Cardiovascular Effects of Androgens

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ABSTRACT

In the process of atherosclerosis sex steroids play a complex role in the vascular vessel wall system. Although a number of experimental studies have clearly documented an atheroprotective effect of estrogens, in recent clinical studies, estrogen replacement therapy has failed to reduce cardiovascular mortality. The effects of androgens on the cardiovascular system and cardiovascular diseases are even more controversial. Whereas in the past, androgens were mainly believed to exert adverse effects on the cardiovascular system, recent studies in men have documented a number of beneficial actions of testosterone in the arterial vascular system. Androgens affect lipid metabolism (e.g., LDL and HDL cholesterol, Lp(a)) and hemostasis (e.g., platelet aggregation and fibrinolytic activity). In addition, several other physiological and pathophysiological processes in the arterial vessel wall are influenced by androgens. Acute hemodynamic effects of testosterone on coronary vasomotion and stress-test-induced ischemia were reported. Additionally, recent animal and in vitro studies have further documented an inhibitory effect of androgens on neointimal plaque formation. This review discusses different and, in part, contradictory effects of androgens on the cardiovascular system including potential signal transduction pathways in androgen target cells.