Letter to Editor

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Vitamin D Deficiency: A Major Issue for Patients Undergoing Hemodialysis

Nader Aghakhani[1] and Roya Naderi[2,3]*

1. Food and Beverages Safety Research Center, Urmia University of Medical Sciences, Urmia, Iran
2. Nephrology and Kidney Transplant Research Center, Clinical Research Institute, Urmia University of Medical Sciences, Urmia, Iran
3. Department of Physiology, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran

*** Corresponding author**
Roya Naderi, PhD
Department of Physiology, School of Medicine, Nephrology and Kidney Transplant Research Center, Clinical Research Institute, Urmia University of Medical Sciences, Urmia, Iran
Tel: +98 44 3278 0801
Email: naderi.r@umsu.ac.ir

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Dear Editor

Vitamin D deficiency, defined as a serum concentration of less than 30 *ng/dl*, is a significant global public health concern. It is linked to various chronic illnesses such as cancer, inflammatory bowel diseases, rheumatoid arthritis, diabetes, infectious diseases, multiple sclerosis, cardiovascular diseases, and immune disorders (1).

Furthermore, this issue plays a crucial role in metabolic bone problems, resulting in stunted growth, skeletal deformities, and delayed development in children, as well as osteomalacia, osteoporosis, and fractures in adults. Children often experience rickets and osteopenia due to nutritional issues related to swallowing and chewing difficulties, insufficient sunlight exposure, and low calcium consumption. In some cases, individuals may exhibit resistance to vitamin D in hereditary vitamin D-resistant rickets (2).

The deficiency may result from various factors, including reduced absorption and/or consumption of the nutrient due to conditions such as gastric bypass, short bowel syndrome, celiac disease, chronic pancreatic insufficiency, cystic fibrosis, and inflammatory bowel disease. On the other hand, the prevalence of inadequate oral intake of vitamin D is significant (3).

Additionally, individuals with chronic liver disease, such as cirrhosis, may experience a decrease in the production of vitamin D within their bodies due to factors such as renal failure, deficiency of the enzyme 1-alpha hydroxylase, and hyperparathyroidism. Furthermore, certain medications like nifedipine, carbamazepine, phenobarbital, dexamethasone, spironolactone, rifampin, and clotrimazole can induce hepatic p450 enzymes, which accelerate the breakdown and reduction of vitamin D (4).

Insufficiency and degradation of Vitamin D are common among those undergoing hemodialysis because the renal 1α-hydroxylase expression is inhibited to compensate for phosphate retention, leading to an increased expression of 24-hydroxylase for the degradation of Vitamin D. This problem can lead to complications like hypocalcemia and secondary hyperparathyroidism. Maintaining Vitamin D levels above 30 *ng/ml* is crucial for managing kidney disease (5).

Insufficiency and deficiency of Vitamin D in patients undergoing hemodialysis can result in various negative outcomes, including elevated levels of bone turnover markers reduced bone-mineral density, and secondary hyperparathyroidism. Additionally, it can contribute to cognitive impairment, arterial stiffness, muscle weakness, vascular calcification, obesity, insulin resistance, left ventricular hypertrophy, metabolic syndrome, atherosclerosis, progression of kidney disorders, and increased mortality. Therefore, it is important to consider the potential benefits of Vitamin D when prescribing it for patients undergoing hemodialysis, and note that excessive amounts of it may lead to adverse effects like hypercalcemia (6).

Vitamin D is essential for kidney function and the prevention of related diseases. It plays a crucial role in maintaining skeletal health and overall balance within the body. Therefore, adequate intake of Vitamin D can positively impact health and help prevent diseases, particularly in patients undergoing hemodialysis. This highlights the importance for physicians to consider various factors when treating patients with kidney diseases. Administering vitamin-based supplements can help patients achieve sufficient levels (7).

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Conflict of Interest

There was no conflict of interest in this manuscript.

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