

Premenstrual Syndrome (PMS): An Enigma

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Abstract

Many women in their reproductive years experience cyclical physical, emotional & psychological symptoms in the week prior to menses or during luteal phase of menstrual cycle. PMS affects about 5-8 % of women and most of them meet the criteria for premenstrual dysphoric disorder (PMDD). The etiology remains unknown and is complex and multifactorial. The diagnosis of PMS is solely based on signs and symptoms and no specific diagnostic tests to confirm the diagnosis. Numerous treatment modalities are available but only few are supported by clinical evidence. The article describes the disorder, with brief account of the theories for the underlying causes of PMS. It discusses the array of non pharmacological and pharmacological strategies available with stress on individualized treatment according to symptom profile.

Keywords: Premenstrual Syndrome, PMS, PMDD, Cyclical Disorder

Introduction

Premenstrual syndrome (PMS) is a common cyclical disorder of young and middle aged woman characterized by physical, emotional and psychological symptoms that typically occur during luteal phase of menstrual cycle [1-5]. Its prevalence is highly variable in literature due to presence of recall bias [6]. Nearly 5-8% women experience moderate to severe incapacitating symptoms of PMS affecting their daily life [7,8]. 85% of menstruating women experience having one or more symptoms and up to 20% of fertile woman have pre menstrual complaints that are clinically relevant [9-11].

Symptoms

The symptoms can be broadly categorized into three types: behavioral symptoms like fatigue, insomnia, dizziness, food craving and changes in sexual interest. The psychological symptoms are like changes in mood, tension, anxiety, loneliness, forgetfulness, confusion, depressed behavior, excessive crying and decreased self esteem. Lastly, the physical symptoms that are seen in PMS include headache, back pain, weight gain, nausea, joint pain, breast tenderness and swelling, abdominal pain; bloating and weight gain [12-14]. It is important to note down the symptoms, their type, timing of occurrence and symptom free interval for making correct diagnosis of PMS. The symptoms of PMS begin approximately a week before menses, peak at about 2 days before start of menses and subside during menses such that the patient is symptom free before ovulation [15-16]. The symptoms do not carry on to the next menstrual cycle [17].

Etiology

The etiology of PMS is unclear and multi factorial, role of ovarian hormones is uncertain although symptoms improve once ovulation is suppressed [18]. Various mechanisms and role of hormones have been suggested in literature but none of them have been able to completely explain the complete spectrum of this psycho physical disorder. Some of the mechanism is briefly described as under:

- Enhanced sensitivity to Progesterone in women with underlying serotonin (centrally acting neurotransmitter) deficiency [9,12,19].
- Deficiency in prostaglandins due to inability to convert linoleic acid to prostaglandin precursors [13,20].
- Suppression of estrogen and Gonadotropin releasing hormone analogues has significantly improved PMS symptoms [21].
- Alteration in Renin Angiotensin aldosterone system during luteal phase leading to bloating and swelling [20].
- Role of genetic factors as concordance rate is twice higher in monozygotic twins although no genes have been identified [22].
- Role of gonad steroids in pathophysiology supported by evidence from literature where symptoms are absent during non ovulation cycles, symptoms abolished by ovariectomy or with the use of ovarian inhibitors [23-28].
- Decreased Progesterone concentration in late luteal phase was associated with changes in central nervous system neurotransmitters like Gamma amino butyric acid (GABA), although progesterone administration was not effective in relieving symptoms of PMS [28].

Thus whether pre ovulation estradiol peak triggers PMS or Post ovulation increase in Progesterone or both still remains unclear [29]. There is evidence to suggest that the gonad steroids do not differ in woman with or without PMS indicating that PMS may be due to enhanced responsiveness to normal, fluctuating concentrations of these hormones. There are numerous studies in literature where role of other risk factors have been elucidated like high body mass index, stress, traumatic event, timing of excretion of hormones like melatonin, cortisol, thyroid stimulating hormone and prolactin [2,30-32].

Diagnosis

American college of obstetrics and gynecology (ACOG) defined PMS as condition where woman experiences at least one affective and one somatic symptom which causes dysfunction of work performance [33]. The symptom must occur during luteal phase and resolve shortly after onset of menstruation. Prospective questionnaires are effective tool and daily record of severity of problems (DRSP) is a reliable method used to diagnose PMS [34].

