

Premenstrual Syndrome in Adolescent Girls: Pathophysiology and Clinical Features

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Abstract

PMS may be present in individuals with family history of depression, postpartum depression in previous pregnancy, mood disorders. In some patients genetic factors, obesity are the causes. Pyridoxine deficiency, calcium deficiency are some of the nutritional deficiency causes. Pyridoxine deficiency is the main factor in PMS. PMS may be due to luteal phase deficiency, which in turn occurs due to progesterone deficiency. Premenstrual changes are burning issue having both the psychiatry and gynaecology related symptoms and adverse social consequences. Detailed interaction and reassurance of the patient goes a long way in reassuring the adolescent girl.

Keywords: Premenstrual Syndrome; Adolescent Girl; Pyridoxine; Progesterone.

Introduction

Premenstrual syndrome is characterized by physical and psychological symptoms that occur during 7 to 10 days before onset of menses. It disappears within first two days of blood flow.

It is characterized by cluster of symptoms such as:

- Weight gain
- Abdominal bloating
- Breast engorgement, Pain
- Peripheral edema
- Constipation
- Headache
- Increased appetite
- Food craving
- Anxiety
- Irritability
- Nervous tension
- Fatigue

- Depression
- Inability to concentrate [1]

Adolescent girl may experience minor psychological and somatic changes for a few days preceding menstruation [2].

Robert Frank is commonly thought to have brought medical attention to PMS through his case series in 1931. He found connection between ovarian function and other organic symptoms [3].

Definition

Premenstrual syndrome PMS is a condition which manifests with distressing physical behavioural and psychological symptoms not due to organic or underlying psychiatric disease which regularly recurs during luteal phase of each menstrual cycle [4].

RCOG Guidelines

Definitions of different types of PMS:

Mild: does not interfere with personal, social and professional life.

Moderate: interferes with personal social and professional life but still able to function and interact.

Severe: unable to interact personally, socially, professionally and withdraws from social and professional activities (treatment-resistant).

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Premenstrual exaggeration:

Background psychopathology, physical or weather condition with incomplete relief of symptoms when menstruation ends [5].

Etiology

Underlying over anxiety and emotional instability present in some cases makes it necessary to regard the condition as psychosomatic disorders [2].

The cause may be present in individuals with

- Family history of depression
- Postpartum depression in previous pregnancy
- Mood disorders

In some patients genetic factor, obesity are the causes.

Serotonin deficiency, magnesium deficiency, calcium deficiency are some of the nutritional deficiency causes [5].

Cigarette smokers twice as likely to have more severe PMS symptoms as nonsmokers [6].

Pathophysiology

Absence of PMS before puberty in pregnancy and after Menopause supports the theory that cyclical ovarian activity is important [4].

Since PMS does not occur prior to menarche in pregnancy or post menopause exposure to changing levels of gonadal Steroids is obligatory. Women's response to hormonal changes can lead to symptoms expression.

Some patients may have a pathological response to either withdrawal from or exposure to the progesterone metabolite, gamma aminobutyric agonist, allopregnanolone. Blockage of allopregnanolone production reduces PMS and some serotonin reuptake inhibitors (SRIs) which are effective. Treatment of PMS, also affect allopregnanolone levels [3].

PMS may be due to the luteal phase deficiency which in turn occurs due to progesterone deficiency.

Endorphin (endogenous opiate peptide) are controlled to some extent, by progesterone or both oestrogen and progesterone. They increase in 14-20th day of cycle. Biogenic amines and catecholamines are present in first half of cycle. Their low levels in second half of cycle is incriminated in PMS

symptoms. Gamma amino butyric acid (GABA) is also under research for causing PMS. Its transmitter system is inhibitory to CNS. Its receptor sensitivity is crucial factor. There is complex interaction between serotonin and GABA system and neuroactive steroids.

Thus changes in hormone during menstrual cycle occurs in PMS

- Oestrogen excess
- Oestrogen withdrawal
- Progesterone deficiency

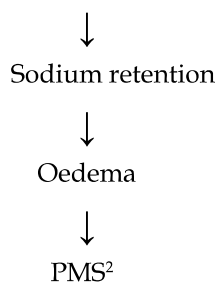
Pyridoxine deficiency (B6) is the main factor.

Chemical changes in the brain due to stress, emotional problems [5].

Decrease in serotonin and withdrawal of endorphins during luteal phase is observed in women suffering from PMS [4].

Increased extracellular fluid through the body may be causative factor in PMS.

High levels of oestrogen and progesterone in second half of menstrual cycle

*Diagnosis*

Cyclic occurrence of psychological and neuroendocrinal symptoms during luteal phase of menstrual cycle. Symptom free period during rest of cycle. Symptoms are not related to any organic lesion, medication or alcohol use. Symptoms are severe enough to disturb or interfere with everyday life of the women. The management of PMS and PMDD is complex. It is important to establish a precise diagnosis.

Differential Diagnosis

- Psychiatric problems - Irritability
Behavioural change
- Hyperthyroidism
- Pelvic pain - Pelvic inflammatory disease
Endometriosis

➤ Cyclic Mastalgia - rule out underlying breast disease [2]

Diseases to be excluded before diagnosing PMS -

- Psychiatric illness
- Endocrinopathies
- Diabetes
- Autoimmune diseases
- Anaemia
- Collagen diseases [7]

Discussion

Premenstrual syndrome is a recurrent luteal phase condition characterized by physical, psychological and behavioral changes of sufficient severity resulting in interpersonal relationship and normal activity.

Older adolescents tend to have more serious symptoms than younger adolescents do. Premenstrual changes are a burning issue having both the psychiatry and gynaecology related symptoms with adverse social consequences. Premenstrual syndrome and premenstrual dysphoric disorder are diagnosis of exclusion, therefore alternative explanation of symptoms must be considered before either diagnosis is made [5].

It is essential to distinguish PMS from other clinical entities particularly depression and anxiety disorders, premenstrual exacerbation of other disorders or mild psychological symptom. There is wide range of treatment options available ranging from lifestyle modifications, nutritional supplements, pharmacotherapy and hormonal therapy. Treatment of PMS will be discussed in next review series.

Detailed interaction and reassurance of the patient of PMS goes a long way in reassuring the adolescent girl. It will remove her fear of having morbid condition requiring radical treatment.

Conclusion

Adolescent girl is in a transitional phase with physical, psychological and hormonal changes

occurring. She often experiences considerable emotional strain. Premenstrual syndrome is one of them. The extreme and predominantly psychological form of premenstrual syndrome is called premenstrual dysphoric disorder. In both premenstrual syndrome and premenstrual dysphoric disorder, the symptoms diminish rapidly with the onset of menses. Thus, disappearance of symptoms after menstruation is the key to diagnosis. Management of problems in adolescence girls is challenging to the gynecologist as she is shy and reluctant to seek medical help. Many times, she suffers silently, not revealing her problem to mother. Detailed interaction and reassurance of the patient of PMS goes a long way in the management of PMS. It will remove her fear of having morbid condition requiring medical treatment.

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