

Abstract

The kidneys are an essential organ that maintains the homeostasis of body fluid and ions, it filters metabolites and plays important endocrine role. Renal function is controlled by many mechanisms with a close interaction that can work independently without central control. These mechanisms are regulated by both systemic and intrarenal humoral systems and their physiological balance sustains the optimal kidney function. Any disturbance of this balance leads to the impairments of renal function and progression of renal injury and thus the kidney works inappropriately. The renal insufficiency and diseases remain significant problem despite modern medicine. This is results of several risk factors such as age, genetic predisposition and low birth weight, increase of civilization diseases – diabetes, hypertension, autoimmune disorders, but also bad habits such as unhealthy lifestyle, smoking etc. These factors can lead to the acute or chronic kidney diseases often without known cause. Then the question is an early diagnosis and optimal treatment to preserve kidney function and stop the progression of terminal renal damage. This thesis should show the importance of kidney function and outline problems and consequences of renal insufficiency particularly during chronic kidney disease.

Keywords: Renal physiology; renin-angiotensin system; endothelin system; regulation of blood pressure; hypertension; progression of renal failure; treatment of chronic kidney disease