

In the “Heart” of Erectile Dysfunction

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ABSTRACT

Erectile dysfunction is a major public health problem that substantially affects the life quality of patients and their sexual partners. Although erectile dysfunction was traditionally considered a psychiatric or an urologic problem, recent pathophysiologic and therapeutic advances unveiled the vascular origin of erectile dysfunction in the vast majority of cases. It is therefore essential for cardiologists, internists, and primary care physicians to become familiar with the identification, diagnosis, and management of erectile dysfunction, towards a holistic approach of patients with cardiovascular disease. This review aims to provide the rationale for the quest for erectile dysfunction by physicians dealing with patients with cardiovascular disease.

Introduction

Erectile dysfunction is highly prevalent in the general population, and its prevalence increases with age¹. Erectile dysfunction describes a male sexual dysfunction with a persistent inability to attain penile erection and/or maintain the erection for a successful and satisfying sexual intercourse².

Erectile dysfunction was considered for centuries the territory of psychiatrists and psychologists; however, recent advances in pathophysiology and therapy revealed that the vast majority of patients suffer from vascular erectile dysfunction, due to structural and/or functional alterations of the penile arteries. Therefore, the role of cardiologists in the management of erectile dysfunction became from peripheral to central.

In order to define the exact role of cardiologists in the management of this disease, we could highlight five points of interest:

a) the increased prevalence of erectile dysfunction in patients with cardiovascular risk factors or overt cardiovascular disease,

- b) the impact of erectile dysfunction on life quality and subsequently on persistence and adherence to drug therapy,
- c) the detrimental effects of some antihypertensive drugs on erectile function,
- d) the significance of erectile dysfunction in the identification of asymptomatic coronary artery disease, and
- e) the need for appropriate sexual counseling, especially in patients with overt cardiovascular disease.

Prevalence of erectile dysfunction in cardiovascular disease

Erectile dysfunction and cardiovascular disease share common pathophysiological mechanisms, including atheromatous lesions, endothelial dysfunction and subclinical inflammation³. It is, therefore, of no surprise that erectile dysfunction is much more prevalent in patients with frank cardiovascular disease and/or cardiovascular risk factors compared with individuals free of cardiovascular disease.

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Indeed, the majority of patients with cardiovascular disease suffer from erectile dysfunction. In particular, 50-60% of patients with coronary artery disease exhibit impaired erectile function, while the prevalence of erectile dysfunction skyrockets to 80-90% in patients with heart failure, compared with only 15-20% in the general population⁴.

Similarly, erectile dysfunction is commonly found in patients with cardiovascular risk factor, more frequently than in individuals without such risk factors. Indeed, erectile dysfunction is twice more prevalent in hypertensive than in normotensive males, while the severity of erectile dysfunction is also greater in hypertensive men⁵. Likewise, the prevalence of erectile dysfunction is 3 times higher in diabetic men; it is more severe, and somehow more resistant to therapy with PDE-5 inhibitors⁶. Increased erectile dysfunction prevalence rates are also found in men with dyslipidemia, obesity, and in smokers⁷⁻⁹.

Life Quality – Adherence to Therapy

Erectile dysfunction exerts a major impact on the quality of life of patients and their sexual partners, being the “prima ballerina” of impaired life quality in hypertensive men¹⁰. Patients with erectile dysfunction tend to have low self-esteem, lack confidence, develop negative feelings, anxiety and depression, and acquire social and family problems. Characteristically, erectile dysfunction negatively affects the relationship of the couple and results in divorce or separation in one out of five cases¹¹. It is therefore of no surprise that men who develop erectile dysfunction, either withdraw their cardiovascular therapy at all or exhibit poor adherence to drug therapy.

The significance of erectile dysfunction on adherence to antihypertensive therapy is highlighted in the findings of a large real-life observational study in the US. Adherence to antihypertensive drugs was significantly poor, while the initiation of PDE-5 inhibitors resulted in pronounced improvements in adherence rates¹², revealing that the treatment of erectile dysfunction may be successfully used for the confrontation with this phenomenon. This is extremely significant, since poor adherence to therapy is currently recognized as the main problem in the management of hypertensive patients¹³.

