

## Role of Vitamin E in Mastalgia in Young Women

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### ABSTRACT

**BACKGROUND:** Vitamin E is a fat soluble vitamin and plays key role in many body systems. It has been in clinical practice for mastalgia for decades, however there is still limited literature defining its precise role.

**METHODS:** This case series was retrospectively collected from a prospectively established database of a dedicated breast clinic for a period of 16 months. A total of 100 patients came with a complaint of breast pain; 20 patients excluded as 17 were having palpable lump while 3 were post menopausal. Eventually 80 patients were included in this study. They were given Vitamin E 400mg a day for six months. They were followed up at six weeks then at three months and finally after six months. Patients were given a pain chart to mark severity of pain on daily basis.

**RESULTS:** Follow up initially at six weeks, three and six months suggested significant improvement in the symptoms of cyclical mastalgia ( $p < 0.001$ ).

**CONCLUSION:** Vitamin E is relatively safe supplement with a better compliance, therefore can be safely considered as first line management of mastalgia in premenopausal young patients.

**KEY WORDS:** Vitamin E, Breast pain, Mastalgia.

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### INTRODUCTION

Mastalgia or breast pain is the most common complaint encountered in breast clinics. It is reported to occur in around 70% of women<sup>1,2</sup>. It may be cyclical, having association with menstrual cycle or non-cyclical without any association with menstrual cycle. There are a number of management options for breast pain starting from supporting measures to heavy medical therapy with a number of side effects. The commonly used medicines for breast pain includes pain killers, evening primrose oil, Danazol, tamoxifen or even sometimes mastectomy can be offered as an option<sup>1-3</sup>. Vitamin E has been used in clinical practice for many years. The drug with the highest safety in this regard is evening primrose oil. However if patients do not respond or if the pain recurs the patients are left with the option of hormonal therapy.

Vitamin E has been in clinical practice for mastalgia for decades, however there is still dearth of strong evidence for its use. Systematic reviews on the breast pain showed insufficient evidence regarding use of Vitamin E for breast pain<sup>1</sup>. A randomised pilot study included 41 patients compared Vitamin E and evening primrose oil alone and in combination and placebo<sup>4</sup>. They concluded that both supplements alone or in combination have potential to reduce cyclical mastalgia while placebo did not produce any effect. However

the sample size in this study was very small and the dose of vitamin E was 1200 IU per day (ie 800mg). Vitamin E when taken at this dose may raise the issue of toxicity especially when taken for longer period. Given the lack of substantial evidence and common use of Vitamin E in breast clinics this study was conducted to report the effects of vitamin E in reducing breast pain in premenopausal women.

### METHODS

#### Patients

This data was retrospectively collected from prospectively established database at the Department of Surgery, Liaquat University of Medical & Health Sciences (LUMHS), Jamshoro from September 2014 to December 2015. All patients with breast pain were included (n=100) who attended the OPD, later patients were follow-up at Medical Research Centre (LUMHS). Post-menopausal (n=3) patients and those with palpable lump or lump found on ultrasound (n=17) were excluded. Eventually there were 80 patients who had mastalgia and were prescribe Vitamin E.

#### Management protocol

The patient after full history, examination and ultrasound found to have cyclical mastalgia were given general supportive care and simple pain killers for pain relief. When they failed to respond to these measures they were put on vitamin E 200mg twice

daily dose for six months. Patients were followed up at six weeks, at three months and finally at six months period. Severity of pain was measured by using Numeric Pain Rating Scale<sup>5</sup>. Patients were given printed copy of numeric pain chart to record severity of pain on daily basis. Their response was recorded following Cardiff Breast Score (CBS)<sup>6</sup>. According to the score response was recorded as: CBS 1= No pain, CBS II, substantial reduction in pain, CBS III, poor response leaving substantial pain, CBS IV, no response.

**Statistical Methods**

Data was collected and analysed by using Statistical Package for Social Sciences (SPSS Version 20.0). Frequencies including number and percentage were considered. For comparison of the responses of treatment chi-square test was applied and a p-value <0.05 was considered significant.

**RESULTS**

There were 80 patients put on vitamin E for this study. All patients were pre-menopausal, history and examination strongly suggestive of cyclical mastalgia. Median age was 24 (range 14-37) years. Majority were unmarried 60% (n=48). At six weeks time 80% (n=64) achieved clinical benefit from vitamin E therapy and they fell into the category where their pain was completely disappeared or they felt significant improvement, however there were 16 (20%) patients who did not achieve any improvement in their pain. A few of the patients (20%) who felt improvement at six weeks did not achieve any further improvement for their pain but remained stable. Therefore at three months 60% patients showed significant improvement in their pain. At six months the results remained same as those at three months. Statistically there was significantly high proportion of the patients who got clinical benefit from vitamin E therapy (p<0.05). None of the patients reported any undesirable side effects.

