Vitamin D and Seronegative Spondylarthritis

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RESEARCH PROTOCOLS-PROPOSALS

Vitamin D and Seronegative Spondylarthritis

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ABSTRACT

Vitamin D is a hormone which belongs to the group of secosteroids, involved in bone metabolism. It contributes to calcium absorption from the gut and regulates bone mineralization. Vitamin D seems to have many extraskeletal actions. It seems to be involved in the regulation of the immune system. It has immunomodulatory action expressed both as immunosuppressive as well as immune-enhancing; action contributing to organism defense against microbial infections. It appears that vitamin D deficiency may be related to the susceptibility of the organism to autoimmune diseases, as it may be related to loss of immune tolerance. Vitamin D exists as a group of molecules; the active hormone thought to be 1,25(OH)2D3. The aim of this study is to measure vitamin D levels in patients with ankylosing spondylitis and psoriatic arthritis and to estimate the relationship between vitamin D levels and disease activity in these diseases. This study will help to define the involvement of vitamin D in skeletal integrity, both by the maintenance of calcium homeostasis and muscle health, as well as its role against the development of autoimmune diseases and the management of pain.

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Keywords: vitamin D, seronegative spondylarthritis, ankylosing spondylitis, psoriatic arthritis.

INTRODUCTION

Vitamin D is a hormone which belongs to the group of secosteroids and it is involved in bone metabolism.[1,2] It contributes to calcium absorption from the gut and regulates bone mineralization.[3,4] Vitamin D is synthesized in the skin from cholesterol by the action of ultraviolet radiation from the sun.[5] Living in an environment which is either protected from the sun, such as modern buildings, or where there is insufficient exposure to the sun due to geographic location, or use of protective clothing from the sun, such as the black clothes used by Orthodox priests, or clothes offering complete body shielding, such as the clothing used by women in the Muslim world, contribute to insufficient vitamin D biosynthesis in the skin. Moreover, dark skin color with excessive levels of melanin protects from sun photons and does not allow sufficient vitamin D biosynthesis within the skin.

Vitamin D has many extraskeletal actions.[6,7] It seems to be involved in the regulation of the immune system.[8,9] It has immunomodulatory action.[10] Its immunomodulatory action is expressed both as immunosuppressive action as well as immune-enhancing; action contributing to the defense of the organism against microbial infections. It appears that vitamin D insufficiency may be related to the susceptibility of the organism to autoimmune diseases, as vitamin D insufficiency may be related to loss of immune tolerance. Vitamin D exists as a group of molecules; the active hormone thought to be $1,25(OH)_2D_3$. Vitamin D sufficiency is estimated by the measurement of $25(OH)D_3$ blood levels. It appears that vitamin D sufficiency may be related to the appearance of autoimmune diseases.

AIM

The aim of the study is to measure vitamin D levels in patients with ankylosing spondylitis and psoriatic arthritis and to estimate the relationship between vitamin D levels and disease activity n ankylosing spondylitis and psoriatic arthritis.

METHODS

Vitamin D -$25(OH)D_3$ – levels will be measured in the blood in 50 patients with ankylosing spondylitis and psoriatic arthritis. Parathyroid hormone (PTH) levels will also be measured. In ankylosing spondylitis and psoriatic arthritis disease activity will be estimated by the measurement of ESR, c-reactive protein levels, BASDAI index for ankylosing spondylitis and HAQ for psoriatic arthritis.

ANTICIPATED RESULTS

It is anticipated that low vitamin D -$25(OH)D_3$- levels will be found in patients with ankylosing spondylitis and psoriatic arthritis. The relationship of vitamin D levels with disease activity in ankylosing spondylitis and psoriatic arthritis will be estimated.

Vitamin D deficiency is related with the susceptibility to autoimmune diseases. The finding of vitamin D deficiency in patients with ankylosing spondylitis will confirm the immunomodulatory role of vitamin D. Vitamin D deficiency is related with diffuse musculoskeletal pain. The detection of vitamin D deficiency in seronegative spondyloarthritis may assist in pain management with the exogenous administration of vitamin D. This study will help to define the involvement of vitamin D in skeletal integrity both by the maintenance of calcium homeostasis and muscle health, as well as its involvement in acting against the development and the management of pain in autoimmune diseases. The systemic inflammatory diseases such as ankylosing spondylitis are characterized by the development of osteoporosis. The detection of vitamin D deficiency in these diseases will also contribute to the prevention and management of osteoporosis.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

1. Holick M F. Vitamin D: evolutionary, physiological and health perspectives. Curr Drug Targets 2011;12:4-18.
2. Holick M F. Biological effects of sunlight, ultraviolet radiation, visible light, infrared radiation and vitamin D for health. Anticancer Res 2016;36:1345-56.
3. Heaney R P. Screening for vitamin D deficiency: is the goal disease prevention or full nutrient repletion? Ann Intern Med 2015;162:739.
4. Baggerly C A, Cuomo R E, French C B, Garland C F, Gorham E D, Grant W B, et al. Sunlight and vitamin D: necessary for public health. J Am Coll Nutr 2015;34:359-65.
5. Mason R S, Sequeira V B, Gordon-Thomson C. (2011) Vitamin D: the light side of sunshine. Eur J Clin Nutr 65:986-93.
6. Kostoglou-Athanassiou I, Athanassiou P, Lyraki A, Raftakis I, Antoniadis C. Vitamin D and rheumatoid arthritis. Ther Adv Endocrinol Metab 2012;3:181-7.
7. Kostoglou-Athanassiou I, Athanassiou P, Gkountouvas A, Kaldrymides P. Vitamin D and glycemic control in diabetes mellitus type 2. Ther Adv Endocrinol Metab 2013;4:122-8.
8. Weiss S T. Bacterial components plus vitamin D: the ultimate solution to the asthma (autoimmune disease) epidemic? J Allergy Clin Immunol 2011;127:1128-30.
9. Larsson P, Mattsson L, Klareskog L, Johnsson C. A vitamin D analogue (MC 1288) has immunomodulatory properties and suppresses collagen-induced arthritis (CIA) without causing hypercalcaemia. Clin Exp Immunol 1998;114:277-83.
10. Hewison M. Vitamin D and immune function: autocrine, paracrine or endocrine? Scand J Clin Lab Invest Suppl 2012;243:92-102.