THE ROLE OF VITAMIN D IN T-SCORE OUTCOMES IN PATIENTS DIAGNOSED WITH POSTMENOPAUSAL OSTEOPOROSIS

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Abstract: Introduction: Osteoporosis is a disease characterized by low bone mass and disruption of bone structure, resulting in an increased bone weakness and possibility of fracture. Osteoporosis causes almost 9 million fractures a year worldwide. Osteoporosis is a serious global and health problem, a hidden and silent epidemic, which if left untreated leads to reduced quality of life and fractures. Medical experience has shown that statistically, large proportion of patients do not adhere to the recommendations for receiving vitamin D in therapy.
Goal: Having in mind the fact that osteoporosis is a serious and global health problem, through this research we want to show that complete osteoporosis therapy with regular intake of Vitamin D, in therapeutic doses, contributes to the reduction of the T-score in measuring bone density, respectively osteoporosis therapy without regular intake of vitamin D does not improve the T-score in the examined patients.
Materials and methods: This research is based on the data for the period from 01.09.2019 to 01.09.2020 taken from the archive of the center for Osteoporosis and densitometry at the department of internal medicine in CH Shtip, ultrasonic densitometry and patients' questionnaires.
Results: The study in this period showed that of the two groups formed, the group of patients who regularly consumed vitamin D in the therapy for the treatment of osteoporosis had an improvement in the mean value of T-score by 0.5 points, while the other group of patients who did not use it regularly or did not use vitamin D at all in therapy did not improve the T-score.
Conclusion: The results underlined the importance of vitamin D in the treatment of osteoporosis in postmenopausal patients in whom the disease was proven by ultrasound densitometry.
Keywords: Osteoporosis, vitamin D, T-score, densitometry

1. INTRODUCTION

Statistically, 200 million people worldwide suffer from osteoporosis, with one in two women and one in eight men over the age of 50 are at risk for osteoporosis.About 120 thousand women suffer from osteoporosis in Macedonia. These statistics from the World Health Organization are just a warning about the need for treatment and prevention of this disease. Prevention and treatment aree qually important.
Osteoporosis is a disease characterized by low bone mass and disruption of bone structure, resulting in an increase in bone weakness and possibility of fracture. Osteoporosis causes almost 9 million fractures a year worldwide. Osteoporosis is a serious global and health problem, a hidden and silent epidemic, which if left untreated leads to reduced quality of life and fractures. From our experience, a statistically large number of patients do not adhere to the recommendations of the prescribed therapy for receiving vitamin D in therapy. It is a common problem in the treatment of patients with postmenopausal osteoporosis.
Vitamin D or the so-called anti-rickets vitamin together with parathyroid hormone regulates the resorption of calcium and phosphorus in the plasma. Our skin when exposed to direct sunlight produces a sufficient amount of vitamin D, and exposure to the sun is the safest way to synthesize it.
Vitamin D can be taken into the body through food. It is most present in fish oil, milk and dairy products, egg yolk. It is not present in sufficient quantity in any food from our daily diet and therefore it is almost impossible to meet the needs by ingesting it through food, so it is supplemented by sun exposure. The recommended daily dose (according to the RDA) is 5-10 mg.
The primary role of Vitamin D in the body is in the proper absorption of calcium and phosphorus in the body, thus playing a primary role in bone formation. It contributes to bone strengthening, healthy teeth in both children and adults. Vitamin D deficiency leads to disruption of calcium and phosphorus metabolism in the body which leads to general bone demineralization, bone pain, muscle weakness and more frequent spontaneous fractures. The most severe disorder caused by Vitamin D deficiency is rickets. It is a metabolic bone disease, most often occurs in children and therefore the intake of vitamin D in children should be regular. Insufficient amount of vitamin D in menopausal women intensifies the process of osteoporosis and is a high risk of fractures.
Therefore, maintaining a normal concentration of Vitamin D, especially in older men and women, is the primary factor in the prevention and treatment of osteoporosis. Current amounts recommendations for adults are: Optimal daily intake of 800 IU (higher concentrations are toxic and lower concentrations are not effective). Decreased vitamin D levels are a condition that is alarmingly increasing every year. Almost 40% of the population after the age