PMS is diagnosed if the patient has at least one of the following affective and somatic symptoms during the five days before menstrual cycles. It is important to note that these symptoms should be relieved within 4 days of the outset of menses without recurrence until at least day 13 of the cycle without any drug, hormone or alcohol use, causing dysfunction in social, academic or work performance and reproducible for two cycles on prospective recording (Table-1)

Table 1: Criteria for PMS Diagnosis [33]

AFFECTIVE SYMPTOMS	SOMATIC SYMPTOMS
Angry outbursts	Abdominal bloating
Anxiety	Breast tenderness / swelling
Confusion	Headache
Depression	Joint – Muscle pain
Irritability	Swelling extremities
Social withdrawal	Weight gain

Premenstrual dysphoric disorder (PHDD) is the severe form of PMS where patient must in the majority of menstrual cycles, at least five symptoms must be present in the final week before the onset of menses, start to improve within a few days after the onset of menses, and become minimal or absent in the week post menses. (Table-2)

Table 2: Symptoms of PMDD [35]

A-1 Marked affective liability (e.g., mood swings; feeling suddenly sad or tearful, or increased sensitivity to rejection
A-2 Marked irritability or anger or increased interpersonal conflicts
A-3 Marked depressed mood, feelings of hopelessness, or self-deprecating thoughts
A-4 Marked anxiety, tension, and/or feelings of being keyed up or on edge
B-1 Decreased interest in usual activities (e.g., work, school, friends, hobbies).
B-2 Subjective difficulty in concentration.
B-3 Lethargy, easy fatigability, or marked lack of energy
B-4 Marked change in appetite; overeating; or specific food cravings

B-5 Hypersomnia or insomnia
B-6 A sense of being overwhelmed or out of control
B-7 Physical symptoms such as breast tenderness or swelling, joint or muscle pain, a sensation of “bloating,” or weight gain
Total five symptoms from A1-A4, B1-B7, minimum one from each category required for diagnosis of PMDD

Controversy

The diagnosis of PMS and PMDD rely solely on self reporting with no diagnostic test or characteristic physical finding to confirm the diagnosis. Sociologist like Carol Taures believes those western women are socially conditioned, aware of its existence and therefore report symptoms [36]. Anthropologist referred PMS as cultural phenomena arising out of helplessness but these contrary views failed to take into account the physical symptoms present in PMS and referred only to emotional aspects.

Treatment

The aim of treatment is to eliminate symptoms and reduce their impact on day to day activities and interpersonal relationships. Before going for non pharmacological or pharmacological therapy other differential diagnosis should be ruled out like endometriosis, hypothyroidism, substance abuse, Oral contraceptive pill use, anemia, anorexia, dysmenorrhoea, diabetes mellitus, affective disorders like (panic, depression, anxiety) or any personality disorders [10,14,35].

Many treatment regimes have been used for PMS but only few are supported by clinical evidence. As some medication work better for particular symptoms, treatment should be individualized according to symptom profile. Table 3 summarizes the various treatment modalities for PMS and PMDD.

Table 3: Treatment Modalities for PMS and PMDD

Non pharmacological	Pharmacological
Patient education [33]	Serotonergic anti depressants [40]
Behavioral changes [14]	SNRI [40]
Relaxation therapy [33]	Vitamin A,E,B6
Cognitive restriction & exercise [37]	Calcium [17]
Caffeine restriction [38]	Magnesium [17]
Chiropractic therapy [39]	Multivitamin [28]

Serotonergic antidepressants are the first line treatment for PMS symptoms. They are effective for psychiatric symptoms [40]. The commonly used are Sertraline, Paroxetine, Fluoxetine, Citalopram, Escitalopram and Fluvoxamine. Neither Venlafaxine a neither serotonin nor epinephrine reuptake inhibitor (SNRI) is used for treatment of PMDD in woman with psychological symptoms [41].

Oral contraceptives have been used for treatment of PMS or PMDD [42]. The literature studies are inconsistent about their utility but most of them suggest that they improve physical symptoms and episodes of depression.

The international society of premenstrual disorders advocates the use of Gonadotropin releasing hormone agonists as potential treatment modality for PMS & PMDD, but they cannot be used for long term for the risk of cardiovascular episode and osteoporosis [43]. Calcium and vitamin D supplementation have been evaluated in some studies,

where calcium supplementation was associated with improvement in mood stability but role of vitamin D supplementation was uncertain [44,45].

The non pharmacological treatment like acupuncture, herbal preparation as treatment of PMS have been attempted but the evidence is too limited to suggest any benefit [45]. Relaxation therapy, cognitive behavior therapy, chiropractic therapy, exercise and dietary restrictions have also been suggested as treatment modalities but require more studies to support their use [3,37,39]. The use of other treatments has been in PMS but cannot be regarded as evidence based as the studies were not controlled.

Conclusion

The diagnosis as well as management of PMS is complex. The clinician should diagnose this disorder based on his own findings rather than on patient's perceptions and apprehensions. The differential diagnosis from other conditions like depression, anxiety disorders, and mild physiological symptoms is deemed necessary and it should be done by general practitioner before referring to gynecologist or psychiatrist. The key to diagnosis lies in the disappearance of symptoms after menstruation. It is not the abnormal concentration of sex steroids but the fluctuations of such hormones and sensitivity of patient to such fluctuations. Generally the treatment to specific symptom is effective and even without treatment they tend to decrease in perimenopausal women.

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