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Research Article

Is There a Need for Testosterone Therapy in Older Men?

Aksam Yassin[1,2,3]*, Hatem Kamkoum[1], Raidh Talib Alzubaidi[1,2], Ahmed Ramadan[4], Mohamed El Akkad[1], Sara Al-Zubaidi[5] and Abdulla Al Ansari[1,2]

[1]Hamad Medical Corporation, Aisha Al Attiyya Hospital, Andrology & Men's Health Unit, Qatar.

[2]Weill Cornell Medical School NY, Qatar.

[3]Dresden International University, Preventive Medicine Program, Dresden Germany.

[4]Pharmacy Department, Aisha Al Attiyya Hospital, Qatar.

[5]University of Guelph, College of Biological Sciences, Ontario, Canada.

Correspondence

Professor. Aksam Yassin

MD PhD EdD HMC, PoBox 3050, Doha, Qatar, Tel +974 6655 1315.

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ABSTRACT

Purpose: To investigate the potential benefits of testosterone administration to elderly men (>65 years) with late onset hypogonadism (LOH).

Materials and Methods: Literature review is confirming the benefits of testosterone treatment in the long-term.

Results: There was a progressive decrease in body weight and waist circumference. Beneficial effects on lipids and other metabolic factors and on psychological and sexual functioning progressed over the first 24 to 42 months and were sustained. Rather than deterioration, there was an improvement in urinary parameters. Prostate volume and prostate specific antigen increased moderately. Hematocrit levels increased but remained within safe margins.

Conclusions: The benefits of restoring serum testosterone in men with LOH were not significantly different between men older than 65 years of age and younger men. There were no indications that side effects were more severe in elderly men. The effects on prostate and urinary function and hematocrit were within safe margins. Age itself need not be a contraindication to testosterone treatment of elderly men with LOH.

KEYWORDS

Aging, Body weight, Erectile dysfunction, Hypogonadism, Testosterone.

Low levels of testosterone are a factor in the etiology of common ailments of elderly men such as the metabolic syndrome and osteoporosis, and the central role of testosterone in erectile dysfunction is increasingly recognized

INTRODUCTION

Aing can be viewed as a time-related functional decline of health into the frailty of old age, with an ever-increasing vulnerability to disease and eventually to death. Among the many processes of aging, endocrine changes are relatively easy to identify and quantify. The first reports on age-related decline of testosterone by Werner [1] and by Heller & Myers [2], and about 10 years later McGavack drew a close parallel with the female menopause [3]. The male climacteric "strikes at the core of what it is to be a man... his youthful sexual drive and performance" and includes such symptoms as hot flashes, depression, insomnia, mood swings, irritability, impotence, decreased libido, weakness, lethargy and loss of bone mass". Terms like male menopause and male climatarian, or andropause were used. It has, however, become clear that levels of testosterone, indeed, show an age-related decline but the char-act eristics of this age-related decline of testosterone are so fundamentally different from the menopause drawing parallels that generates more confusion than clarity. In men testosterone production is affected in a slowly progressive way as part of the normal aging process. It starts after the fourth decade of life, but it will rarely manifest in men under the age of 50 years and becomes usually only quantitatively significant in men over 60 years of age (for review 4, 24) [4]. Disease is a strong predictor of the age-related decline of plasma testosterone [5-7]. It has been argued that lifestyle changes (reduction/prevention of obesity) may decelerate the age-related decline of plasma testosterone [8].

Low Testosterone Induces Diseases

So while it is clear that disease, and in particular features of the metabolic syndrome, suppress circulating testosterone levels, it has also been documented that low testosterone induces the metabolic syndrome [9,10], dramatically demonstrated by findings in men with prostate cancer who undergo androgen ablationtherapy [11-13]. A recent study showed convincingly that acute androgen deprivation reduces insulin sensitivity in young men [14] very well documented is that androgen deprivation leads to osteoporosis and increases bone fractures [15]. So, it is evident that low levels of testosterone are a factor in the etiology of common ailments of elderly men such as the metabolic syndrome and osteoporosis.

Triad of cardiovascular disease, visceral obesity and erectile dysfunction cardiovascular disease, (visceral) obesity, erectile dysfunction and hypogonadism occur frequently in aging men. Until recently they were viewed as independent entities of the aging male, usually treated by various medical specialties. With a more integrative approach to the health situation of the aging male, these conditions appear closely interrelated in their etiology, diagnostic strategy and their treatment [16]. Treatment of one of the components will positively impact on the others. Most aging men are inclined to view the above conditions as inevitable occurrences at advancing age and do not readily seek medical consultation. The complaint that may motivate them to seek medical advice is erectile dysfunction. Appropriate treatment of sexual dysfunction in elderly men will imply treatment of the other conditions mentioned above which are a etiologically closely interrelated to the complaint. Low testosterone levels predict the development of the metabolic syndrome. Testosterone administration to men with lower-than-normal plasma testosterone levels will positively influence both erectile function and the metabolic syndrome.