Drug Actions and Interactions

Many cardiovascular drugs affect erectile function, with antihypertensive drugs being the most implicated¹⁴. Several lines of evidence indicate that the effect of antihypertensive drugs on erectile function is variable: older antihypertensive drugs (diuretics, b-blockers, mineralocorticoid receptor antagonists, centrally acting) are associated with erectile dysfunction, while newer agents tend to have a neutral effect on erectile function¹⁵. Special mention needs to be made for nebivolol, which is the only beta-blocker that is devoid of detrimental actions on the cavernosal tissue¹⁶. In fact, switching therapy to nebivolol from other b-blockers is associated with significant improvements in sexual function¹⁷.

Another very significant aspect regards the hemodynamic effects of PDE-5 inhibitors. The latter possess vasorelaxant properties, which, however, are not very potent. In general, PDE-5 inhibitors result in a slight blood pressure reduction of 2-4 mmHg. However, severe hypotension may occur in some patients, especially when alpha-blockers are co-administered. Therefore, special caution is needed with the co-administration of these two classes, including time separation, reduced dosing, and careful titration. Finally, PDE-5 inhibitors are absolutely contra-indicated in men receiving nitrates for coronary artery disease.

Asymptomatic Cardiovascular Disease

Atheromatosis is a diffuse disease and affects all vessels in the body, including the penile arteries. According to the artery size hypothesis, erectile dysfunction occurs before coronary and cerebrovascular symptoms, because the diameter of the penile arteries is much smaller than that of the coronary and carotid arteries, and, therefore, occlusive symptoms appear earlier. Erectile dysfunction is an emerging independent cardiovascular risk factor and its presence is associated with increased rates of myocardial infarction, stroke and all-cause mortality¹⁸. Of major importance, erectile dysfunction offers risk re-classification, thus providing a better risk estimation in hypertensive patients. In fact, several lines of evidence suggest that erectile dysfunction precedes cardiovascular events by 3 to 5 years¹⁹.

Therefore, erectile dysfunction provides a unique opportunity to identify asymptomatic coronary artery disease and can be considered as a very

useful diagnostic tool in cardiovascular disease. The exact algorithm of diagnostic investigation of asymptomatic patients with erectile dysfunction remains unclear; however, it seems clinically wise to place erectile dysfunction within the estimation of the total cardiovascular risk of the individual patient.

Sexual Counseling

One must not forget that sexual intercourse is actually a form of physical exercise, which might be in fact very demanding, according to the type and the position of the intercourse, its duration and intensity, and whether it is intra- or extra-marital. Sexual intercourse can, therefore, be associated with acute cardiovascular events or even sudden death, as any other form of vigorous exercise.

To this end, high-risk patients with overt cardiovascular disease or severe uncontrolled hypertension require a careful cardiologic evaluation and stabilization of the disease before engaging safely to sexual intercourse. A treadmill exercise test of 5 to 6 minutes without pathological findings ensures the safe engagement to sexual intercourse, in most cases.

A very significant but under-recognized aspect regards sexual counseling after an acute cardiovascular event²⁰. Patients need to be carefully evaluated after the acute event and appropriately counseled about the time of sex re-initiation, the intensity, the type and the positions permitted, and the potential use of PDE-5 inhibitors, at an individual basis, by adequately trained healthcare professionals (physicians or dedicated nurses).

ESH Actions in Sexual Function

The European Society of Hypertension (ESH) represents the first Scientific Association in the cardiovascular field that acknowledged the importance of erectile dysfunction in the management of patients with cardiovascular risk factors of overt cardiovascular disease. Lectures about sexual dysfunction have been performed at each annual meeting of the Society, for more than a decade, while a Special Working Group, devoted on sexual dysfunction, has been formed in 2010. This working group is popular and very active, has already published two newsletters, published a position paper on sexual dysfunction in hypertension and is now updating it, and published a special book about sexual dysfunction in CV disease a couple of years ago, along with nu-

merous lectures and activities in numerous national and international meetings^{21,22}.

To this end, on behalf of the ESH Working Group that I have the honor to chair, I call each Greek physician with interest in cardiovascular medicine, to join our activities for the proper management of our patients towards a holistic approach.

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