

PROPHYLACTIC ROLE OF PYRIDOXINE IN DIFFERENT AGE GROUPS WITH PREMENSTRUAL SYNDROME

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ABSTRACT

In present study the prophylactic role of pyridoxine was assessed in reducing the unpleasantness associated with Premenstrual syndrome (PMS) in different age groups. Severity of symptoms was observed in age group 35-44. Overall improvement in symptoms after vitamin B6 treatment was highest in age group 25-34, followed by age group 15-24 and least improvement in age group 35-44. Vitamin B6 was found most beneficial in reducing the functional impairment of daily routine, as well as in reducing the intensity and incidence of dysphoric symptoms.

INTRODUCTION

Premenstrual syndrome (PMS) is a term used to describe a cluster of physical and emotional distress occurring late in the post ovulatory phase of the menstrual cycle and sometimes overlapping with menstruation. Symptoms usually increase in severity until the onset of period and then disappear dramatically. Among these symptoms are weight gain, breast swelling and tenderness, abdominal distension, water retention, backache, acne, fatigue diarrhea, nausea, body aches, poor concentration, insomnia, depression, crying spells, cravings for sweets or salty foods (Daugherty, 2002).

For many years, PMS is considered purely psychological. Many women were even diagnosed as being mentally ill from PMS. The real cause for PMS is still unknown. It is estimated that 75-80% of all women experience some symptoms of PMS during their lifetime. These days it is considered as a physical problem involving many of the body's hormones that work together normally but are imbalanced during this time of a women's cycle. Estrogen excesses, progesterone deficiencies, Vitamin B6 or pyridoxine deficiencies, low levels of serotonin, an excess of prolactin and altered glucose metabolism

are among the many theories considered to explain PMS.

Vitamin B6 is a water soluble vitamin that exists in three major chemical forms: pyridoxine, pyridoxal, and pyridoxamine. It performs a wide variety of functions in our body and is essential for good health: Vitamin B6 is needed for more than 100 enzymes involved in protein metabolism. The nervous and immune systems need vitamin B6 to function efficiently and it is also needed for the conversion of tryptophan to niacin (Bender, 2003). Hemoglobin within red cells carries oxygen to the tissues. Our body needs vitamin B6 to make hemoglobin and it also helps in increasing the amount of oxygen carried by hemoglobin (Murry *et al.*, 2006). Vitamin B6 deficiency can result in a form of anemia that is similar to iron deficiency anemia (Rapkin, 1992).

Vitamin B6 deficiency is often found in depressed people and some studies have shown that supplements can improve mood as it is involved in the formation of serotonin (Chakmakjian, 1985). It is also used to treat stress conditions. Vitamin B6 is sometimes called as a Women's vitamin (Kerr, 1977) as estrogen may suppress vitamin B6 metabolism, supplements may be beneficial

for pregnant women, those on the contraceptive pill or hormone replacement therapy (HRT) who suffers from mood swings and depression.

Nausea and vomiting can be controlled by vitamin B6 intake as pyridoxine is involved directly into Dopamine synthesis (Bender, 2003).

Vitamin B6 also helps in maintaining our blood glucose within a normal range. When caloric intake is low our body needs vitamin B6 to convert stored carbohydrate or other nutrients to glucose, deficiency of vitamin B6 will limit this function (Brezekinski, 1996).

In present study the role of pyridoxine is assessed in reducing the unpleasantness associated with PMS in different age groups

MATERIALS AND METHOD

Thirty females were selected with no gynaecological disorder. Selected volunteers were divided into three categories:

1. Age group 15-25
2. Age group 25-34
3. Age group 35-44

All volunteers were assessed by rating scale for PMS. The participants took Vitamin B6 in a dose of 50mg/day for three months. After three months of consecutive intake subjects were again assessed by rating scale.

RESULTS AND DISCUSSION

Severity of symptoms was relieved in age group 35-44 after pyridoxine use. Symptoms usually start appearing in premenopausal phase. Vitamin B6 plays an important role in the synthesis of DA and 5-HT that are involved in physical and emotional well-being. Vitamin B6 deficiency has been hypothesized as a cause of PMS (Keye, 1985).

Symptoms of PMS are relieved by onset of menstruation in age group 15-24 and in age group 25-34. Both these groups reported ease of symptoms after pyridoxine intake.

Many PMS sufferers experience impairment of daily routine. Significant improvement is observed in age group 15-24 after vitamin B6 therapy. The improvement may be due to its involvement in many metabolic reactions and it is also known as energy releasing vitamin. It is involved in transamination and decarboxylation of amino acids and breakdown of glycogen to glucose. Vitamin B6 also helps to maintain blood glucose level. Oxidation of glucose provides tremendous amount of energy for muscular work and performance of daily routine by providing maximum amount of ATP (MacCann & Holmes, 1984).

Insignificant weight reduction is observed by all age groups. This effect is probably due to maximum utilization of carbohydrates which contributed to weight gain. Vitamin B6 is also involved in mineral metabolism (Oleson & Flocco, 1993).

Maximum improvement in symptoms of Bloating was observed by age group 25-34. This reduction is probably due to excretion of ammonia and gases and proper carbohydrate metabolism by pyridoxine. It also contribute to relaxation of flatulence (Lee, 1995).

Mastalgia i.e., painful breasts are experienced by all age groups and significant improvement was observed in all volunteers. It is seen previously that low levels of vitamin B6 leads to high level of prolactin that inturn produces the edema and mastalgia.

