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Commentary

See the original article by Augusto et al (J Parathyr Dis. 2022;10:e9143)

Glomerulonephritis and impact of vitamin D; a short look to the recent evidence

Mina Dehghani[1], **Hamid Nasri**[2*]

Abstract

Implication for health policy/practice/research/medical education

Mechanistic impact of vitamin D therapy in glomerulopathies consists of preservation of morphological integrity of slit diaphragm, which leads to restoration of tight junction proteins. Vitamin D also avoids the loss of nephrin component of the glomerular basement membrane.

Keywords: 25-Hydroxyvitamin D, Chronic kidney disease, Glomerulopathy

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Glomerular disease is regarded as a common etiology of end-stage renal disease around the world. This disease is also responsible for 25% of all causes of chronic renal failure globally (1). This disease is characterized by glomerular inflammation, proliferation and hypercellularity along with immune complex deposition and sometimes necrosis. Recently much attention has been directed toward the role of vitamin D in the glomerulopathies. Augusto et al in the latest issue of this journal discussed the relationship between serum vitamin D concentration and the state of glomerulopathies. They studied 175 adult cases with glomerulopathy, with the mean age of 44.5 ± 14.9 years, while 62.9% of which were females. Their patients had a glomerular filtration rate of 75.9 ± 32.9 mL/min along with proteinuria of 1.48 ± 2.18 g/d. In this study vitamin D, insufficiency and deficiency were detected in 54.3% and 32% of individuals, respectively. Notably, the daily proteinuria had an inverse relationship with serum vitamin D values. Further, the levels of vitamin D below15 ng/mL were correlated with greater reduction in glomerular filtration rate in the patients with one-year follow up. They finally showed that, low-vitamin D values were common in chronic renal failure cases with proteinuria. The authors concluded that lack of vitamin D could affects the development of glomerulopathies (2). On this study, we would like to explain some additional points. It is evident that vitamin D has a strong modulatory impact on immune system across with anti-proliferative properties playing a role in kidney inflammation. The production of 1,25-dihydroxyvitamin D (1,25$(OH)_2$D), from 25-hydroxyvitamin D conducts mainly in the renal proximal tubular cells (3). An impaired vitamin D production is detectible in the chronic renal failure even in the early stages. Additionally, the function of vitamin D is also disturbed following a reduction in the hydrolyzation of the inactive form of vitamin D. Moreover, this compound regulates RAAS (renin–angiotensin–aldosterone) system (1). In a recent meta-analysis, by Zhao et al, on 18 trials containing 1834 patients, showed that vitamin D administration does not have a prominent anti-inflammatory effect in chronic kidney disease (4). However, other studied ameliorative impact of vitamin D in diabetic kidney disease and other glomerulopathies. Meanwhile, the more recent meta-analysis by Dou et al, on 7 trials hypothesized that vitamin D is capable to recuperate the vascular morphology and structure in renal failure patients. This meta-analysis indicated that the improving efficacy of vitamin D is more detectible when it administered in the early stages of the disease (5). Previous studies also showed low-vitamin D levels are independently has a relationship with enhanced patients' death and particularly with higher cardiac disease in individuals with chronic kidney disease, not yet on dialysis. This improvement may be following amelioration of endothelial cell function after administration of vitamin D (6). Mechanistic impact of vitamin D therapy in glomerulopathies consists of preservation of morphological integrity of slit diaphragm, which leads

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[1]School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran
[2]Department of Nephrology, Isfahan University of Medical Sciences, Isfahan, Iran
***Corresponding author:** Prof. Hamid Nasri, Email: hamidnasri@yahoo.com, hamidnasri@med.mui.ac.ir

to restoration of tight junction proteins. Vitamin D also avoids the loss of nephrin component of the glomerular basement membrane. However, this subject requires more investigations since the study by Augusto et al is a shed of the light in this topic. Hence, further clinical trials are recommended on this subject.

Authors' contribution

Conceptualization, validation, investigation, resources, data curation, writing—original draft preparation, writing—review and editing, visualization, project administration, and funding acquisition: HN and MD.
Supervision: HN.

Conflicts of interest

The authors declare that they have no competing interests.

Ethical issues

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