

Analysis of Vitamin D Supplementation's Improvement for the Symptoms of Parkinson's Disease

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Abstract: with the Aging of the Population, the Growth Rate and Number of Parkinson's Patients Are Increasing. At Present, More Than Two Million People Suffer from Parkinson's Disease in China, and Hundreds of Thousands of People Get Parkinson's Disease Every Year. a Large Number of Related Studies Have Shown That Vitamin d Has Obvious Therapeutic Effect on Parkinson's Disease, Which Has Attracted Wide Attention in the Industry. in This Context, through the Theoretical Analysis of Vitamin d and Parkinson's Disease, This Paper Summarizes the Intrinsic Relationship between Vitamin d and Parkinson's Disease, and Explores the Therapeutic Effect of Vitamin d on Parkinson's Disease.

1. Introduction

1.1 Literature Review

Liu Ying, a scholar, studied the serum 25-hydroxyvitamin D level of Parkinson's disease patients, and compared it with other patients. He concluded that osteoporosis symptoms were common in Parkinson's disease patients. Therefore, he believed that the treatment of Parkinson's disease could be achieved by controlling the serum 25-hydroxyvitamin D level (Liu,2013). Li Xiao yun and Wang Shi yu have proved that vitamin D is one of the important biological molecules that regulate cell proliferation and immune function through the study of vitamin D. For many diseases such as tumors, nervous system diseases have a strong therapeutic capacity. Vitamin D is an indispensable nutrient (Li et al, 2018). Fan Dong sheng has studied Parkinson's disease carefully. By comparison, the majority of the patients are about 60 years old. However, there is no cure for Parkinson's disease for the time being, and the quality of life of the elderly patients has seriously declined. Therefore, he raised the clinical focus of Parkinson's disease (Fan, 2013). An zhu yan and other scholars have explored the pathogenesis of Parkinson's disease from the root, and concluded that the loss of dopaminergic neurons in substantia nigra compact and the formation of Lewis corpuscles are the main causes of Parkinson's disease. Antioxidant and mitochondrial function improvement can delay the aggravation of Parkinson's disease (An et al, 2017). Wang Le and other scholars believe that the drug properties of vitamin D play a role in several neurological diseases, especially in the elderly patients with osteoporosis and cognitive decline. Therefore, vitamin D may be an important target for the treatment of Parkinson's disease (Wang et al, 2015).

1.2 Purpose of Research

The increasing population aging and Parkinson's disease group make professionals pay more attention to related aspects. Relevant personnel through vitamin D targeted treatment of Parkinson's disease patients, the results show that vitamin D can significantly improve the symptoms of Parkinson's disease, so that the condition of Parkinson's disease can be alleviated. Because Parkinson's disease can not be completely cured, the high incidence of Parkinson's disease has seriously damaged the quality of life of many elderly people. Based on this, the author collated and analyzed the theory of vitamin D and Parkinson, summarized the intrinsic relationship between vitamin D and Parkinson, and explored the root causes of vitamin relief of Parkinson's symptoms. In order to provide reference for relevant departments and personnel.

2. Theoretical Analysis of Vitamin d and Parkinson

2.1 Pharmacological Analysis of Vitamin d

VD is also known as vitamin D. There are two kinds of vitamin D, VD3 and VD2. Vitamin D is a chemical mixture of cyclopentane and polyhydrogen. Structurally, it belongs to sterols and pharmacologically prevents rickets. Vitamin D promotes cell growth and regulates immune function. Because vitamin D is produced by ultraviolet radiation, hydrogen-free cholesterol in the human body and ergosterol in plants. Generally, adults are exposed to sunlight and ultraviolet radiation for chemical reactions all year round, so adults seldom lack vitamin D. But infants and elderly people who don't take long walks need vitamin D supplements. If vitamin D is deficient, children may suffer from rickets and adults may suffer from osteoporosis. Patients can get vitamin D supplements from food. For example, animal liver, egg yolk, butter and so on. There are four main functions of vitamin D. The first one regulates calcium and phosphorus metabolism and promotes bone calcification. The second is to promote bone growth and increase the number of osteoblasts. The third kind inhibits cell growth and differentiation, and has obvious inhibitory effect on breast cancer cells, lung cancer cells and cancer cells. The fourth is to regulate immune function. When the collective immune system is inadequate, vitamin D can enhance monocytes and enhance immune function through the characteristics of macrophages.

