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EFFECTIVENESS OF VITAMIN D IN INFLAMMATION

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Abstract:

Objective: Vitamin D plays an important role in inflammatory processes, calciu balance and the musculoskeletal system. This property of vitamin D is also a important factor in the principles of treating osteoarthritis (OA). In order to evalua the effect of vitamin D on OA patients, to determine its effectiveness in inhibitir the inflammatory process, this study was conducted. Material and methods: Th participants were a total of 30 patients with OA living in the Kuva district of Fergar region. The results were analyzed by examining the general and biochemical bloc tests (leukocytes, CRB. ECHT and ferritin) of these patients. Results: A total of 3 patients, after thirty days of taking Vitamin D, all inflammatory markers returne to normal in all patients. It was found that the pain in the knee joint decrease significantly in the patients. Conclusion: Vitamin D is similar to Glucocorticoids in i mechanism of action. But it does not cause any complications. Based on this rul in the future we should use Vitamin D more widely in arthritis and autoimmur diseases

Keywords: Osteoarthritis, Vit D, pain, inflammation

INTRODUCTION: Osteoarthritis (OA) is a common musculoskeletal disease, with an estimated 527.8 million people worldwide affected in 2019 [1]. In the United States, more than 32.5 million adults were diagnosed with OA, and it is a leading cause of pain and disability [2]. In addition, OA can affect people's physical and mental health, and this widespread disease has resulted in enormous social and personal costs [2,3]. The pathogenesis and progression of OA are multifactorial, including joint structures, non-modifiable factors (age, gender, etc.), and modifiable factors, such as obesity and vitamin D status, which are important in the pathogenesis of this disease. As a steroid hormone, vitamin D exerts diverse biological effects on many tissues [5]. Vitamin D has a well-defined role in bone calcium metabolism, and the production and regulation of vitamin D in the body are important factors in the treatment of OA [5]. Vitamin D supplementation may improve pain and joint function in patients with knee OA, especially in those with low serum levels. There is also evidence of several positive benefits in increasing outdoor activity and improving mental health in patients with OA, which may contribute to better quality and quantity of survival [9]. In addition, recent literature has shown that vitamin D has anti-inflammatory, anti-proliferative, and anti-oxidative activities in many non-skeletal diseases, such as cardiovascular disease, diabetes, and cancer, which have been shown to have benefits. [10]

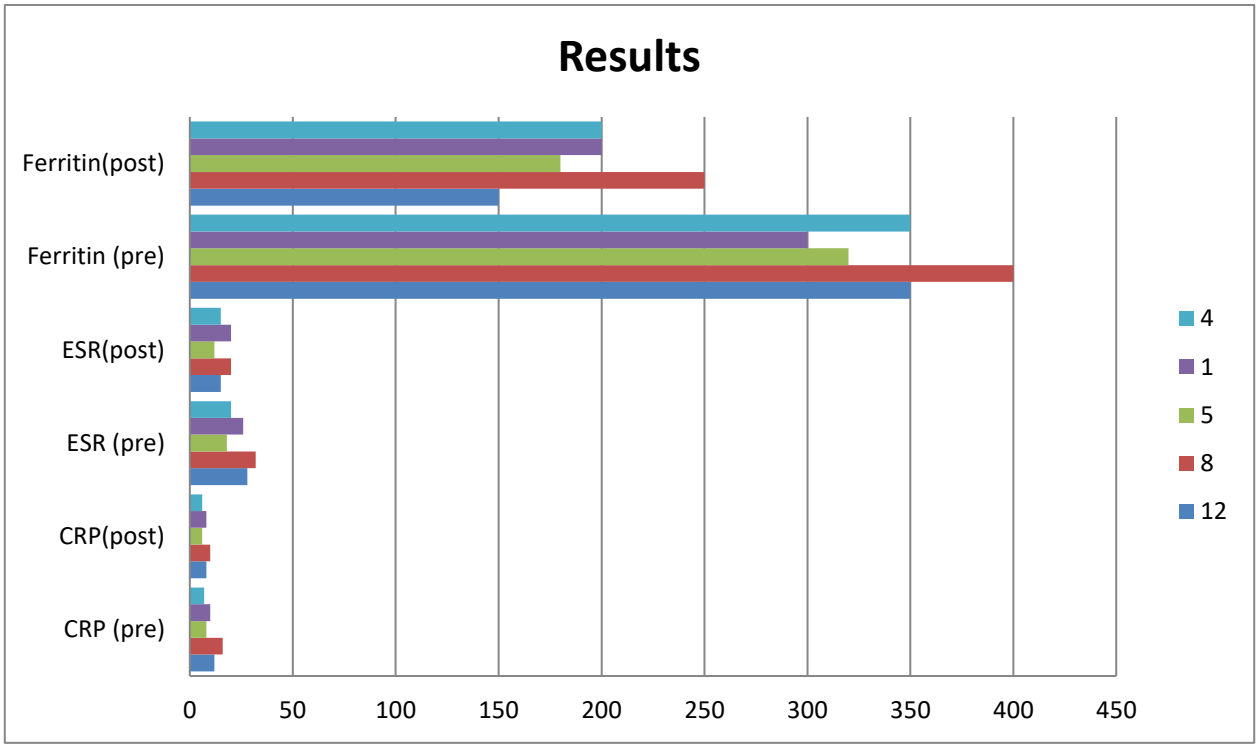
MATERIALS AND METHODS: In order to determine the effectiveness of vitamin D in the inflammatory process in patients with OA, 30 patients with OA living in the Kuva district of Fergana region were the objects of this study. All analyses were carried out in the laboratory of the Central Multidisciplinary Polyclinic of the Kuva district medical association. The results were recorded in the form of diagrams and tables using statistical methods.

