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General Medicine

ASSOCIATION OF SERUM VITAMIN B12 AND VITAMIN D3 IN MIGRAINE PATIENTS

Panchal Akshay Balwantbhai — Resident, Dept. Of General Medicine & Therapeutics, GMCH, Udaipur.

Yadav Naraian Verma* — Professor and Unit Head, Dept. Of General Medicine & Therapeutics, GMCH, Udaipur. *Corresponding Author

ABSTRACT Migraine is a complex, chronic, disabling, common neurovascular disorder typically characterized by recurrent episodes of headache - a throbbing, pulsating, severely debilitating and often unilateral pain. This study aimed to determine the association of migraine with Vitamin B12 and Vitamin D3 among 500 patients suffering from migraine aged between 10-60 years visiting Geetanjali Medical College and Hospital. Blood samples were collected to assess Vitamin B12 and Vitamin D3. We observed both parameters were below the normal range. Thus Vitamin B12 and Vitamin D3 may need to be supply for preventing migraine attacks.

KEYWORDS : Migraine, Vitamin B12, Vitamin D3

INTRODUCTION:

Migraine is a complex, chronic, disabling, common neurovascular disorder typically characterized by recurrent episodes of headache - a throbbing, pulsating, severely debilitating and often unilateral pain. It may be associated with visual or sensory symptoms, the aura, and nausea or vomiting. The most common forms of migraine fall into two main categories, migraine with aura (MA) and migraine without aura. Migraine without aura is the most common type of migraine, and approximately 80% of migraine patients are reported to have this type.[1] MA is primarily characterized by the presence of focal neurological symptoms such as blurred vision, vertigo, or hallucination and headache. During the past decade, scientific research has improved our understanding of migraine pathogenesis, leading to more efficient pharmacological treatment protocols. It is not surprising, therefore, that in a recent survey,[2] complementary and alternative medicine was reportedly used more often among adults with migraine and severe headache (49.5%) than by those without these diagnose (33.9%). Migraines correlate with many non-headache conditions, including susceptibility for Vitamin B12 deficiency. Unfortunately, many of the symptoms of Vitamin B12 deficiency mimic migraines, making it harder to identify and treat. In order to prevent severe Vitamin B12 deficiency with migraines, it's important to understand why it happens and what you can do to reduce your odds. No one knows for sure whether Vitamin B12 can help prevent migraines and, if so, how it works, but scientists are trying to find answers. Some experts think migraines may occur when blood vessels in the brain swell and press on nearby nerves, causing headache pain. Vitamin B12 (cobalamin) is essential for the normal functioning of your nervous system and for the production of healthy red blood cells, but exactly how Vitamin B12 could reduce migraines is unclear.[3] Vitamin D3 plays a role in the absorption of calcium that helps to build strong bones. Your body makes Vitamin D3 naturally from your skin's exposure to sunlight. Researches[4] have shown that Vitamin D3 status and factors of Vitamin D3 metabolism are related to migraines but that Vitamin D3 status does not relate to certain headache characteristics. Research on Vitamin D3's role in migraines and headaches is limited and inconsistent, with some studies showing a positive association and others showing no association. That being said, it has been shown extensively that higher Vitamin D3 levels help reduce inflammation and therefore it might have a role in the development of migraine attacks.[4] Considering the extensive prevalence and excruciating painful effect of migraine, options for curing, alleviating or mitigating it need to be exhaustively explored. Two parameters namely Vitamin B12 and Vitamin D3 levels in random sample appear to be suitable options for such exploration. Since migraine is impacted by life style, local and socioeconomic condition we propose to undertake a study based on the headache patients from underdeveloped and developing region of south west Rajasthan attending tertiary private hospital, Udaipur.

AIMS AND OBJECTIVES

1. To assess the serum levels of Vitamin B12 and Vitamin D3 in patients suffering from migraine.
2. To correlate the levels of Vitamin B12 and Vitamin D3 with duration of migraine.

MATERIALS AND METHODS

A prospective study of 500 patients who attended medical / neurology OPD at Geetanjali Medical College and Hospital, Udaipur, Rajasthan with complaint of headache, due to migraine was done. All the patients of age more than 10 and less than 60 years, attending as outpatient during the study period with migraine were included. Blood samples of Vitamin B12 and Vitamin D3 were taken after taking consent.