Women of all ages experience abdominal discomfort which may be due to hormonal changes before menstrual cycle. Pyridoxine helps in reducing abdominal discomfort and cramps (Steiner *et al.*, 1977). Greatest improvement is seen in age group 15-24.

Table
Symptoms decreased/improvement (%) after treatment according to age

S. No.	Symptoms	Age in Years		
		15-24%	25-34%	35-44%
1.	Severity of symptoms	16.7	16.7	62.5
2.	Symptoms relieved by the onset	66.7	66.7	33.3
3.	Functional impairment of daily routine	1.4	44.4	66.7
4.	Weight gain	20.0	40.0	0.0
5.	Bloating	40.0	57.1	33.3
6.	Mastalgia	50.0	66.7	50.0
7.	Abdominal discomfort	50.0	20.0	33.3
8.	Fatigue	40.0	50.0	60.0
9.	Headache	40.0	80.0	0.0
10.	Severe depression	50.0	75.0	0.0
11.	Exacerbations of chronic illness	0.0	0.0	0.0
12.	Dysphoria, irritability, anxiety, tension, aggression	80.0	20.0	50.0
13.	Feeling of cold and fever	0.0	25.0	0.0
14.	Craving of sweets	0.0	0.0	0.0
15.	Restless nights	50.0	20.0	33.3

Symptoms of fatigue are commonly experienced by women during menstruation. Significant Improvement was noted in all age groups with highest percentage improvement in age group 35-44 after vitamin B6. Vitamin B6 is involved in the functioning of enzymes and in the release of energy from food. The co-enzyme form of vitamin B6 are pyridoxal 5-PO4 these are necessary for nearly 100 enzymatic reactions. It is also involved in the manufacture of most protein related compounds and plays a role in almost all bodily processes. It enhance muscular work performance by providing ATP so onset of fatigue is lessen and suppressed by vitamin B6 (Sampson, 1979).

Headache is experienced in age groups 15-24 and 25-34. Greatest improvement is seen in age group 25-34. It may be due to vitamin B6 involvement in formation of 5-HT as 5-HT agonists are useful in control of vascular headaches (Katzung, 2005).

Highest number of sufferers of depression belong to the age group 25-34 and showed 75% of improvement in symptoms after vitamin B6 intake.

Vitamin B6 is involved in the synthesis of dopamine, serotonin and GABA. All these neurotransmitters are very important for physical and emotional well-being and minimizes the negative symptoms and elevates the mood (Rickels, 1995).

Feelings of apprehension, uncertainty and fear without apparent cause is termed as dysphoria and is a symptom highly experienced during PMS. Highly significant improvement was observed in age group 15-24. Significant improvement was experienced by age group 35-44. GABA is involved in the relief of anxiety (Clinical Medicine, 2004). GABA is formed from glutamic acid with the help of vitamin B6. So daily intake of vitamin B6 helps in relieving the dysphoric symptoms.

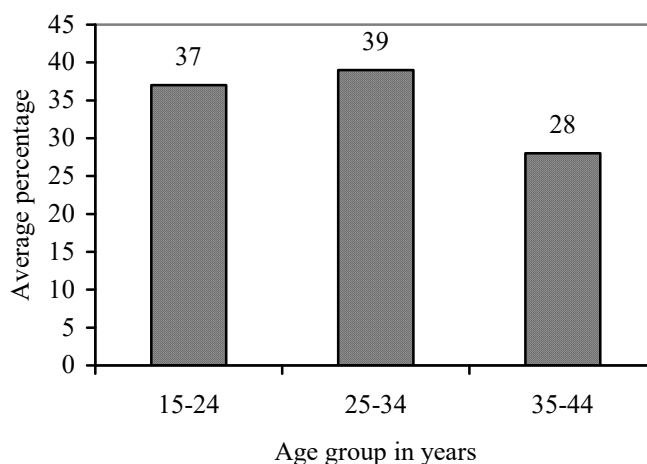


Fig: Overall improvement in symptoms after treatment (Vit. B6) according to age.

PMS sufferers experience craving for sweets which is probably because of symptoms of hypoglycemia. Vitamin B6 increases glucose level in blood to cope up hypoglycemia by glycogenolysis (Menkes, 1993).

Restless nights are complained by PMS sufferers. Vitamin B6 helps in reducing the symptoms in all age groups with highest percentage in age group 15-24. The improvement of symptoms may be due to involvement of serotonin and GABA as both neurotransmitters are involved in sleep cycle. GABA increases duration of NREM sleep and decreases duration of REM sleep. Duration of slow wave sleep is also reduced (Veeninga, 1992).

In recent study highest percentage improvement i.e., 39% is seen in age group 25-34, followed by 37% by age group 15-24 and least by 35-44 i.e., 28%.

CONCLUSION

On the basis of present study vitamin B6 is believed to improve the transamination and decarboxylation reactions leading to the

formation of serotonin, dopamine and GABA and thus helps in relieving the unpleasant symptoms and intensity of PMS. Vitamin B6 was found most beneficial for increasing energy level and output and very effective in suppression of different dysphoric symptoms of PMS. The adequate dosage of pyridoxine must be used by menstruating young females to control the PMS. Present work may be extended to study the effect of different doses of pyridoxine and to observe the effect of pyridoxine in learning and cognitive behaviour.

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