RESULTS: Patients were given 30 thousand doses of vitamin D for a month. To prevent complications of vitamin D (kidney stones, hypercalcemia), magnesium glycinate, zinc picalinate, and K2 microelements were additionally given. The following changes were achieved in the blood of patients. Twenty-six out of thirty patients were female, four were male. Before taking the drug, inflammatory markers CRB, ESR, and ferritin were determined. In twenty-six women, the average SRB index was twelve out of thirteen patients, the ESR was twenty-eight, and the ferritin was up to 350 micrograms/liter. In eight female patients, the average CRB was sixteen, the ESR was thirty-two, and the ferritin was 400 micrograms/liter. In our five female patients, the average ESR was eighteen, the CRB was 8, and the ferritin was 320. In our male patients, the SRB was 7, the ESR was 20, and the ferritin was 350 micrograms/liter (Table 1). After thirty days of taking Vitamin D, all inflammatory markers returned to normal in all patients. The pain in the knee joint decreased dramatically in the patients.

	CRP	***ESR***	***Ferritin(microgram/litr***
Patient 1 (female)	*12*	*25*	*350*
Patient 2 (female)	*10*	*22*	*320*
Patient 3 (female)	*12*	*28*	*300*
Patient 4 (female)	*16*	*32*	*400*
Patient 5 (female)	*14*	*30*	*360*
Patient 6(female)	*12*	*28*	*300*
Patient 7 (female)	*10*	*24*	*320*
Patient 8 (female)	*16*	*32*	*400*
Patient 9 (female)	*18*	*32*	*390*
Patient 10 (female)	*13*	*28*	*360*
Patient 11(man)	*7*	*24*	*370*
Patient 12 (female)	*16*	*32*	*400*
Patient 13 (female)	*7*	*18*	*340*
Patient 14 (female)	*11*	*20*	*340*
Patient 15 (man)	*8*	*20*	*360*
Patient 16 (female)	*16*	*32*	*400*
Patient 17 (female)	*16*	*34*	*400*
Patient 18 (female)	*8*	*18*	*320*
Patient 19 (female)	*12*	*24*	*320*
Patient 20 (female)	*10*	*26*	*300*
Patient 21 (female)	*16*	*32*	*400*
Patient 22 (female)	*12*	*24*	*350*
Patient 23 (female)	*8*	*16*	*320*
Patient 24 (female)	*11*	*28*	*360*
Patient 25 (female)	*14*	*30*	*400*
Patient 26 (man)	*6*	*21*	*320*
Patient 27 (female)	*8*	*18*	*320*
Patient 28 (female)	*8*	*18*	*300*
Patient 29 (female)	*16*	*34*	*400*
Patient 30 (female)	*8*	*18*	*320*

Table 1

After thirty days of taking Vitamin D, all inflammatory markers returned to normal in all patients. It was found that the patients had a significant decrease in knee pain



Discussion: According to the mechanism of action of vitamin D, its action as a steroid hormone occurs in six steps.

According to the mechanism of action of vitamin D, the action of a steroid hormone occurs in five stages. Stage 1 Vitamin D enters the cell cytoplasm, binds to the hormone receptor	How to manage the process, taking into account these three processes
Stage 2 The hormone receptor complex enters the nucleus and dimerizes.	
Stage 3: Hormone receptor proteins bind to the SJE portion of DNA.	
Stage 4 DNA transcription mRNA production	
Stage 5 New protein formation. Colbindin d28-k protein stimulates calcium absorption in the intestines	

Although most doctors only recognize Vitamin D's role in calcium metabolism, Vitamin D inhibits inflammation through the following mechanisms.

1. Control of Cytokines and Inflammatory Mediators
- Vitamin D reduces pro-inflammatory cytokines (e.g. IL-6, TNF-α, IL-1β).
- Increases anti-inflammatory cytokines (e.g. IL-10).
- This helps to suppress the inflammatory process.

2. Inhibition of the NF-κB Pathway
- Vitamin D inhibits the NF-κB (nuclear factor kappa B) pathway. NF-κB plays an important role in the activation of genes that lead to inflammation.
- By inhibiting NF-κB, the production of inflammatory mediators is reduced.

3. Modulating T-lymphocytes and the Immune System
- Vitamin D suppresses T-lymphocytes (especially Th1 and Th17 cells), reducing their pro-inflammatory activity.
- Activates T-regulatory lymphocytes (Treg), which reduces inflammation.

4. Regulating Macrophages and Monocytes
- Vitamin D reduces the pro-inflammatory activity of macrophages and monocytes.
- Limits the production of pro-inflammatory mediators by these cells.

5. Reducing Oxidative Stress
- Vitamin D has antioxidant effects, reducing oxidative stress. This helps to alleviate inflammation.

6. Actions Through Vitamin D Receptors (VDR)

- Vitamin D acts through vitamin D receptors (VDR). These receptors modulate the anti-inflammatory response by altering gene expression.

CONCLUSION: In conclusion, it can be said that Vitamin D is similar to Glucocorticoids in its mechanism of action. But it does not cause any complications. Based on this rule, in the future, we should use Vitamin D more widely in arthritis and autoimmune diseases. Using Vitamin D together with magnesium glycinate, zinc, and K2 microelements will increase the effectiveness of Vitamin D by 10 times.

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