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Coronary Heart Disease, Diabetes, and Sexuality in Men

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ABSTRACT

Erectile dysfunction (ED) has been well recognized as a marker of increased cardiovascular risk for more than 15 years, especially in younger men. Early detection of ED represents an opportunity to intervene to decrease the risk of future cardiovascular events and limit the progression of ED severity. Evidence suggests there is a window of opportunity of 3 to 5 years from the onset of ED to subsequent cardiovascular events. This opportunity is usually missed if the onus is placed on the patient to seek care for his sexual problems. Unfortunately, these clear messages have not been incorporated into routine cardiovascular care. The reasons for these disparities within specialties are discussed in this article, in addition to management algorithms. Lifestyle modification is usually recommended as the first-line treatment to correct ED and lessen cardiovascular risk, but evidence suggests that this might be effective only in men without established cardiovascular comorbidities. In men with type 2 diabetes mellitus and established cardiovascular disease, lifestyle modification alone is unlikely to be effective. Cardiovascular medications are often associated with sexual dysfunction but changes in medication are more likely to be beneficial in men with milder recent-onset ED. A balanced view must be taken related to medication adverse events, taking into account optimal management of established cardiovascular disease. Testosterone deficiency has been associated with different metabolic disorders, especially metabolic syndrome and type 2 diabetes mellitus. Testosterone deficiency syndrome has been associated with an independent burden on sexual function globally and increased cardiovascular and all-cause mortality. Testosterone replacement therapy has been shown to improve multiple aspects of sexual function and, in some studies, has been associated with a decrease in mortality, especially in men with type 2 diabetes mellitus. Recent studies have suggested that phosphodiesterase type 5 inhibitors, the first-line medications to treat ED, could decrease cardiovascular and all-cause mortality, through multiple mechanisms, predominantly related to improved endothelial function.

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Key Words: Coronary Heart Disease; Diabetes; Sexuality

INTRODUCTION

Sexual dysfunction is a complex, multifactorial process with important sex differences and similarities. A detailed sexual history is required in men and women to assess organic and psychological issues. Management usually involves a multidisciplinary approach to all risk factors in parallel with personalized therapy to achieve optimal outcomes. Although there is considerable overlap in the mechanisms by which coronary heart disease (CHD) and diabetes mellitus (DM) can affect sexual function in men and women, the development of new therapies for ED in men reflects a much stronger evidence base in men than in women. These important differences justify separate consideration of women and men.

CHD AND SEXUALITY IN MEN

The development of ED is attributable to neural, vascular, hormonal, metabolic, and psychogenic factors, which are

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RECOMMENDATIONS

1. Detection of erectile dysfunction (ED) provides an opportunity to decrease the risk for cardiovascular disease (CVD; level of evidence = 1a, level of recommendation = A).
2. ED not only shares risk factors with CVD but also is an independent marker of increased risk for CVD (level of evidence = 1a, level of recommendation = A).
3. ED is a marker of significant increased risk of CVD, coronary artery disease (CAD), stroke, and all-cause mortality (level of evidence = 1a, level of recommendation = A).
4. The relative risk of coronary events associated with ED is greatest in younger men (30–60 years old) and these men should be targeted for aggressive decrease of risk (level of evidence = 1a, level of recommendation = A).
5. Incident ED has a similar or greater risk of predictive value for cardiac events as traditional risk factors such as family history, myocardial infarction (MI), smoking, and hyperlipidemia (level of evidence = 1a, level of recommendation = A).
6. ED often occurs in the presence of silent CAD with a time window from ED onset to a CAD event of 2 to 5 years (level of evidence = 1a, level of recommendation = A).
7. ED is predictive of peripheral arterial disease and stroke (level of evidence = 1a, level of recommendation = A).
8. The more severe the ED, the greater the degree of risk of CAD, extent of CAD, and risk of peripheral arterial disease (level of evidence = 1a, level of recommendation = A).
9. Correction of low testosterone levels in men with type 2 diabetes mellitus (T2DM) improves sexual desire and erections (level of evidence = 1b, level of recommendation = A) and salvages men with previously failed phosphodiesterase type 5 inhibitor (PDE5I) treatment (level of evidence = 1b, level of recommendation = B).
10. Intensive lifestyle intervention improves sexual function in men with mild ED (grade = 1a, level of recommendation = B) but has minimal effect in men with high CV burden and T2DM (level of evidence = 2b, level of recommendation = B).

mediated through endothelial and smooth muscle dysfunction (Figures 1 and 2).

