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Bioclinical Implications of Vitamin D Levels in Management of Knee Osteoarthritis

Topic: Health Conditions (Nervous System, Musculoskeletal System, Cardiopulmonary System)

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BACKGROUND

Osteoarthritis is a significant global health problem, predominantly impacting older adults and placing a heavy burden on healthcare system due to medical and surgical interventions required. Knee osteoarthritis is a prevalent form of osteoarthritis, that involves gradual joint deterioration, leading to pain, stiffness and loss of mobility. It affects all structures of the knee joint, including cartilage, synovial membrane and subchondral bone. Age, genetics, injuries, and body mass index are key contributors, with post menopausal women at higher risk due to hormonal and biomechanical factors. Vitamin D deficiency has been linked to the accelerated progression of knee osteoarthritis, as low levels correlate with impaired cartilage and joint function, exacerbating symptoms. The relationship between vitamin D and knee osteoarthritis remains a topic of debate. Although some studies highlight the symptomatic relief provided by vitamin D supplementation, the evidence for its effect on the structural progression of the disease is mixed.

METHODS

A comprehensive literature search was performed following PRISMA criteria (Preferred Reporting items for systematic reviews and Meta-Analyses). We selected studies published in the last decade, that investigated the relationship between vitamin D levels and knee osteoarthritis. The selected studies focused on assessing the impact of vitamin D supplementation on cartilage integrity, progression of knee osteoarthritis, and also the clinical applications for the management of the disease.

RESULTS

This analysis highlighted a number of studies that investigated the relationship between vitamin D levels and osteoarthritis, with a range of results. While previous reviews have investigated this relationship, the results remain inconclusive, and there is no definitive agreement. A thorough re-evaluation of the current literature is therefore essential to improve our understanding and approach to the management of osteoarthritis, particularly with regard to potential therapeutic applications and disease progression outcomes.

CONCLUSION

The association between vitamin D levels and knee osteoarthritis remains insufficiently defined, emphasizing the considerable need for further studies. An updated analysis of the existing literature is essential to optimize osteoarthritis management strategies. Such research could provide critical insights into whether vitamin D supplementation should be integrated into therapeutic protocols.

Statement of Disclosures

None

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