolae Testemitanu State Medicine and Pharmacy University, Republic of Moldova (30.03.2009). All patients voluntarily signed the informed consent forms.

RESULTS

Patients in the study groups were comparable in age, physique, menstrual cycle parameters.

Table 1. Rudolph Moss's Menstrual Distress Questionnaire Scores

Cluster of symptoms	Treatment group (n = 136)	Control group (n = 136)	p-value
Pain	8.66 ± 1.43	2.12 ± 1.08	< 0.001
Concentration	6.25 ± 1.17	1.03 ± 0.65	< 0.001
Behavioral change	5.6 ± 1.32	0.78 ± 0.47	< 0.001
Autonomic reactions	4.39 ± 1.47	0.83 ± 0.48	< 0.05
Water retention	4.14 ± 1.11	0.96 ± 0.48	< 0.01
Negative affect	9.11 ± 1.71	1.59 ± 1.03	< 0.001
Arousal	3.87 ± 1.13	2.22 ± 0.98	> 0.05
Control	6.08 ± 1.64	1.0 ± 0.64	< 0.01
Total scores	47.14 ± 3.67	10.28 ± 1.94	< 0.001

No pathologies that could affect PMS symptoms were revealed through oncocytological examination of cervix, microscopic examination of vaginal discharge, ultrasound of pelvic organs and mammary glands.

Analyzing anamneses of the patients, we detected a number of gynecopathies that were equally distributed through the groups, i.e. there were no statistically significant differences in their occurrence there ($p > 0.05$). Inflammatory diseases of pelvic organs (treated earlier) were seen in 36.02 ± 4.11 % cases in the treatment group and 27.94 ± 3.84 % cases in the control group. Ovarian cysts, previously found and treated either conservatively or operatively, were found in 5.14 ± 1.89 and 8.08 ± 2.33 % cases, respectively; uterine fibroids — in 6.61 ± 2.13 and 4.41 ± 1.76 % cases. 7.35 ± 2.23 and 5.88 ± 2.01 % of patients in treatment group and control groups, respectively, underwent gynecologic surgeries (cystectomy, ectopic pregnancy, conservative myomectomy). The frequency of menstrual cycle irregularities (menorrhagia, oligomenorrhea) did not exceed 5 % in both groups.

Filling the Rudolph Moss's Menstrual Distress Questionnaire, patients from the treatment group scored higher than control group patients in all clusters except for the Arousal cluster (Table 1). The average treatment group's score was 47.14 ± 3.67 points, which describes their PMS as moderate (22–51 points). That in the control group was 10.28 ± 1.94 points, i. e. they only suffered from mild PMS (4–21 points).

PMS pains and their reported occurrence were as follows: headaches — 66.17 % of patients in treatment group, 22.79 % of patients in the control group ($p < 0.001$); severity and pain in mammary glands — in 83.08 % and 49.26 % of patients, respectively, ($p < 0.001$); pelvic pains — in 70.58 % and 35.29 % of cases, respectively ($p < 0,001$); swelling/abdominal pains — in 64.7 % and 25.73 % of cases ($p < 0,001$); muscle and joints pain — in 51.47 % and 21.32 % of cases, respectively ($p < 0.001$) (Fig. 1).

It is important to note that the abovementioned PMS pains manifest in combination with emotional and autonomic symptoms. In the control group, the manifestations were rare and their degree mild. In the treatment group, the average number of PMS symptoms manifested was 5.62 ± 0.92, their intensity varied. Of those symptoms, 2.47 ± 0.68 were intensely painful and thus produced a negative effect on the general state and behavior of women (interpersonal relationships and ability to work) (Table 2).

In the treatment group, the symptoms expressed themselves for 7.14 ± 1.0 days per month (5–7 days — 61.03 %, > 7 days — 38.97 %). In the control group, the figure was 2.3 ± 1.28 days per month (1–4 days — 88.24 %, no PMS symptoms — 10.29 %) ($p < 0.01$) (Fig. 2).

Assessing painful symptoms, the researchers took into account frequency, duration of their expression, intensity. The following table presents the data describing clinical parameters of painful PMS symptoms in patients that participated in the study (Table 3).

Headache is one of the symptoms that determine the severity of PMS, prevents women from working efficiently and worsens the quality of their lives. Study participants from the treatment group had more severe and longer lasting headaches than those from the control group. The scores were taken with VAS; the difference was statistically significant ($p < 0.01$) (Table 3). In 36.03 % (n = 49) of them, headache was unilateral, in 41.11 % (n = 37), it was pulsating; 31.11 % (n = 28) had their headaches accompanied by nausea/vomiting, 14.44 % (n = 13) — by lacrimation; 54.44 % (n = 49) suffered from additional acousticophobia and photophobia, 31.11 % (n = 28) reported anxiety; 37.78 % (n = 34) felt drowsy at the same time, and 38.89 % (n = 35) found difficulties concentrating their attention while suffering from headaches; physical capabilities worsened in 32.22 % (n = 29) of patients attacked by a headache, and 42.22 % (n = 38) could not work efficiently.

