

## REVIEW PAPER

### Cardiovascular Disease and Chronic Inflammation in End Stage Kidney Disease

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#### Abstract

**Background:** Chronic Kidney Disease (CKD) is one of the most severe diseases worldwide. In patients affected by CKD, a progressive destruction of the nephrons is observed not only in structural but also in functional level. Atherosclerosis is a progressive disease of large and medium-sized arteries. It is characterized by the deposition of lipids and fibrous elements and is a common complication of the uremic syndrome because of the coexistence of a wide range of risk factors. High blood pressure, anaemia, insulin resistance, inflammation, high oxidative stress are some of the most common factors that cause cardiovascular disease and atherogenesis in patients suffering from End Stage Kidney Disease (ESRD). At the same time, the inflammatory process constitutes a common element in the apparition and development of CKD. A wide range of possible causes can justify the development of inflammation under uremic conditions. Such causes are oxidative stress, oxidation, coexistent pathological conditions as well as factors that are due to renal clearance techniques.

Patients in ESRD and coronary disease usually show increased acute phase products. Pre-inflammatory cytokines, such as IL-6 and TNF-a, and acute phase reactants, such as CRP and fibrinogen, are closely related. The treatment of chronic inflammation in CKD is of high importance for the development of the disease as well as for the treatment of cardiovascular morbidity.

**Conclusions:** The treatment factors focus on the use of renin-angiotensic system inhibitors, acetylsalicylic acid, statins and anti-oxidant treatment in order to prevent the action of inflammatory cytokines that have the ability to activate the mechanisms of inflammation.

**Key words:** Chronic Kidney Disease, uremic syndrome, inflammation, cytokines, hemodialysis