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LEVELS OF VITAMIN D AMONG THE PATIENTS OF MASTALGIA VISITING TO TERTIARY CARE HOSPITAL

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ABSTRACT

OBJECTIVE

To determine the frequency of levels of vitamin D among the patients of mastalgia visiting to tertiary care hospital.

METHODOLOGY

This descriptive cross-sectional study was carried out among confirmed cases of mastalgia to evaluate the Vitamin D levels at Department of General Surgery, Shaheed Mohtarma Benazir Bhutto Medical University / Chandka Medical College, Larkana. A total of 174 eligible female individuals were selected for the cohort (between 30 to 75 years). The breast pain was assessed clinically during breast examination and was categorized based on the Visual Analogue Scale as mild, moderate, or severe. The blood samples of all participants in the study were sent to the laboratory for analysis of Vitamin D which was classified as normal level, insufficiency, and deficiency. The deficiency was further subdivided into mild, moderate, and severe. The data

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Volume 08, Issue 06.
https://ghsjournal.com/

were subjected to analysis utilizing SPSS version 26 statistical software, with statistical significance established at $p \leq 0.05$.

RESULTS

The median age of the entire cohort was 53.50 ± 6.73. Vitamin D statuses of the individuals were reported as deficient (25.9%), insufficient (39.7%), and sufficient (34.5%). The association was identified as significant in menopausal status (p=0.001), insignificant in age group (p=0.732), body mass index (p=0.788), and parity (p=0.403).

CONCLUSION

Vitamin D deficiency and insufficiency are prevalent among individuals experiencing mastalgia, with a highly significant association identified with menopausal status. The identification and rectification of vitamin D dysregulation within this demographic may provide clinical advantages in the management of breast pain. These observations advocate for the inclusion of vitamin D evaluation in the standard assessment protocols for mastalgia, although additional research is imperative to investigate its therapeutic ramifications.

KEYWORDS

Breast pain, Complications, Mastalgia, Nutritional status, Vitamin D deficiency

INTRODUCTION

Mastalgia is the most common breast-related complaint of patients seeking care at both primary care clinics and breast referral centres [1]. It is reported to occur in around 70% of women [2]. Two-thirds of screened patients in the most serious complain of breast pain of which more than 50% is cyclical in nature [3]. While most of the patients only require reassurance of the benign nature of their complaints, up to 15% will require further therapy [4]. Mastalgia can be classified as true mastalgia or referred, mostly from the chest wall [5]. True mastalgia can be cyclic and exacerbate with menstrual cycles or be non-cyclic and constant [6]. The causes of mastalgia are uncertain; various factors such as hormonal or dietary issues have been implicated [5,6]. Because of the unknown origin of mastalgia treatment guidelines are not clearly defined [7]. Various therapies have been suggested from old times till now, from reassurance to oral nonsteroidal analgesics to hormone therapy [8]. Among vitamins, vitamins A, B6 and E have been prescribed for true mastalgia; the latter is widely used and is still recommended in the treatment of this disorder [9]. Vitamin D has been shown to play an important role in the development and function of the mammary gland [10]. Little is known about the effects of vitamin D deficiency on non-cyclical breast pain and how supplementation could potentially improve symptoms [11]. According to a study, women who have the lowest levels of vitamin D have a 45% increased risk of breast cancer, compared to women with the

highest levels of vitamin D in their blood [12]. vitamin D deficiency is a major contributing factor

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Volume 08, Issue 06.
https://ghsjournal.com/

in the well-recognised side effect of chest and musculoskeletal pain in patients receiving aromatase inhibitors (AI) [13]. Vitamin D deficiency is significantly lower in patients undergoing AI treatment experiencing musculoskeletal pain [14], as well as increased intensity of observed pain [15]. Regimented supplementation has been demonstrated to raise serum vitamin D levels and significantly improve symptoms of Musculoskeletal disability [16]. Furthermore, pre-treatment with vitamin D has also been shown to reduce musculoskeletal side effects after starting AI therapy [17] with prolonged improvement in symptoms during and after treatment. In a study by Alipour S et al, vitamin D levels showed no deficiency in 20% of women, mild deficiency was reported in 73.3%, severe deficiency level in 6.7% and moderate level deficiency was not present among women having mastalgia [18]. Vitamin D has been in clinical practice for mastalgia for decades, however, there is still a dearth of strong evidence for its use [19]. Systematic reviews on breast pain showed insufficient evidence regarding the use of Vitamin D for breast pain [20]. A descriptive cross-sectional study was conducted to determine the levels of vitamin D among the patients of mastalgia. Due to the lack of substantial evidence and less awareness of Vitamin D in breast clinics, this study was conducted to report the levels of vitamin D in reducing breast pain (mastalgia) in premenopausal women[21].