Testosterone and Erectile (dys-)function

Over the last few years there has been a renewed interest in the role of testosterone in male (patho) physiology and, more particularly, in a better definition of the place of testosterone in erectile dysfunction (ED) [17], recent studies provide convincing evidence that there is a powerful effect of testosterone on the anatomical and physiological substrate of penile erection. Further-more, it has become clear that testosterone is not sim-ply one of the many factors playing a role in erectile(dys)function. Indeed, circulating levels of testosterone are closely related to manifestations of other etiological factors in ED, such as atherosclerotic disease and diabetes. Conversely, the latter are correlated with lower-than-normal testosterone levels [18]. Therefore, the central role of testosterone in erectile (dys)function is increasingly recognized [19].

Erectile potency is physiologically a complex interaction of vascular, neural, metabolic, endocrine and, finally, psychological factors. Erectile difficulties often provide a window into the presence of pathology in these areas. Rather than a disease, ED is, particularly in elderly men who have enjoyed normal sexual functions earlier in life, a manifestation of pathologies of the biological systems involved in erectile function [18]. But the advent of successful treatment modalities of erectile difficulties, such as the phosphodiesterase type 5 (PDE5) inhibitors, has led to a concept of erectile failure as an entity in itself rather than an expression of underlying pathology of its constituents. In other words, it has opened the door to viewing diagnosis and Many elements of frailty are related to the neurological system, metabolism, joints, bones and muscles treatment of underlying pathology of erectile failure as redundant. But many men discontinue PDE5 inhibitors, which leads to a better definition of their ED and renewed interest in the role of testosterone. Testosterone appears to have profound effects on tissues of the penis involved in the mechanism of erection and testosterone deficiency impairs the anatomical and physio-logical substrate of erectile capacity. It has been shown that the full therapeutical potential of PDE5 inhibitors will only become manifest in a eugonadal state [20].

Frailty

Many elements of frailty are related to the neurological system, metabolism, joints, bones and muscles. The vulnerable health status usually preceding the onset of overt disability is often referred to as frailty. Many elements of frailty are related to the neurological system, metabolism, joints, bones and muscles. Central to frailty is the dramatic decline in muscle mass and strength with aging. Therefore, sarcopenia seems to be the major determinant of frailty. Several components of the frailty syndrome are related to the physiological actions of testosterone. Testosterone has effects on psychological functioning. Testosterone (or its aromatization product estradiol) are required for Maine-nance of bone mineral density. Testosterone stimulates red blood cell formation. Testosterone has a profound effect on body composition. A significant characteristic of aging and a factor in frailty is the loss of muscle mass and the increase in fat mass. Androgens promote differentiation of mesenchymal multipotent cells into the myogenic lineage and inhibit their adaptogenic differentiation, thus reversing the development of a down-ward spiral of loss of muscle mass and increase of fat mass. Skeletal muscles of older men are as responsive to the anabolic effects of testosterone as those of younger men, indicating that age as such should not be an impediment to elderly men benefiting from the anabolic effects of testosterone [21]. So, while frailty is obviously a complex syndrome, some elements are androgen associated, and these may improve in men with subnormal testosterone levels [22,23].

Decrease in Bone Mineral Density

With increasing longevity, maintenance of good health is pivotal for independent living of older people. osteoporotic fractures are a crippling occurrence in their lives and are an obvious impediment for most of the activities of daily living. osteoporotic fractures have long been regarded as a female ailment but with increasing longevity of men it appears that incidence and prevalence of osteoporotic fractures is not very different from the female rate, be it approximately 10-years later in the lives of men when their general health is deteriorating. A multitude of factors determine bone strength: genetic, nutritional (calcium), vitamin D (both nutritional or exposure to sunlight), physical activity and hormonal factors. Hormonal factors are significant throughout life from puberty onwards. In adolescence they are indispensable for the formation of peak bone mass. Throughout life sex steroids maintain bone formation. Surprisingly, in men estrogens appear more significant for development of peak bone mass and maintenance of bone mineral density than androgens. In men estrogens are derived from androgens and levels of estrogens and androgens are strongly inter-related. Adequate androgen levels imply adequate estrogen levels. Recent study confirmed the beneficial effects of testosterone treatment in long-term had been published recently illuminating this in progressive registry study [24].

Guidelines

Professional organizations recognize that androgen deficiency in the aging male should receive due interest and debate, not least because the demographics clearly demonstrate the increasing percentage of the population in the older age groups [22,23]. Whether older hypogonadal men will benefit from testosterone treatment and what will be the risks associated with such intervention can reduce bone fractures especially hip joints and prevent severe comorbidities.

DISCLOSURE

Authors have nothing to disclose to this paper.

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