

# Role of vitamin D in vascular complications and vascular access outcome in patients with chronic kid

July 13 2016

---



Credit: CC0 Public Domain

In recent years, a growing interest has prompted research to find new links between vitamin D and the renin-angiotensin-aldosterone system

(RAAS), cell proliferation, and anti-apoptotic cell paths in the vascular system. The activation of vitamin D receptors (VDRs) on endothelial cells induces changes in the metabolic activity of the endothelium and is responsible for cell survival, proliferation and neoangiogenesis.

Recent studies linked [vitamin D](#) deficiency with cardiovascular diseases. For example, studies have shown that normal levels of vitamin D have a pivotal role in reducing the physiological activity of RAAS, due to the suppression of the renin gene, renin reduced disposal and the decrease of its circulating levels, thereby down-regulating the RAAS.

In particular, vitamin D blunts the compensatory increase of renin synthesis occurring during chronic administration of anti-RAAS agents. Indeed, in experimental models, the administration of vitamin D analogs blocked the compensatory increase of renin expression ameliorating the efficacy of RAAS inhibitors.

Deficiency of vitamin D in patients with [chronic kidney disease](#) (CKD) or in patients with end stage renal disease (ESRD) receiving hemodialysis is not only a key factor in the development of secondary hyperparathyroidism, but it is also associated with other complications. The immunomodulatory and anti-inflammatory effects of vitamin D may have particular relevance in CKD patients and in ESRD patients, as the uremic state induces biochemical changes that turn in a marked condition of inflammation and oxidative stress as observed in calcitriol deficiency status.

Few and very recent studies have directly investigated the role of vitamin D in vascular access. Two retrospective studies and one randomized, double-blind prospective study analyzed the effects of vitamin D on arterio-venous fistula (AVF) patency with contrasting results. Therefore, to better define the relationship between vitamin D and AVF outcomes, more studies involving a large number of patients are

required.

**More information:** Domenico Santoro et al, Role of Vitamin D in Vascular Complications and Vascular Access Outcome in Patients with Chronic Kidney Disease, *Current Medicinal Chemistry* (2016). [DOI: 10.2174/0929867323666160405112019](https://doi.org/10.2174/0929867323666160405112019)

Provided by Bentham Science Publishers

Citation: Role of vitamin D in vascular complications and vascular access outcome in patients with chronic kid (2016, July 13) retrieved 23 April 2024 from <https://medicalxpress.com/news/2016-07-role-vitamin-d-vascular-complications.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.