Vitamin D receptors are present in breast tissue, and vitamin D plays a role in various cellular processes, including hormone regulation and immune function. Adequate vitamin D levels are crucial for maintaining bone health, immune function, and hormonal balance. By identifying and correcting vitamin D deficiencies in patients with mastalgia, it may be possible to alleviate symptoms, improve overall health, and potentially enhance the response to other therapeutic interventions. Furthermore, it is important to assess vitamin D levels in patients with mastalgia to identify potential deficiencies that may impact their overall health and contribute to their symptoms.

METHODOLOGY

A cross-sectional descriptive study conducted at the department of General Surgery, Shaheed Mohtarma Benazir Bhutto Medical University / Chandka Medical College, Larkana from July 2023 to December 2024 to find out the level of vitamin D in patients with mastalgia. A total of 174 female patients in this study, who were chosen by non-probability consecutive sampling. Ethical clearance was received and informed written consent was obtained from all participants. The only included the studies on female patients of age 30–75 years with mastalgia (defined as breast pain that was sharp or burning in character and occurred in any region of the breast bud during menstrual cycle or intermenstrual period). The pain was evaluated clinically on breast examination and graded on the Visual Analogue Scale (VAS) as mild (1–3), moderate (4–7) or

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Volume 08, Issue 06.
https://ghsjournal.com/

severe (8–10). Exclusion criteria were those with a discrete lump in the breast, nipple discharge, those with breast abscess, pregnancy and lactation and post-traumatic cases.

Baseline clinico-demographical profiles were noted. Blood samples were obtained from all study participants and analyzed in the hospital laboratory to measure serum 25-hydroxyvitamin D [25(OH)D] levels. Patients' vitamin D status was categorized into three groups as follows: normal with the patient's serum 25(OH) D concentration being greater than 30 ng/mL (75 nmol/L); insufficiency with the patient's serum 25(OH) D concentration ranging from 20 to 30 ng/mL (50-75 nmol/L), and deficiency with the patient's serum 25(OH) D concentration less than 20 ng/mL (50 nmol/L). The deficit range was subsequently categorized in mild (10–19 ng/mL, 25–49 nmol/L), moderate (5–9 ng/mL, 12.5–22.5 nmol/L) and severe (<5 ng/mL, 12.5 nmol/L) deficit.

Data were collected and analyzed in SPSS version 26. Continuous variables were presented as mean ± standard deviation. Frequency and percentage were used to describe categorical variables. Chi-square test was applied to evaluate the statistical significance and p-value ≤ 0.05 was considered as statistically significant.

RESULTS

The study involved 174 participants, with a mean age of 53.50 ± 6.73 years. Most individuals (73.6%) were older than 50, while the remaining 26.4% were between 30 and 50 years of age. The average Body Mass Index (BMI) among the participants was 25.99 ± 3.81 kg/m². Of the total sample, 62.1% had a BMI in the 20–26 kg/m² range, whereas 37.9% had a BMI above 26 kg/m². A large proportion of the group (90.2%) were pre-menopausal, while 9.8% were post-menopausal. Regarding parties, 63.8% were multiparous and 36.2% nulliparous. Assessment of vitamin D levels showed 25.9% were deficient, 39.7% had insufficient levels, and 34.5% were sufficient, as shown in Table I.

Table II presents the associations between patient characteristics and their vitamin D status among the 174 participants. Statistical analysis showed no significant relationships between vitamin D levels and age groups ($p = 0.732$), BMI categories ($p = 0.788$), or parity ($p = 0.403$). However, a meaningful correlation was observed between menopausal status and serum vitamin D levels ($p = 0.001$). Among those who were pre-menopausal, 88.9% had vitamin D deficiency, compared to 11.1% in post-menopausal individuals. All participants with insufficient vitamin D levels were pre-menopausal (100%), while among those with adequate levels, 80% were pre-menopausal and 20% were post-menopausal.

