

LINKS BETWEEN VITAMIN D DEFICIENCY AND CARDIOVASCULAR DISEASES

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Abstract

The aim of the present paper was to review the most important mechanisms explaining the possible association of vitamin D deficiency and cardiovascular diseases, focusing on recent experimental and clinical data. Low vitamin D levels favor atherosclerosis enabling vascular inflammation, endothelial dysfunction, formation of foam cells, and proliferation of smooth muscle cells. The antihypertensive properties of vitamin D include suppression of the renin-angiotensin-aldosterone system, renoprotective effects, direct effects on endothelial cells and calcium metabolism, inhibition of growth of vascular smooth muscle cells, prevention of secondary hyperparathyroidism, and beneficial effects on cardiovascular risk factors. Vitamin D is also involved in glycemic control, lipid metabolism, insulin secretion, and sensitivity, explaining the association between vitamin D deficiency and metabolic syndrome. Vitamin D deficit was associated in some studies with the number of affected coronary arteries, postinfarction complications, inflammatory cytokines and cardiac remodeling in patients with myocardial infarction, direct electromechanical effects and inflammation in atrial fibrillation, and neuroprotective effects in stroke. In peripheral arterial disease, vitamin D status was related to the decline of the functional performance, severity, atherosclerosis and inflammatory markers, arterial stiffness, vascular calcifications, and arterial aging. Vitamin D supplementation should further consider additional factors, such as phosphates, parathormone, renin, and fibroblast growth factor 23 levels. [*Biomed Res Int.* 2015;2015:109275. Epub 2015 Apr 27]. PMID:26000280

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IATROGENIC HYPERVISCOSITY AND THROMBOSIS

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Abstract

It is well known that hemostatic-thrombotic mechanisms are influenced by hemodynamic factors, such as shear forces affecting platelets or red blood cell aggregation, in turn affecting flow in stenotic regions. Endothelial cell function is also significantly influenced by shear forces acting on the vessel wall. Further, the distribution of shear forces in the vasculature is complex and closely associated with factors determining the flow properties of blood. Therefore, there is a link among alterations in the rheological properties of blood and its elements and the risk for thrombosis, with this linkage confirmed by numerous clinical studies. After discussing relevant rheological and hemodynamic concepts, this review focuses on selected drug-induced conditions that are known to be associated with both hyperviscosity conditions and increased thrombotic risk: oral contraceptives, diuretics, intravenous immunoglobulin, erythropoiesis-stimulating agents, chemotherapy, and radio-contrast media. Alterations of relationships between blood rheology and thrombotic risk related to artificial circulatory environments and physical exercise are also briefly discussed. [*Semin Thromb Hemost.* 2012 Nov;38(8):854-64. doi: 10.1055/s-0032-1325616. Epub 2012 Aug 22]. PMID: 22915493

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ENDOTHELIAL FUNCTION TESTING AND CARDIOVASCULAR DISEASE: FOCUS ON PERIPHERAL ARTERIAL TONOMETRY

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Abstract

During recent decades, a number of methods have been developed to assess endothelial function, contributing to a better understanding of the pathophysiology of cardiovascular disease. Recently, the advent of non-invasive, reproducible techniques for assessment of endothelial function has opened novel possibilities of application in the clinical setting. Peripheral arterial tonometry is a relatively novel, user-friendly technique measuring finger pulse volume amplitude changes induced by reactive hyperemia following 5 minutes of ischemia in the upper limb. Current evidence indicates that this technique has the potential to significantly impact the field of cardiovascular research and prevention of cardiovascular disease. However, a number of methodological, pathophysiological, and clinical aspects still need to be clarified before widespread application of this promising technique. This review focuses on the current knowledge and future perspectives of peripheral arterial tonometry, in comparison with the most widely used non-invasive technique, i.e., flow-mediated dilation. [*Vasc Health Risk Manag.* 2014 Sep 26;10:577-84. doi: 10.2147/VHRM.S44471. eCollection 2014]. PMID:253284

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