2.2 A Comprehensive Study of Parkinson's Disease

Parkinson's disease occurs mostly in the elderly. This is a common neurodegenerative disease. Parkinson's disease is not obviously infectious and hereditary, so the industry believes that Parkinson's disease is sporadic. The main cause of Parkinson's disease is the degeneration and death of dopaminergic neurons. Currently, through research, professionals have identified three main causes of Parkinson's disease. The first is aging. According to incomplete statistics, most people with Parkinson's disease are over 60 years old. Therefore, it can be judged that the morbidity and morbidity increase with age, which indicates that the damage of dopaminergic neurons caused by aging is the main factor of Parkinson's disease. The second environmental factor. Through research, most drug users suffer from typical Parkinson's disease. Because heroin used by drug addicts contains neurophagic toxic substances that inhibit mitochondrial respiration, leading to the degeneration and death of dopamine neurons. Therefore, it is concluded that chemicals that inhibit mitochondrial function are one of the pathogenic factors of Parkinson's disease. The MPTP (Tetrahydropyridine) contained in herbicides and insecticides also proved that chemicals can kill dopaminergic neurons. Comprehensive judgment of the presence of MTPT-like substances in the environment is the pathogenic factor of Parkinson's disease. The third is genetic factors. The pathogenic gene of Parkinson's disease, alpha-synuclein, has been identified as one of the six major genes in family genetics. However, only 5% of Parkinson's patients have a family history of illness, which can only be preliminarily judged to be related to genetic factors.

3. The Relationship between Vitamin d and Parkinson's Disease

3.1 The Relationship between Vitamin d Deficiency and Osteoporosis

Through many years of scholarly research and case statistics, most of the elderly with skeletal diseases are deficient in vitamin D. One of the clinical manifestations of Parkinson's disease is osteoporosis. Many Parkinson's patients suffer from fractures due to falls and osteoporosis. It is not difficult to find that the bone mineral density of Parkinson's patients is lower than that of normal people. People who lack vitamin D lose bone mass and reduce bone mineral density (Yan, 2012). Some research institutes use vitamin D and calcium therapy to treat Parkinson's patients. Studies have shown that vitamin D improves bone quality more than calcium treatment. After summary and analysis, it is proved that vitamin D level is positively correlated with bone mineral density. For patients with Parkinson's disease, vitamin D supplementation can effectively reduce the risk of osteoporosis.

3.2 The Relationship between Vitamin d Deficiency and Parkinson's Disease

The vitamin D gene contains the VDR gene, which is also a component of steroid hormones. It is composed of 427 amino acids, which bind to vitamin D and bind to specific DNA sequence of target gene to express target gene. Researchers have found that VDR gene is widely distributed in human muscles and brain. Vitamin D can bind to VDR and play an important role in the central nervous system. Parkinson's typical symptoms are motor retardation and quiescent tremor. It can be concluded that vitamin D can inhibit the typical symptoms of central nervous system control. At present, a large number of studies focus on the five receptor genes of VDR, Bsm1, Taq1, Fok1, Apa1 and Tru91. Scholars have tested that five receptor genes bind to vitamin D at the same time. People with Parkinson's disease show no significant symptomatic worsening one year later (Li et al, 2016). On the relationship between VDR gene and Parkinson's disease, we conclude that the polymorphism of vitamin D receptor gene has a significant driving force on Parkinson's disease.

3.3 Causal Relationship between Vitamin d Deficiency and Parkinson's Disease

A large number of data were collected from medical institutions and compared with the normal group. Parkinson's patients have a lower 25-hydroxyvitamin D concentration, but without scientific evidence, it is not clear that vitamin D has a causal relationship with Parkinson's disease. Some scholars have proved that people with 25-hydroxyvitamin D concentration less than 75 nmol/L have a high risk of Parkinson's disease through the correlation study between vitamin D content and Parkinson's disease. People with 25-hydroxyvitamin D concentrations less than 50 nmol/L are more than twice as likely to have Parkinson's disease. It is fully proved that vitamin D deficiency is causal to Parkinson's disease. The International Parkinson's Disease Genome Alliance organized 5333 cases of Parkinson's disease. The 25-hydroxyvitamin D concentration data of Parkinson's patients were obtained. The Parkinson's risk index was significantly correlated with them (Jiang and Liu, 2015) The level of vitamin D in plasma was determined by taking the patient's plasma. The results showed that the ratio of the risk of Parkinson's disease in patients with plasma 25-hydroxyvitamin D concentration lower than 20 ng/ml was 1.14 compared with that in normal subjects. This authoritative statistics show that 25-hydroxyvitamin D concentration has a certain impact on Parkinson's disease.

