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In Patients with Type 2 Diabetes Mellitus, the Relationship between Vitamin D Status and Diabetic Foot

Xiangwei Xiao*

Department of Pediatric Surgery, University of Pittsburgh, Children's Hospital of Pittsburgh, Pittsburgh, USA

Abstract

One of the most severe and painful chronic complications of diabetes mellitus is diabetic foot (DF). Poor wound healing increases the risk of disability and death in diabetic patients1, 2 as well as the number of hospitalizations and lower limb amputations. The prevalence of DF has been estimated to be between 2.46 and 2.4 percent3 per year. Patients with healed foot ulcers have a higher than 50%4 incidence of recurrence after three years. As a result, diabetic foot is now a significant threat to public health.The regulation of bone turnover and the metabolism of calcium and phosphorus are both dependent on vitamin D, a pleiotropic steroid hormone. In addition, it is known to play a role in the inflammatory response, immune function, cell cycle regulation, and a number of chronic diseases, including diabetes and its complications5, 6. In addition, there is a correlation between vitamin D levels and HbA1c levels in diabetic patients7, and low vitamin D levels have also been linked to lower muscle strength8. Vitamin D deficiency affects approximately one billion people worldwide, primarily in the Middle East, China, Mongolia, and India9. It is interesting to note that the proportion is even higher during the winter.

Keywords: FEH • Condyloma • Diagnoses • Tongue

Introduction

Vitamin D levels have been shown to be inversely related to the onset and progression of type 2 diabetes mellitus over the past few years11-13. micronutrient status in diabetic patients with foot ulcers, revealing that vitamin D deficiency was the most common condition among diabetic foot patients. Vitamin D's beneficial effect on wound healing has been found in a variety of preclinical and observational studies. However, it is still up for debate whether or not vitamin D contributes to the onset and progression of diabetic foot (DF). In addition, there are few large-scale epidemiological studies of the relationship between vitamin D levels and diabetic foot in the Chinese population. As a result, it is essential to investigate the connection between vitamin D levels and diabetic foot in the vast Chinese population. The primary objective of this study was to examine the relationship between serum 25-OH-vitamin D levels and DF in a Chinese hospitalized type 2 diabetes mellitus population and the prevalence of vitamin D deficiency in order to summarize clinical evidence regarding DF prevention and treatment [1].

Literature Review

They suggested a vitamin D concentration value of 25 nmol/L as the "cut-off" for unfavorable immunological alterations in diabetic patients and reported that severe vitamin D deficiency was associated with elevated inflammatory cytokine concentrations. Since then, a succession of observational studies have been published. However, these studies' outcomes have not always been consistent. In a cross-sectional study published in 201925, diabetic patients with and without foot infections did not differ significantly in serum vitamin D levels. This was also the case in India. A recent study that was conducted in a Mediterranean nation26 reached a similar conclusion. Despite this, the findings in Iranian patients. Similar observational studies have shown that diabetic foot syndrome patients are particularly vulnerable to vitamin D deficiency. Only two studies have been conducted in China at this time, and only one of them had a relatively large sample size. It's important to note that both of their results are in line with ours. Our multivariate logistic regression analysis also showed that vitamin D was a separate risk factor for diabetic foot and may have some protective effect against the condition. However, considering vitamin D as a continuous variable, false positive results cannot be ruled out because the amplitude was so small (OR=0.986 [2].

Discussion

Seasonal variations in vitamin D concentrations42 are well-known. This is the first study to our knowledge to examine the seasonal variation in vitamin D levels in diabetic foot patients. We observed a seasonal variation in vitamin D levels, with lower levels in the winter and spring, particularly in diabetic foot patients. In addition, the DF group's vitamin D levels were lower during the same season than those of patients without diabetic foot. The skin makes the majority of vitamin D when exposed to ultraviolet B. Season, time of day, latitude, altitude, air pollution, skin pigmentation, sunscreen use, and rays passing through glass and plastic43 are just a few of the many factors that could have a significant impact on vitamin D levels. The inconsistent findings of the most recent studies may be partially attributable to this. As a result, diabetic foot patients and people with type 2 diabetes must have their vitamin D levels checked in the winter and spring. In addition, recommending timely vitamin D supplementation may be important [3].

Only two randomized controlled trials have been conducted to demonstrate, 45, 46, that vitamin D supplementation may aid in wound healing in DF patients. According to our research, diabetic foot patients with type 2 diabetes had lower vitamin D levels than those without the condition. As a result, this hints at the possibility of vitamin D supplementation as an additional treatment option for diabetic foot. To put it another way, avoiding vitamin D deficiency and maintaining adequate vitamin D levels may be beneficial for both the prevention and treatment of diabetic foot. A large number of studies and meta-analyses still show a clear connection between low vitamin D levels, vitamin D deficiency, and diabetic foot. Although this connection does not necessarily mean a correlation or a causal connection, it also has great significance for

***Address for Correspondence:** Xiangwei Xiao, Department of Pediatric Surgery, University of Pittsburgh, Children's Hospital of Pittsburgh, Pittsburgh, USA, E-mail: xianxiao@gmail.com*

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the treatment and management of diabetic foot. Based on the aforementioned, there are contradictory results. In addition, the risk of developing diabetic foot could be assessed to some extent by measuring vitamin D levels in diabetic patients [4,5].

Conclusion

Vitamin D deficiency is a common problem for Chinese people who have type 2 diabetes. Chinese patients with type 2 diabetes were significantly more likely to have diabetic foot if their serum vitamin D levels were low. We surveyed the occasional variance of vitamin D in patients with diabetic foot, first and foremost. Even though vitamin D levels fluctuate seasonally, diabetic foot patients were still more likely to have vitamin D deficiency or insufficiency. Diabetes foot may be prevented or improved by vitamin D screening or supplementation in Chinese patients with type 2 diabetes, particularly in the winter and spring.

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Conflict of Interest

There are no conflicts of interest by author.

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