of 40 has a reduced level of Vitamin D. The status of vitamin D in the body is determined by measuring the level of 25 (OH) D in the serum. It is recommended to check it at the beginning of menopause, as one of the ways to prevent osteoporosis, because chronic vitamin D deficiency cannot be solved overnight and it takes a long time to make up for it.

2. GOAL

Having in mind the fact that osteoporosis is a serious and global health problem, which if not treated properly, leads to an increased number of fractures, which burdens the health system in every way, we want to show that the complete therapy for osteoporosis emphasized by regular intake of Vitamin D at a therapeutic dose, reduces the T-scores demonstrated by measuring bone density by ultrasound densitometry, in contrast to the patients who omitted vitamin D in osteoporosis therapy and do not show any improvement in T-scores in the examined patients.
In line with that fact, we want to emphasize the importance of vitamin D in the treatment of postmenopausal osteoporosis.

3. MATERIALS AND METHODS

This research is based on the data for the period from 01.09.2019 to 01.09.2020 taken from the archive of the center for Osteoporosis and densitometry at the department of Internal medicine, at CH Shtip, i.e. two consecutive ultrasonic densitometries from 40 selected patients in a period of one year as well as questionnaires for the same patients in which they answered whether they regularly receive vitamin D therapy in a therapeutic dose.
Regarding the place of residence, patients living in urban areas were selected and patients living in rural areas were not selected, due to the possibility of greater exposure to the sun and ultraviolet rays.
In terms of age, menopausal patients aged 55 to 65 years were selected, with no significant comorbidities that were contraindicated in the use of therapy.

4. RESULTS

Two groups were created, with the same number of patients. In the first group, group A, there were 20 patients who regularly took Vitamin D with the rest of the prescribed therapy (ibandronic acid and Calcium), and in the second group, group B, there were 20 patients who exclusively responded that they did not use vitamin D in therapy, although it was prescribed by a doctor. Ultrasound densitometry analyzes of both groups showed that in the patients from the group A, in one year we have an improvement of the mean value of the T-score (on the lumbar spine) by 0.5, while in the patients from the group B there is no improvement of T-score (on the lumbar spine). The mean value of the T-score (measured on the hips) in group A improved by 0.3, while in group B there was an improvement of 0.1.

5. DISCUSSION

Postmenopausal osteoporosis is a global issue. Osteoporosis and bone density measurement centers are being opened more and more often, in order to educate patients with osteopenia for the prevention of osteoporosis and, of course, early detection of the disease and starting its treatment.
What has been observed in our experience is the frequent omission of vitamin D in therapy. In those patients, the explanation was that the vitamin was consumed through the diet or that they were regularly exposed to sunlight. Given the fact that our climate has 7 months of the year with very little sun, sun exposure can not cure postmenopausal osteoporosis. The explanation also prevailed that the ibandronic acid they receive once a month on the same date is understood as the main drug.
Therefore, when setting up therapy, it is necessary to explain to the patient the importance of the role of vitamin D in therapy, to understand that it is one of the necessary drugs in the treatment and that when we have already diagnosed postmenopausal osteoporosis the necessary amount of vitamin D cannot be compensated by diet and exposure to sunlight.

6. CONCLUSION

In conclusion we can say that Vitamin D is essential in the treatment of postmenopausal osteoporosis. As the official statistics show that the number of patients with postmenopausal osteoporosis is increasing every year, it is necessary to educate the patients about the therapy and its proper implementation, emphasizing that vitamin D is not an aid but one of the main drugs of the disease. Hopefully, this will lead to reduction of the number of improper use of therapy, which will prevent fractures due to reduced bone density.

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