DISCUSSION

The frequency of different degrees of vitamin D levels in patients with complaint of mastalgia

was the objective of this work in a tertiary care hospital. Results showed that 25.9% of the

GLOBAL HEALTH & MEDICINE
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Volume 08, Issue 06.
https://ghsjournal.com/

subjects were vitamin D deficit, 39.7%Vitamin D insufficiency and 34.5% had sufficient serum Vitamin D levels. These findings support a high prevalence of maternal hypovitaminosis D in patients with mastalgia.

Our findings are similar to the results of earlier reports. Sree et al. reported comparable findings among their study subjects having 26% of the patients being categorized as vitamin D-deficient, 39% as insufficient, and 35% as sufficient [18]. The close resemblance to our findings certainly enhances the reliability and generality of our findings and suggests that a consistent relationship between low vitamin D levels and mastalgia exists in a variety of contexts and across multiple populations.

Nonetheless, some studies have provided inconsistent distributions. For instance, AlFaris et al. found 29.4% meeting the definition of Vitamin D disorders, 10.4% with insufficiency and 10.2% with sufficiency [11]. The variation in sufficiency and insufficiency between the two studies may be due to geographical, nutritional, cultural, or seasonal differences in sunlight exposure; these factors affect serum vitamin D levels considerably. The population of the Saudi study might have also had different dietary habits or supplementation practices which would influence their vitamin D status.

The high frequency of vitamin D deficiency and insufficiency in patients with mastalgia in our study have important clinical implications. Vitamin D has been associated with calcium homeostasis, immunomodulation and inflammation regulation and could alter the pathophysiology of mastalgia. Evaluation of vitamin D levels in women with unexplained breast pain may, hence, provide a simple, inexpensive approach for its diagnosis and management.

The therapeutic value of correcting hypovitaminosis D in idiopathic mastalgia is also supported by other studies. A systematic review of Hafiz et al. stated the management of idiopathic mastalgia was variable, but vitamin D supplementation seemed to be a promising method for relieving symptoms in some patients [19]. Likewise, a full work-up, including testing for nutritional deficiencies such as vitamin D in those with persistent breast pain should be considered according to the British Journal of General Practice [20].

The psychosocial burden of mastalgia also cannot be ignored. Bolat et al. reported that cyclical as well as noncyclical mastalgia have a highly negative impact on the quality of life of the women with mastalgia, often resulting in anxiety, fear about breast cancer, and regular consultations with a healthcare professional [21]. Hence, if modifiable risk factors such as vitamin D deficiency were identified and managed, it would not only relieve patients from their physical symptoms but also improve their feeling of mental well-being and save them from unnecessary diagnostic investigations.

GLOBAL HEALTH & MEDICINE
ISSN / eISSN: 2434-9186 / 2434-9194
Volume 08, Issue 06.
https://ghsjournal.com/

This study has a number of strengths, such as a well-defined operational definition and a uniform method of categorising vitamin D levels. However, the single-center design and the absence of follow-up data to evaluate the therapeutic effect of vitamin D supplementation are weaknesses. Further research needs to be done in the form of RCT to assess if correction of vitamin D deficiency results in long term relief of mastalgia.

In conclusion, results indicate a high prevalence of vitamin D deficiency and insufficiency in women with mastalgia. These findings are consistent with the current literature and suggest that vitamin D screening and even supplementation may be a consideration for this patient population.

Although, this study was beneficial and showed us how common the vitamin D deficiency is among mastalgia's patients, but it has some limitations. First, as it was a cross-sectional study, causal relationships between vitamin D levels and mastalgia could not be determined. Since the data were collected in a cross-sectional fashion, we cannot be certain that low vitamin D levels cause mastalgia, of whether this is merely correlative. Secondly, as a single institution study, our findings might not be generalized to the wider population, for example, in diverse geographic and socio-economic backgrounds. Also, dietary consumption, sun exposure, length of physical activity, intake of vitamin D supplement were not examined, and thereby might have affected the status of vitamin D and increase confounding variables.