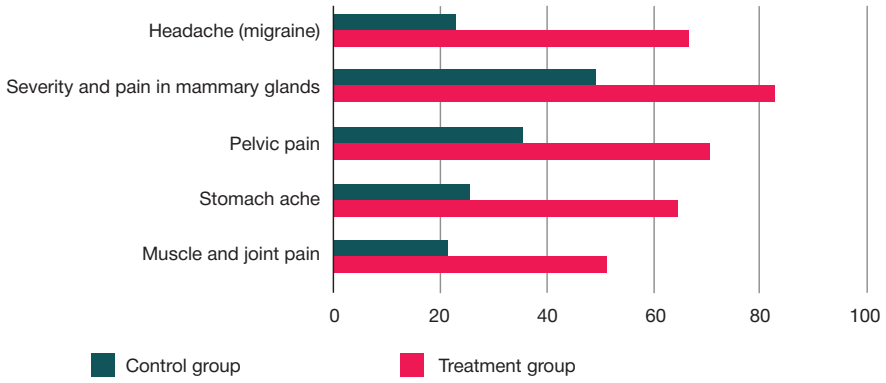

Fig. 1. Frequency of PMS pains suffered by the participants, %

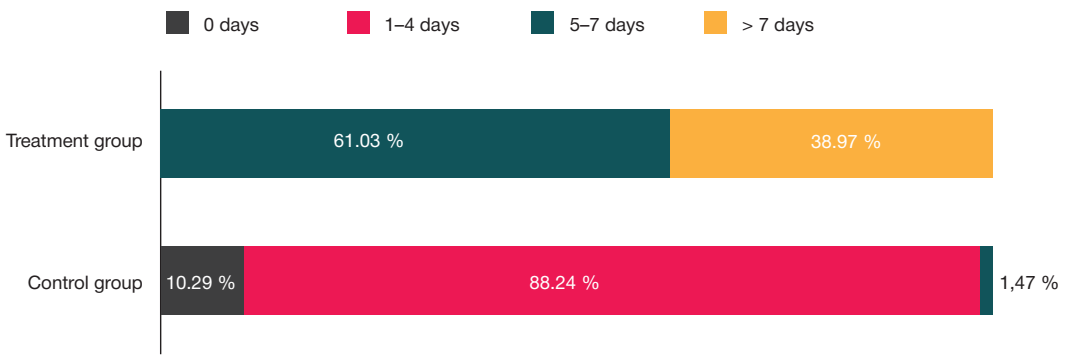

Fig. 2. Duration of clinical manifestation of PMS symptoms, days per month

Table 2. PMS symptoms

Parameter	Treatment group (n = 136)	Control group (n = 136)	p-value
Number of PMS symptoms	5.62 ± 0.92	2.43 ± 1.15	< 0.05
Number of painful PMS symptoms	2.55 ± 0.67	0.9 ± 0.49	< 0.05

Table 3. Painful symptoms parameters

Cluster of symptoms	Treatment group (n = 136)	Control group (n = 136)	p-value
Headache (migraine) duration, days per month intensity, VAS	 5.95 ± 1.36 6.0 ± 1.2	 2.05 ± 0.36 2.1 ± 0.31	 < 0.01 < 0.01
Severity and pain in mammary glands duration, days per month intensity, VAS	 7.77 ± 1.22 5.03 ± 1.03	 3.25 ± 0.97 1.96 ± 0.48	 < 0.01 < 0.01
Pelvic pain duration, days per month intensity, VAS	 4.67 ± 0.94 4.87 ± 0.65	 1.98 ± 0.56 1.86 ± 0.67	 < 0.05 < 0.001
Stomach ache duration, days per month intensity, VAS	 3.91 ± 0.98 3.19 ± 0.58	 1.17 ± 0.17 1.28 ± 0.21	 < 0.01 < 0.01
Muscle and joint pain duration, days per month intensity, VAS	 4.38 ± 0.93 3.73 ± 0.65	 1.34 ± 0.37 1.48 ± 0.45	 < 0.01 < 0.01

Headaches were not migraineous and did not meet the criteria for a migraine aura attack [10].

Severity and pain in mammary glands were reported by 83.08 ± 3.21 % of patients (n = 113) of the treatment group. The duration and intensity of these symptoms were greater than those recorded by the control group (VAS scores; statistically significant difference, $p < 0.01$). As for the pelvic pain, in treatment group it was reported by 70.58 ± 3.9 % of patients (n = 96). Its duration and intensity were greater than those registered in the control group ($p < 0.01$). Often, pelvic pain came together with visceral pain, but its duration and intensity were significantly less notable. Besides, patients have reported muscle and joint pains, which were most often companions to other painful symptoms (Table 3).