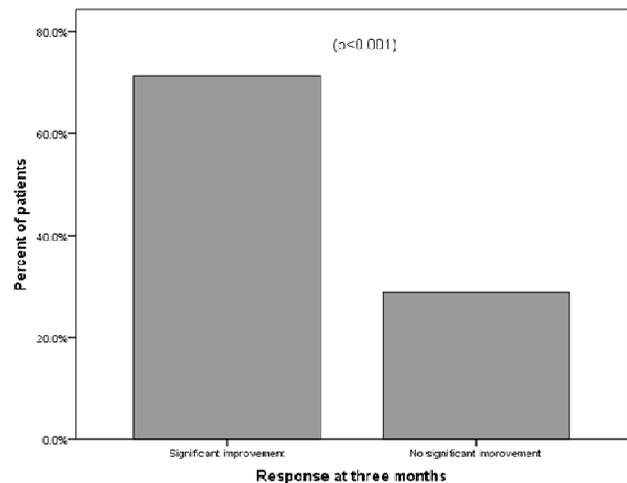
**TABLE I: DEMOGRAPHIC CHARACTERISTICS OF THE PATIENTS PRESENTED WITH CYCLICAL MASTALGIA AND WERE GIVEN VITAMIN E**

Character	Number (n)	Percentage (%)
<b>Age groups</b>		
<25 years	46	57.5
≥25 years	34	42.5
<b>Marital status</b>		
Married	32	40
Unmarried	48	60

**TABLE II: RESPONSE PATTERN OF THE PATIENTS PRESENTED WITH CYCLICAL MASTALGIA AFTER TAKING VITAMIN E**

Response	Number (n)	Percentage (%)
<b>At six weeks</b>		
CSB I	9	11.3
CSB II	55	68.8
CSB III& IV	16	20.0
<b>At three months</b>		
CSB I	10	12.5
CSB II	43	58.8
CSB III&IV	23	28.8

**FIGURE I: PATTERN OF THE RESPONSE OF PATIENTS WITH MASTALGIA AT THREE MONTHS OF TAKING VITAMIN E**



**DISCUSSION**

The results of the study showed that there was a significant improvement of the symptoms in pre-menopausal women with cyclical Mastalgia when they were given vitamin E as the first line of management. There was no notable side effect observed at the prescribed dose.

Vitamin E is a fat soluble vitamin and one of the essential dietary ingredients which is responsible for the maintenance of normal health and wellbeing<sup>7-10</sup>. Although the strong evidence is not yet available but it is suggested that vitamin E inhibits production of prolactin by facilitating the production of prostaglandins. During the later-half of the menstrual cycle when the cyclical breast pain reaches at its peak, the level of prolactin also goes high<sup>11</sup>. Prolactin is the hormone which

stimulates production of milk during lactation and during later-half of the menstrual cycle it probably stimulates breast to prepare for the possible pregnancy and thus stimulates pain. However this mechanism of vitamin E has yet to be proved. Despite the fact that there is controversial evidence available for the therapeutic effects of vitamin E for Mastalgia, it has been used to cure this condition<sup>12</sup>. Looking at the influence of menstrual cycle on the breast development it is evident that there is maximum breast cell growth as well as accumulation of fluid which could be the cause. Although the related evidence of failure of diuretics to cure cyclical Mastalgia refutes the hypothesis of fluid accumulation as a cause of Mastalgia. Therefore prolactin associated cell growth could be a cause which can potentially be controlled by vitamin E. However laboratory based data is required to understand the mechanism. This study serves to provide a baseline clinical data in this regard to open up an era of new laboratory based projects.

Our study suggested significant improvement in the symptoms of cyclical mastalgia, similar results were observed in a few small scale studies. A small study reported from Iran, compared vitamin E (n=75) with placebo (n=75) and showed significant improvement in the symptoms in women in vitamin E group<sup>13</sup>. They used 600 IU and followed up patient at 2 and 4 months intervals. This dose is similar to our study however we used a relatively shorter interval for follow-up. Recently another study has come up with the similar results showing declining pain after vitamin E therapy<sup>14</sup>. In contrast to the randomised pilot study<sup>4</sup> where they used double dose and report similar effects. Therefore it is highly recommended to analyse the appropriate dose to cure this condition.

Our study however was a case series but presented a relatively larger sample size and supports the available literature in favour of vitamin E. We still appreciate small sample size and non-comparative nature of the study as limitations.

## CONCLUSION

Given the drastic side effects of hormonal therapy vitamin E can be prescribed as first line therapy for cyclical mastalgia in pre-menopausal women.

## Future directions

We recommend establishment of large randomised controlled trials to compare vitamin E with placebo to see its superiority and with evening primrose oil as

non-inferiority trial. Further work is also required to understand mechanism of action of vitamin E in alleviating breast symptoms.

## Source of funding

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