Nevertheless, our study was characterized by substantial strengths, despite some limitations. It used a cohesive operating definition for both mastalgia and vitamin D, providing uniformity and precision in diagnosis. The validity of the results was improved by using objective laboratory measurements to measure the serum 25(OH)D concentrations. In addition, the sample size of 174 patients was sufficient for descriptive analysis, and implementation of standardized statistical methods enabled us to gain valuable information regarding the frequency distribution of vitamin D levels in our population.

According to the results, the subsequent investigations should be in the form of a longitudinal or interventional study to evaluate the potential therapeutic effects of vitamin D supplements in mastalgia. The addition of several centers and varied populations would improve generalizability. Moreover, evaluating lifestyle and monitoring the course of the symptoms over time would allow for a better understanding the involvement of vitamin D in mastalgia. Practitioners may wish to consider the routine screening for vitamin D deficiency in women with idiopathic breast pain as treatment could prove to be a simple and cost-effective remedy.

CONCLUSION

Vitamin D deficiency and insufficiency are prevalent among individuals experiencing mastalgia,

with a highly significant association identified with menopausal status. The identification and

GLOBAL HEALTH & MEDICINE

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Volume 08, Issue 06.

https://ghsjournal.com/

rectification of vitamin D dysregulation within this demographic may provide clinical advantages in the management of breast pain. These observations advocate for the inclusion of vitamin D evaluation in the standard assessment protocols for mastalgia, although additional research is imperative to investigate its therapeutic ramifications.

GLOBAL HEALTH & MEDICINE

ISSN / eISSN: 2434-9186 / 2434-9194

Volume 08, Issue 06.

https://ghsjournal.com/

Table I: Demographic Characteristics of Study Participants (n=174)	
Characteristics	**n (%)**
Age (Mean ± SD) = 53.50 ± 6.73	
30 - 50 years	46 (26.4)
>50 years	128 (73.6)
Body mass Index (Mean ± SD) = 25.99 ± 3.81	
20 - 26 kg/m^2	108 (62.1)
>26 kg/m^2	66 (37.9)
Menopausal Status	
Pre-menopausal	157 (90.2)
Post-menopausal	17 (9.8)
Parity	
Nulliparous	63 (36.2)
Multiparous	111 (63.8)
Levels of Vitamin D	
Deficient	45 (25.9)
Insufficient	69 (39.7)
Sufficient	60 (34.5)

Table II: Association of Patient Characteristics with Vitamin D Levels (n=174)					
Characteristics		**Levels of Vitamin D**			**P-Value**
		Deficient	**Insufficient**	**Sufficient**	
Age Group	30 - 50 years, *n* (%)	13 (28.9)	16 (23.2)	17 (28.3)	0.732
	>50 years, *n* (%)	32 (71.1)	53 (76.8)	43 (71.7)	
BMI Group	20 - 26 kg/m^2, *n* (%)	26 (57.8)	44 (63.8)	38 (63.3)	0.788
	>26 kg/m^2, *n* (%)	19 (42.2)	25 (36.2)	22 (36.7)	
Menopausal Status	Pre-menopausal, *n* (%)	40 (88.9)	69 (100.0)	48 (80.0)	0.001
	Post-menopausal, *n* (%)	5 (11.1)	0 (0.0)	12 (20.0)	

GLOBAL HEALTH & MEDICINE

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Volume 08, Issue 06.

https://ghsjournal.com/

Parity	Nulliparous, *n* (%)	17 (37.8)	21 (30.4)	25 (41.7)	0.403
	Multiparous, *n* (%)	28 (62.2)	48 (69.6)	35 (58.3)	

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Volume 08, Issue 06.

https://ghsjournal.com/

REFERENCES

1. Thakur N, Dar MY, Bhat SH. To study association between Vit D deficiency and mastalgia among patients visiting outpatient department: a prospective study. Int J. 2020;3(6):693.

2. Li E, Rai S, Rizkalla N, Sintler M, Vishwanath L. Vitamin D supplementation in the treatment of non-cyclical breast pain. J Pain Relief. 2018;7(330):2167-0846.

3. Rose H, Rose A, Forbat S, Anderson E, Hendry P, Mullen R, et al. Does every young woman presenting with a solid breast lump require a biopsy? Six year experience of a regional breast unit. Eur J Surg Oncol. 2019;45(5):893.