Patients of the treatment group reported that painful premenstrual symptoms produced a negative effect on their emotional and general state and quality of life. In the control group, only sporadical expressions of symptoms (mild intensity) were observed, and they did not adversely affect emotional and general state of women.

VAS allowed charting the "pain profile" (Fig. 3) that includes the most common painful PMS symptoms and emotional impact thereof. As for the intensity of those symptoms, they never went above moderate.

DISCUSSION

Due to the variety of clinical manifestations and prevalence of certain symptoms, very often patients suffering from PMS seek medical help from various doctors (therapist, neurologist, endocrinologist), and that help falls short of their expectations. Since PMS is a state ruled by hormones, it is a gynecologist that should be the doctor of choice. If PMS is severe, the team of specialists may be extended to include endocrinologist, neurologist, therapist, etc., depending on the dominating symptoms [11, 12]. We aimed to research characteristics of painful PMS manifestations in order to better diagnose it and optimize treatment offered to PMS patients. The results of our study confirm the hypothesis that painful symptoms express themselves together with psychoemotional and vegetovascular

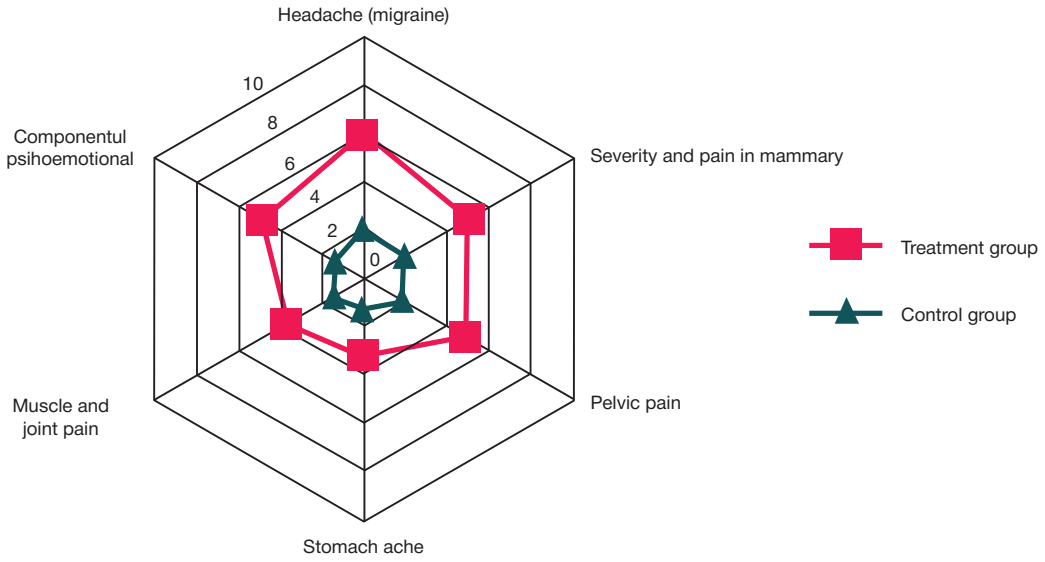

Fig. 3. "Pain profile" of study participants

disorders, which largely determines the severity of clinical manifestations of PMS.

Assessing the state of women suffering from PMS, practitioners should register symptoms prospectively, during 2 or 3 consecutive cycles, with the help of a symptoms diary. Questionnaires and diaries used in the context of this study allowed revealing key features of premenstrual symptoms, including the cyclicity of manifestation exclusively in the premenstrual period. Also, these tools helped identify dominant symptoms and assess their severity.

To a certain extent, the results of this study bring together the opinions various authors have on the clinical manifestations of PMS. According to M. N. Kuznetsova, almost all forms of PMS — cephalal, edematic, and crisis — manifest with one or more painful symptoms [2]. On the other hand, according to the classification by the Royal College of Obstetricians and Gynecologists, PMS manifests through neuropsychiatric, somatic and mixed symptoms [3], and the somatic cluster of PMS symptoms includes neurovegetative and endocrine-metabolic manifestations that have pain (localization varies) as one of the most important constituents. This classification may be more convenient for practitioners, since domination of neuropsychiatric symptoms in PMS means fundamentally different forms of treatment from those prescribed for patients with a predominance of somatic manifestations.

CONCLUSIONS

All in all, PMS manifested itself as a complex of emotional and somatic symptoms (an average of 5.62 ± 0.92 cyclic symptoms). Most often, they were pains of various localization (2.47 ± 0.68 of the total number of symptoms). As reported on a VAS, the duration and intensity of pain in the participants of the study were moderate. Pain symptoms were dominant; they determined the severity of PMS and negatively affected general condition of women.

The results of this study suggest that PMS symptoms should be confirmed with prospective daily assessments made for at least 2 consecutive cycles, since retrospective chart review is not sufficiently reliable.

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