The fact that ED was found more commonly in men with hypertension, hyperlipidemia, acute coronary syndrome, DM, and metabolic syndrome led to the recognition of ED as an important marker of future CV risk.[1] ED has been associated with severity of ischemic heart disease in terms of plaque burden

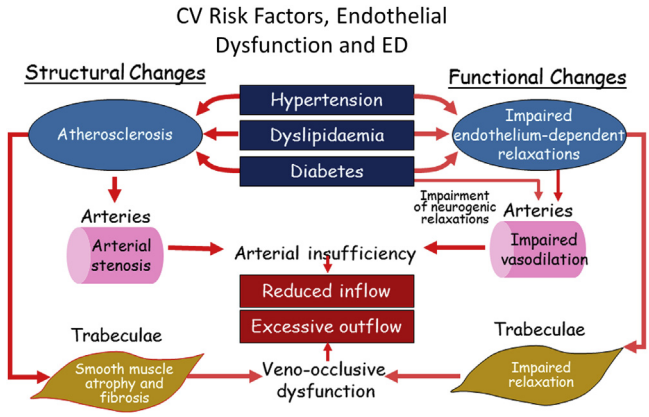

Figure 1. The progressive development of ED in association with comorbidities. At the early stage of endothelial dysfunction, changes could be reversible, but less so at the later stage of fixed atherosclerosis. Adapted from Saenz de Tejada et al.[106] CV = cardiovascular; ED = erectile dysfunction.

and number of coronary arteries affected.[2] ED is believed to be a sentinel marker for CVD occurring 3 to 5 years before an event owing to the earlier presentation of ED symptoms based on the arterial size hypothesis.

The predictive value for ED and CAD is most impressive in younger men 40 to 49 years old for whom data from the Olmsted County Study suggested a 50-fold relative risk with the development of ED in younger men (Table 1).[3]

These findings were supported by a long-term study from Western Australia in which men with ED had seven times the CV risk of men without ED.[4]

A recent meta-analysis of 12 prospective studies involving 36,744 men[5] found ED to be an independent marker of CV events and all-cause mortality in addition to conventional risk factors (eg, age, weight, hypertension, DM, hyperlipidemia, and smoking) (Table 2).

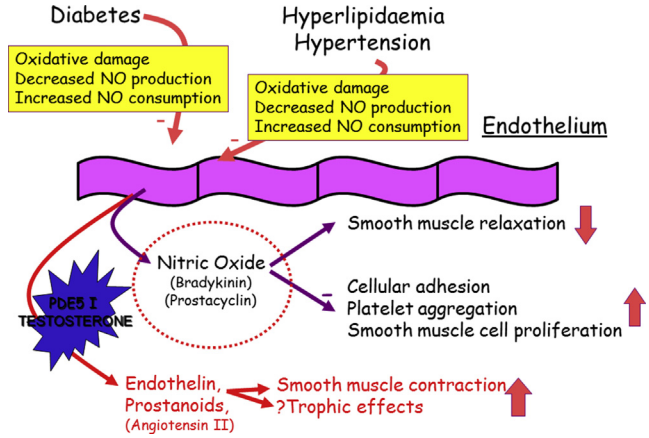

Figure 2. Endothelial dysfunction and comorbidities in erectile dysfunction and the central role of testosterone and angiotensin II on PDE5 expression (source author). NO = nitric oxide; PDE5 = phosphodiesterase type 5.