4. Burratti M, Morano G, Pasquale C, Di Fonso G, Costabile L. Breast gel based on Boswellia serrata, Betaine and myo-Inositol improves cyclic mastodynia in fertile women: a retrospective clinical study. Breast Dis. 2024;43(1):243-9.

5. Sarkar DK, Khan M, Banerjee R, Jana D. P028. Vitamin D deficiency in mastalgia: Is it a coincidence or an association?. Eur J Surg Oncol. 2019;45(5):893.

6. Mohammed AA. Evaluation of mastalgia in patients presented to the breast clinic in Duhok city, Iraq: Cross-sectional study. Ann Med Surg. 2020;52:31-5.

7. Godazandeh G, Ala S, Motlaq TM, Sahebnasagh A, Bazi A. The comparison of the effect of flaxseed oil and vitamin E on mastalgia and nodularity of breast fibrocystic: a randomized double-blind clinical trial. J Pharm Health Care Sci. 2021;7:1-8.

8. Janakiraman S, Subramanian G. Hypovitaminosis D and effect of Vitamin D supplementation in Type 2 diabetes mellitus: A rural population-based study. Int J Adv Med. 2019;6(4):1293-8.

9. Bansal D, Boya CS, Vatte R, Ghai B. High prevalence of hypovitaminosis D in patients with low back pain: Evidence from meta-analysis. Pain Physician. 2018;21(4): E389-99.

10. Suryanarayana P, Arlappa N, Sai Santhosh V, Balakrishna N, Lakshmi Rajkumar P, Prasad U, et al. Prevalence of Vitamin D deficiency and its associated factors among the urban elderly population in Hyderabad metropolitan city, South India. Ann Hum Biol. 2018;45(2):133-9.

GLOBAL HEALTH & MEDICINE

ISSN / eISSN: 2434-9186 / 2434-9194

Volume 08, Issue 06.

https://ghsjournal.com/

11. AlFaris NA, ALkehayez NM, Almushawah FI, Al Naeem AN, D AL-Amri N, Almudawah ES. A descriptive study of vitamin D and other nutritional factors in breast cancer patients in Saudi Arabia. Saudi Med J. 2018;39(6):564.

12. Ganeb SS, Eltanawy R, Marei Y, Abdelazez H, Mahgoub M. Implications of vitamin D deficiency on Egyptian adults' health. Benha Med J. 2021;38(3):831-47.

13. Aparna P, Muthathal S, Nongkynrih B, Gupta SK. Vitamin D deficiency in India. J Family Med Prim Care. 2018;7(2):324-30.

14. Choudhury JR, Bandyopadhyay D, Mukherjee K, Bhattacharjee D. A clinical registry of multisystemic presentation of hypovitaminosis D in hospital attendees in Kolkata. Asian J Med Sci. 2022;13(1):60-5.

15. Siddique AB, Nath SD, Mubarak M, Akter A, Mehrin S, Hkatun MJ, et al. Assessment of prevalence and factors affecting Mastalgia among early reproductive-aged women in Bangladesh: a cross-sectional survey. BMC Public Health. 2023;23(1):2269.

16. Altıntas Y, Bayrak M. Evaluation of 1294 female patients with breast pain: a retrospective study. Adv Ther. 2018;35:1411-9.

17. ElSherif A, Valente SA. Management of mastalgia. Surg Clin. 2022;102(6):929-46.

18. Sree GN, Yadav SK, Sharma DB, Sharma D, Shekhar S. Vitamin D deficiency and mastalgia: a prospective controlled study on prevalence and the therapeutic impact of supplementation. Eur J Breast Health. 2025;21(2):137.

19. Hafiz SP, Barnes NL, Kirwan CC. Clinical management of idiopathic mastalgia: a systematic review. J Prim Health Care. 2018;10(4):312-23.

20. Hubbard TJ, Sharma A, Ferguson DJ. Breast pain: assessment, management, and referral criteria. Br J Gen Pract. 2020;70(697):419-20.

GLOBAL HEALTH & MEDICINE

ISSN / eISSN: 2434-9186 / 2434-9194

Volume 08, Issue 06.

https://ghsjournal.com/

21. Bolat H, Aşcı Ö, Kocaöz S, Kocaöz S. Noncyclical and cyclical mastalgia in Turkish women: Prevalence, risk factors, health-care seeking and quality of life. Health Care Women Int. 2022; 43(1-3):160-75.