Androgen therapy in men with testosterone deficiency: can testosterone reduce the risk of cardiovascular disease?

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Source

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Abstract

Obesity, hypertension, insulin resistance (IR), dyslipidaemia, impaired coagulation profile and chronic inflammation characterize cardiovascular risk factors in men. Adipose tissue is an active endocrine organ producing substances that suppress testosterone (T) production and visceral fat plays a key role in this process. Low T leads to further accumulation of fat mass, thus perpetuating a vicious circle. In this review, we discuss reduced levels of T and increased cardiovascular disease (CVD) risk factors by focusing on evidence derived from three different approaches. (i) epidemiological/observational studies (without intervention); (ii) androgen deprivation therapy (ADT) studies (standard treatment in advanced prostate cancer); and (iii) T replacement therapy (TRT) in men with T deficiency (TD). In epidemiological studies, low T is associated with obesity, inflammation, atherosclerosis and the progression of atherosclerosis. Longitudinal epidemiological studies showed that low T is associated with an increased cardiovascular mortality. ADT brings about unfavourable changes in body composition, IR and dyslipidaemia. Increases in fibrinogen, plasminogen activator inhibitor 1 and C-reactive protein have also been observed. TRT in men with TD has consistently shown a decrease in fat mass and simultaneous increase in lean mass. T is a vasodilator and in long-term studies, it was shown to reduce blood pressure. There is increasing evidence that T treatment improves insulin sensitivity and lipid profiles. T may possess anti-inflammatory and anti-coagulatory properties and therefore TRT contributes to reduction of carotid intima media thickness. We suggest that T may have the potential to decrease CVD risk in men with androgen deficiency.