

## Exploring Treatment Modalities in Premenstrual Syndrome in Adolescent Girls

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### Abstract

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Premenstrual syndrome (PMS) as associated with cyclical symptoms occurring in second half of menstrual cycle (luteal phase). Non-pharmacological management include high protein diet, regular exercise, stress reduction. Adolescent girls with PMS have been treated with gamma linolenic acid, an essential fatty acid precursor of prostaglandin E1. Vitamin B6 (pyridoxine) up 100 milligrams per day is helpful. Nutritional supplements like calcium, magnesium and chromium play a vital role in management of PMS.

Non-hormonal therapy for PMS include: Anti-inflammatory drugs, diuretics, anxiolytics and selective serotonin reuptake inhibitors (SSRI). Hormonal therapy recommended for PMS is progesterone in luteal phase, low dose combined OC pills and GnRH.

**Keywords:** Premenstrual Syndrome; Pyridoxine; Nutritional Supplements; Progesterone.

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### Introduction

Premenstrual syndrome (PMS) is cyclical constellation of symptoms occurring in the second half of menstrual cycle (Luteal Phase) to such a degree that a patient's work is affected. This is followed by a period of time free of symptoms. The symptoms should have occurred for at least 4 to 6 previous menstrual cycle [1]. Frank was the first to describe PMS in 1931. He actually used the term premenstrual tension. The term PMS was coined by Green and Nalton in 1952. Extreme predominantly psychological end of PMS spectrum is premenstrual dysphoric disorder (PMDD) [2]. Once the accurate diagnosis is made appropriate interventions for the individual can be planned, keeping to principles in mind.

1. PMS is a chronic problem, so both cost and

side Effects are important consideration in treatment plan.

2. Adolescent girls experience degrees of severity of symptoms and the treatment should match the symptoms [3].

### Non-Pharmacological Treatment

#### *Specific recommendations include*

- Regularly scheduled meals that are relatively high in carbohydrates, proteins, low in salt, caffeine.
- Regular exercise, yoga, aerobics, relaxation and stress management may enhance general well being. In severe cases where mood changes interfere with activities, psychiatric consultation, maybe sought [3].

### **Nutritional Supplements**

Many different treatments have been suggested for PMS including nutritional supplements such as vitamins, minerals and essential fatty acids.

#### **Gamma-Linolenic Acid**

Attempts have made to treat girls with PMS with gamma linolenic acid, an essential fatty acid precursor of prostaglandin E1 [4].

It is thought that women with PMS have increased sensitivity to prolactin hormone. Increase sensitivity to prolactin is the result of relative insufficiency of PGE1 derived from essential fatty acid, dihomogamma linolenic acid (DGLA) derived from GLA.

Defect in Delta-6 desaturase activity

↓

Relative deficiency of GLA and DGLA in PMS patients

↓

Reduced PGE1

↓

Increased prolactin sensitivity

↓

Manifestations of hyper prolactin symptoms

#### **Role of Prolactin:**

- Direct influence on breast tissue
- Association with stress
- Indirect relationship with dopamine and nervous Pathways [5].

#### **Pyridoxine**

Vitamin B6 (pyridoxine) is a coenzyme for several enzyme systems. It has vital role in metabolism of amino acids:

- Synthesis
- Breakdown
- Absorption of amino acids

Pyridoxine has role in formation of:

- Histamine
- Serotonin
- Dopamine
- Adrenaline

Vitamin B6 reduces the emotional difficulties associated with PMS. Vitamin B6 relieves fluid retention. Deficiencies can cause depression. Insufficient amount of Vitamin B6 causes imbalance of neurotransmitter dealing to depression and mood swings. Vitamin B6 is required by liver to break down and deactivation [6].

#### **Chromium**

Diet plays a crucial role in the treatment of PMS, many women experience exacerbated symptoms of PMS when their blood sugar is uncontrolled. Thus, controlling blood sugar is a crucial step in eliminating PMS. Chromium is helpful in stabilizing blood sugar and eliminating sweet cravings [4].

#### **Magnesium**

Women with PMS have lower levels of magnesium and leukocytes despite normal plasma magnesium levels. Intracellular magnesium is likely to be better indicator of true levels, since magnesium is mostly found within the cells. Magnesium supplementation has been used as potential therapy.

- Less fluid retention
- Less muscle cramps, irritability and fatigue.

Admission therapy in doses of 200 to 400 mg once daily reduces fluid retention [4].

#### **Pharmacological Treatment**

- Nonhormonal Therapy
- Hormonal Therapy

#### **Non-Hormonal**

- Anti inflammatory drugs
- Diuretics: (spironolactone) in second half of the cycle to reduce bloating and water retention
- Anxiolytics during luteal Phase to improve anxiety and depression symptoms.
- Selective serotonin reuptake inhibitors (SSRI)

May be the most effective treatment in severe PMS. SSRIs such as fluoxetine and sertraline, are antidepressants that can be taken daily to relieve tiredness, food cravings, sleep problems and combat depression [7].

#### **Hormonal**

- Combined oral contraceptive pills:

Drospirenone is promising drug containing anti-mineralocorticoid and anti-androgenic progesterone, due to its mild diuretic and antiandrogenic effects progestogenic Side Effects are minimised.

*It contains*

Ethylene estradiol 20 microgram +drospirenone 3 mg [8]

### **Gonadotropin Releasing Hormone (GnRH)**

GnRH analogues should only be used in severe PMS when all other treatments have failed. They often have side Effects such as:

- Hot flashes
- Vaginal dryness
- Osteoporosis

They should only be taken alone for up to 6 months.

When treating girls with severe PMS with GnRH analogue-

- Therapy should be recommended as second or third line treatment
- Add back hormone therapy recommended.
- Leuproline acetate 3.75 milligram IM or SC every month [7].
- Bromocriptine helpful in relieving breast symptoms dose 2.5 mg OD or BD [9].

Danazol causes ovarian suppression and has been found effective in many women. But the serious Side Effects like hirsutism, alterations of lipid profile limit its use. It is mainly effective for premenstrual mastalgia and hence short- term treatment in the luteal phase may be effective [2].

### **Discussion**

Teenage or adolescent girls make 10% of the population. Like the budding flower, the adolescent girl needs caring environment at home supported by a friendly, sensitive health system to help her to bloom and mature into a healthy woman. Because of fear and embarrassment adolescent girl may not consult gynecologist [9].

At this stressful phase of life in adolescent girl, PMS may cause tremendous psychological response. Lack of knowledge and understanding about her health problems, add to her emotional turmoil. Hence, problem of adolescent girl with

PMS must be dealt with sensitivity. To extend medical aid at a larger scale, establishment of "Adolescent clinics" will be beneficial. These adolescent clinics will provide privacy also so that she will discuss her problems frankly. Ensuring good adolescent reproductive health will ensure "Safe motherhood" [10].

The management of PMS is complex. It is important to establish a precise diagnosis. Disappearance of symptoms after menstruation is the key to diagnosis.

### **Conclusion**

Sympathetic listening and explanation may suffice in mild PMS. Reassurance is very effective. Lifestyle modification comprising a healthy diet, regular exercise and relaxation is very important. Diet should be a low fat, high fibre with adequate vitamins and minerals and reduced intake of salt, alcohol, caffeine and sugar.

Adolescent girls with PMS are benefited with nutritional supplements like essential fatty acids, calcium, magnesium, chromium, pyridoxine (B6) are key factor in management of PMS. Diuretics can be given for bloatedness and definite weight gain [2].

Patients who do not respond to lifestyle modification and nutritional supplementation require interventions like serotonin reuptake inhibitors and hormonal therapy.

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