4. Vitamin d Alleviates Parkinson's Symptoms

4.1 Relief of Clinical Manifestations of Resting Tremor in Parkinson's Disease by Vitamin d

To study the effect of vitamin D on Parkinson's disease, a double-blind placebo-controlled trial was conducted. Some cases were treated with vitamin D and some cases were treated with placebo. After a period of comparative treatment, the proportion of patients using vitamin D deteriorated significantly. Although patients receiving placebo had certain therapeutic effects, they were much worse than those receiving vitamin D. Some scholars have carried out ultraviolet radiation therapy. The results show that ultraviolet radiation can indeed affect the re-production of vitamin D in patients, which is of great help to reduce the risk of Parkinson's disease. Specifically, the concentration of serum 25-hydroxyvitamin D is proportional to the ultraviolet irradiation. However, direct intake of vitamin D does not alter the concentration of 25-hydroxyvitamin D in the body. The relationship between vitamin D and Parkinson's disease indicates that 25-hydroxyvitamin D reacts with vitamin D receptor (VDR) and is expressed in glial cells. Vitamin D also acts as a nutrient molecule in the nervous system to supplement energy and protect cells from external damage.

4.2 The Alleviation of Clinical Manifestations of Parkinson's Disease by Vitamin d

There are antibodies in the body, even in patients with Parkinson's disease. Anti-DA neuron antibodies are produced in Parkinson's patients. There are research institutions for cell culture and artificial culture of immune proteins. Studies have shown that the cerebrospinal fluid of patients with Parkinson's disease contains immunoglobulin IgG, which destroys the neurons of patients and leads to complete neuronal damage. When a neuron is completely necrotic, it releases an antigen

substance, which can cause a large number of neurons to self-destruct due to autoimmune reaction, and the dead neurons will release a large number of this antigen substance again. This leads to an endless cycle. To a certain extent, autoimmune diseases can not be said to be the cause of disease, but he aggravated the clinical manifestations of Parkinson's disease. The central nervous system of Parkinson's disease has not only immune abnormalities, but also humoral immune abnormalities. Some scholars have studied Parkinson's cases and found that the total number of lymphocytes in Parkinson's patients is about 10% less than that in normal people. These changes are closely related to the treatment. These studies have shown that the occurrence and aggravation of Parkinson's disease are closely related to the autoimmune response. In the pharmacological analysis of vitamin D, vitamin D has the effect of immunoregulation. Most of the expression of VDR is related to the immune system. The specific mechanism is through 25-hydroxyvitamin D to reduce the necessary active molecules of T lymphocyte and reduce the antigen secretion ability of cells. Inhibits the immune response and prevents the disease from deteriorating.

4.3 Relieving the Symptoms of Cognitive Decline in Parkinson's Disease with Vitamin d

Parkinson's disease is due to the destruction of the nerve center, physical retardation, unilateral physical inability to exercise and then the whole body can not exercise, the most obvious is that people with Parkinson's disease have cognitive impairment. Cells produce free radicals when they metabolize new towns, because the structure of free radicals can easily react with proteins and destroy cell tissues. Free radicals also strengthen calcium ions in cells and cause degenerative death of nerve cells. The most powerful damage of free radicals is to destroy the mitochondria of neurons, resulting in the death of neurons due to lack of oxygen. Oxidative stress is a major factor in the death of dopaminergic neurons in Parkinson's disease. Because the metabolism of DA produces many free radicals, free radicals are the main pests of pathogens. Studies have shown that the antioxidant mechanism of Parkinson's patients is defective, which can not inhibit the production of free radicals, leading to Parkinson's disease more and more serious. Vitamin D can increase the secretion of antioxidant glutathione, increase the expression of glutathione molecule, activate the active protective mechanism of Parkinson's patients, so that the antioxidant mechanism in Parkinson's patients' brain can re-enter the work and protect the nerve center.

5. Conclusion

Vitamin D can significantly improve Parkinson's symptoms. Through the pharmacological analysis of vitamin D and in-depth analysis of the causes of Parkinson's disease, we found three relationships between vitamin D and Parkinson's disease. That is, the relationship between vitamin D deficiency and osteoporosis in Parkinson's disease, the relationship between vitamin D deficiency and Parkinson's disease, and the causal relationship between vitamin D deficiency and Parkinson's disease. The alleviation of Parkinson's disease symptoms by vitamin D was analyzed from the origin of the disease based on the research results of various research institutes.

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