

Original research article

The effects of vitamin D, C, E and zinc supplementation in chronic non-specific low back pain in Women

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Abstract

The vast majority of people experience some level of back pain. After headache, the most common type of patient complaint is one that involves pain. Chronic pain in the lower back (also known as CLBP) typically worsens over time, and it can be difficult to determine or verify the underlying cause of the condition. Despite the availability of very invasive therapeutic options, a significant number of patients continue to suffer as a result of a significant amount of mortality. This is the case despite the fact that there are a great deal of pharmaceutical options. A lack of vitamin D has been linked to recurrent pain in the musculoskeletal system, which can manifest itself as low back pain. Back Pain (LBP). Inadequate levels of vitamin D have been shown to have adverse effects on the body's mobility, both directly and indirectly as a result of the body's capacity to feel and experience pain. When compared to people in the general population, patients who suffer from chronic low back pain have a significantly higher prevalence of vitamin-D deficiency. This prevalence can reach up to 83 percent, according to reports. The purpose of this study was to examine the effects of supplementation with vitamin D3, vitamin C, vitamin E, and zinc on pain and functional capacity in patients with chronic low back pain.

Keywords: Vitamin D, zinc, supplementation, low back pain

Introduction

Pain is an unpleasant sensory and emotional experience that is related with present or potential tissue damage, or that is characterised in terms of such damage^[1]. It is also possible to say that pain is an experience that is described in terms of such damage. Back pain is the second most common sort of pain complaint, with headache being the most common type of pain complaint overall. It can be difficult to pinpoint the underlying cause of chronic low back pain (CLBP), which often results in symptoms that become progressively worse over time. Even though there are several pharmacological and invasive therapy options available, a substantial number of patients still have significant morbidity^[2]. This is due to the fact that there is no cure for the condition. There is a correlation between low back pain and vitamin D insufficiency, which has also been found to be associated with other forms of chronic musculoskeletal pain (LBP). In addition, a lack of vitamin D can harm the flexibility of the body in a way that is both direct and indirect due to the impact that pain has on the body.

Patients who suffer from persistent low back pain have been observed to have a much greater prevalence of vitamin-D insufficiency (up to 83%), as compared to the general population^[2-5]. Concerning the mechanisms that underpin these interactions, there is currently a dearth of understanding^[6, 7]. In theory, two different kinds of links may be established between the two things. In the first instance, it is possible that hypovitaminosis D is to blame for the broad discomfort in the bones and muscles, in addition to the weakness and paresthesia. Second, hypovitaminosis D may play a part in the development of morphological changes by making the vertebral end plates more susceptible to the effects of irradiation^[8]. Because of this greater sensitivity, morphological abnormalities could develop. Vitamin E is a vital component of a healthy diet since it plays a key role in the body as an antioxidant. One of the important nutrients is vitamin E. It is the chain-breaking antioxidant with the largest significance in the body and the first line of defence against lipid peroxidation. It acts as a buffer against the damage that free radicals can bring to cell membranes^[9]. The anti-nociceptive effects of vitamin E were observed and described in the very first stages of research. For instance, streptozotocin-induced diabetic neuropathy in rats was treated with the dietary supplement vitamin E (12 g/kg per day, administered orally for three months), and this resulted in an improvement in the rats' nerve conduction impairments^[10, 11]. According to the findings of one study, rats that had undergone spinal nerve ligation saw a reduction in the severity of mechanical allodynia after receiving a single infusion of vitamin E (0.1-5 g/kg intraperitoneally).

Aims and Objectives

To effects of vitamin D, C, E and zinc supplementation in chronic non-specific low back pain in Women.

Materials and Methods

This research was carried out at the KMC, Mangalore, Obstetrics and Gynecology Department with assistance from the Medicine Department. Between October 2013 and October 2014, the research was carried out.