Type of study: A prospective study design.
Sampling Method: consecutive patients

INCLUSION CRITERIA:

1. Primary cause of headache is migraine.
2. Age 10 years – 60 years.

EXCLUSION CRITERIA:

1. Headache due to any other cause other than migraine.

OBSERVATION AND RESULT

Table - 1 Vitamin B12 and Vitamin D3 levels in migaraineurs

Parameters	Gender						
	Male		Female		Total		P value
	Mean	SD	Mean	SD	Mean	SD	
Vitamin B12 (ng/ml)	152.75	126.55	146.27	115.73	149.53	121.20	0.55 (NS)
Vitamin D3 (ng/ml)	18.59	11.11	17.85	11.33	18.22	11.21	0.46 (NS)

Table 1 represents the Vitamin B12 levels in male and female migraineurs. Mean Vitamin B12 value in male patients was 152.75 ± 126.55 ng/ml, and in females was 146.27 ± 115.73 ng/ml. Vitamin B12 values were well below the normal of > 200ng/ml.

Vitamin D3 levels in male and female migraineurs. Mean Vitamin D3 value in male patients was 18.59 ± 11.11 ng/ml, and in females was 17.85 ± 11.33 ng/ml. The Vitamin D3 values were well below the normal range of 30-100 ng/dl.

Table - 2 Vitamin B12 levels with duration in migraineurs

Duration (Yrs)	Vitamin B12 (ng/dl)				
	Male		Female		P value
	Mean	SD	Mean	SD	
<5	145.89	112.50	145.36	118.27	0.97
5-10	210.42	175.67	173.85	146.68	0.27
10-15	151.45	125.23	155.91	112.59	0.88
15-20	89.50	16.53	101.70	20.11	0.08
>20	100.54	48.72	116.57	61.86	0.33

Table 2 represents Vitamin B12 levels in migraineurs with duration of disease. Both genders have Vitamin B12 levels well below the normal range, except the 5-10 years duration of male migraineurs.

Table - 3 Vitamin D3 levels with duration in migraineurs

Duration (Yrs)	Vitamin D3 (ng/dl)				P value
	Male		Female		
	Mean	SD	Mean	SD	
<5	18.70	10.63	19.31	11.23	0.61
5-10	21.62	12.10	20.12	12.95	0.63
10-15	14.01	7.12	14.09	8.27	0.96
15-20	22.75	12.48	16.05	8.35	0.10
>20	13.83	12.59	14.18	12.68	0.92

Table 3 represents Vitamin D3 levels in migraineurs with duration of disease. Both gender migraineurs have Vitamin D3 values well below the normal range.

DISCUSSION

The main objectives of the study were to assess the serum levels of Vitamin B12 and Vitamin D3 in migraineurs and to correlate the data with duration of migraine.

VITAMIN B12

- In present study mean Vitamin B12 level in male patients was 152.75 ± 126.55 ng/ml and in that of females was 146.27 ± 115.73 ng/ml. These values were well below the normal range of 200 - 900 ng/ml. Vitamin B12 levels in migraineurs of either gender with higher frequency of disease were also well below normal levels.
- No any study is done for association of Vitamin B12 levels with migraine.

VITAMIN D3

- Mean Vitamin D3 level in male patients was found to be 18.59 ± 11.11 ng/ml and in females 17.85 ± 11.33 ng/ml, values were well below the normal range of 30-100 ng/ml. Vitamin D3 levels in migraineurs of either gender with higher frequency of migraine attacks were low.This study compares well with other research work on the subject:

- A few case reports have indicated the role of vitamin D in headache, including migraine.[5,6,7] Two investigations were conducted in this field in 1994.[6,7] A case report study was conducted over two months in two female patients with migraine, associated with menstruation and premenstrual syndrome. These patients had low levels of vitamin D; consumption of vitamin D and calcium supplements (1600-1200 IU per day) led to significant reduction in migraine attacks and premenstrual symptoms[6]

- Some researchers reported an association between headache and serum 25-hydroxyvitamin D: this is verified by the increased frequency of headache in people living at higher latitudes, who are more likely to be vitamin D deficient; no such association between migraine and serum 25(OH) D.

- Other researchers found that vitamin D status and factors of vitamin D metabolism are related to migraines but that vitamin D status does not relate to certain headache characteristics. Research on the role of vitamin D in migraines and headaches is thus limited and inconsistent.

CONCLUSION

- This study concluded that Vitamin B12 and Vitamin D3 levels are well below the normal level in migraineurs and also with duration of migraine both parameters tend to be well below normal range.

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