One hundred female patients with chronic low back pain (CLBP) for at least three months, no leg pain, not responding to medications and physical therapies, having a pain score of at least 5 as assessed on a 0–10 Visual Analogue Scale (VAS) at baseline, and having low plasma levels of 25-hydroxyvitamin D3 (30 ng/mL) were eligible for study recruitment. Patients' ages ranged from 20 to 65 years old. Patients' pain scores ranged from at least 5 to 10. Patients who did not report having any pain in their legs were not included in the study. After a period of abstinence lasting for a full 24 hours, a blood sample was taken and examined to determine the levels of 25-hydroxyvitamin D3.

The McGill Pain Questionnaire, The Finger Floor Test, the Roland Morris Disability Questionnaire, and the Fear-Avoidance Beliefs Questionnaire were all used in the evaluation process both before and after the 8-week treatment protocol.

Results

Table 1: Age Distribution

| 20-35 years | 36-50 years | 50-65 years |
|--------------------|--------------------|--------------------|
| 30.65 ± 1.89 years | 45.11 ± 0.98 years | 62.94 ± 0.23 years |

Table 2: Before treatment, MPQ, FFT, RMDQ and FABQ were evaluated and the results were recorded

| | |
|------|--------------|
| MPQ | 50.52±5.60 |
| FFT | 5.62±2.02 cm |
| RMDQ | 13.96±2.34 |
| FABQ | 2.42±0.61 |

Table 3: After treatment, MPQ, FFT, RMDQ and FABQ were evaluated and the results were recorded

| | |
|------|------------|
| MPQ | 22.32±5.2 |
| FFT | 2.8±0.2 cm |
| RMDQ | 5.32±1.18 |
| FABQ | 2.58±5.62 |

Discussion

The activation of specific enzymes, such as proline hydroxylase and lysine hydroxylase, is essential to the maintenance of stable collagen helices, which are the defining characteristic of healthy connective tissues. Ascorbic acid is a common name for vitamin C, which is also an important component of vitamin C. It is common knowledge that vitamin C can perform the function of an antioxidant, thereby shielding DNA, proteins, and the cellular walls from the potentially harmful consequences that oxidation can have. Antioxidant vitamins are essential to humans not only because of their preventive action against the damages caused by free radicals, but also because they contribute to regenerate the redox (oxidoreduction) potential of cells and circulating fluids, and to maintain a stable and active antioxidant system^[12]. This is because antioxidant vitamins play a role in maintaining a stable and active antioxidant system. Because antioxidant vitamins play a part in keeping an antioxidant system stable and active, this is one reason why this is the case. Zinc is a trace element that has been shown to play a significant part in the maintenance of human health. It is necessary not only for the processes of cellular differentiation and production, but also for the synthesis of proteins and nucleic acids. In addition, it plays a key role in the generation of new cells. In addition to this, it participates as a microelement in a wide variety of biological reactions^[13, 14]. This is one among its many functions. Zinc is required for the normal functioning of about three hundred distinct metalloenzymes, in addition to the RNA enzymes and DNA polymerases that they are a component of. Zinc also plays an important role in the synthesis of proteins. In addition to this, there is evidence to suggest that zinc has a role in the normal operation of the immune system. Growth restriction, iron deficiency anaemia, organomegaly, insufficient wound repair, weight loss, impaired immune response, and increased susceptibility to infection can all be caused by a zinc shortage^[15-17]. Among the other symptoms is something called organomegaly. It has been demonstrated that zinc can alleviate gastrointestinal infections and diarrhoea, in addition to assisting in the healing of wounds by activating enzymes involved in the synthesis of collagen. These advantages can be traced back to zinc's presence in the body. The current study is being carried out with the intention of establishing the efficacy and safety of dietary supplements containing vitamin D3, vitamin C, vitamin E, and zinc with reference to the alleviation of pain and other symptoms associated with CLBP.

Conclusion

The effects of vitamin D, C, E and zinc on chronic pain should not be forgotten and should be questioned

in the evaluation.

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