

ORIGINAL RESEARCH

Erectile Dysfunction is Associated with Subsequent Cardiovascular and Respiratory Mortality in Cohort of 1,436 Chinese Elderly Men

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ABSTRACT

Introduction. Erectile dysfunction (ED) is commonly shown to be associated with subsequent cardiovascular mortality, but not respiratory mortality, despite respiratory disease being highly prevalent among ED patients.

Aim. We aim to examine associations of ED with all-cause and cause-specific (i.e., cardiovascular and respiratory) mortality in a prospective cohort of 1,436 Chinese men, followed up from 2001 for a median of 11.5 years.

Methods. ED measurement was based on a single question of four categories at the 4-year follow up.

Main Outcome Measures. Outcome measures include all-cause and cause-specific mortality (i.e., cardiovascular and respiratory mortality, classified according to the International Classification of Disease-version 10 [ICD-10]). Multivariable regression models estimated associations between ED and all-cause and cause-specific mortality, adjusting for the presence of chronic conditions, and socio-demographics and lifestyle factors. For each category of disease-specific mortality, subjects with the corresponding diseases and death cases from other causes were excluded. Cancer mortality was included for comparison.

Results. Participants who were completely impotent had significantly increased risk of all-cause (HR = 1.63, 95% CI = 1.20–2.23), cardiovascular (HR = 3.94, 95% CI = 1.77–8.76) and respiratory mortality (HR = 3.16, 95% CI = 1.46–6.81) compared with non-impotent participants, adjusting for chronic conditions, and socio-demographics and lifestyle factors.

Conclusion. ED is significantly associated with subsequent all-cause mortality, possibly via its association with cardiovascular and respiratory mortality. Primary care practitioners should pay attention to ED patients' cardiovascular and respiratory risk profiles, which may benefit their prognosis. **Chung RY, Chan D, Woo J, Kwok T, Leung JCS, Lai JTT, and Wong SYS. Erectile dysfunction is associated with subsequent cardiovascular and respiratory mortality in cohort of 1,436 Chinese elderly men. J Sex Med 2015;12:1568–1576.**

Key Words. Erectile Dysfunction; Cardiovascular Diseases; COPD; Prospective Studies

Take Home message: The first study to show that erectile dysfunction is significantly associated with not only cardiovascular but also respiratory mortality. Health care practitioners should pay attention to erectile dysfunction patients' cardiovascular and respiratory risk profiles, which may benefit their prognosis.

Introduction

Erectile dysfunction (ED), the inability to develop and/or maintain a satisfactory penile erection sufficient enough for sexual activity [1], is a common health problem affecting over 100 million men worldwide [2]. The prevalence of ED

increases with age [2]; thus, with the aging population worldwide, the prevalence of ED is projected to significantly increase in the future [2,3]. While aging accounts for many cases of ED [4], ED is mostly vasculogenic [5,6], and share with cardiovascular disease (CVD) common risk factors [4] and pathophysiological mechanisms, such as endothelial dysfunction, arterial occlusion, and systemic inflammation [7]. Based on these commonalities, ED is widely regarded as a potential sentinel symptom marker for cardiovascular risk [8,9]. On the other hand, there is also evidence showing that ED is associated with respiratory disorder, including chronic obstructive pulmonary disease (COPD), asthma, and obstructive sleep apnea syndrome [10,11] and decreased the quality of life of men with COPD [12]. COPD has also been found to diminish sexual function among patients with the condition [13]. Despite the associations found between ED and respiratory disease, ED has not been commonly shown to be associated with respiratory mortality.

Prospective studies that show an association between ED and subsequent mortality are of particular importance in terms of public health and clinical implications. It has been shown in a number of prospective studies that ED patients have a significantly increased risk of CVD-related outcomes, including coronary heart disease, stroke, and peripheral vascular disease when compared with non-ED patients [14], and that ED is significantly associated with increased all-cause mortality, primarily through its association with CVD mortality [15]. However, no prospective study has ever been conducted to examine the association between ED and respiratory mortality anywhere, despite apparent association between the two conditions and the high co-morbidities between CVD and respiratory disease [16,17]. Moreover, to our knowledge, no prospective study examining the association between ED and mortality has been conducted in Asia. Given the differences on the prevalence of CVD and ED in Asian populations [18] and the large burden of non-communicable diseases in Asia [19], it is warranted to examine the risk associated with the presence of ED on mortality.

Aims

Therefore, in the present study, we aim to examine the association of ED with all-cause and cause-specific mortality in a prospective cohort of Chinese men who have undergone extensive

assessment at baseline on their demographic and cardiovascular and metabolic risk factors. We hypothesized that ED is associated with subsequent all-cause mortality, through its association with other diseases that share similar etiology and pathophysiology, particularly CVD and also respiratory mortality.

Methods

Sampling and Data Collection

Data from a prospective study, Mr. Os, which consisted of 2,000 men, were used in the present study. In brief, 2,000 men aged 65 or above were recruited from the community starting in 2001, and were studied for a period of 4 years initially to collect information related to risk factors associated with osteoporosis in men. This study was later expanded to include measurements on sexual activity, sexual dysfunction, and urinary related symptoms including the lower urinary tract symptoms, from which findings have been published previously [18]. For the present study, the participants were followed up for a median of 11.5 years to study the associations between ED and subsequent mortality due to different causes of death.

The study was approved by the Clinical Research Ethics Committee of the Chinese University of Hong Kong, which required informed consent to be obtained.

Measurements

Subjects were interviewed with a structured questionnaire by trained interviewers at baseline and at follow-up (year 4). Education level, information on self-rated socioeconomic status, and smoking and alcohol use were collected at baseline. Age, marital status, physical activity level, BMI, and status of erectile function were assessed at the follow-up. Medical history was defined by the presence of disease at either baseline or at the year 4 follow-up.

Independent Variables

Socioeconomic Status

Education level was used as a proxy measurement for objective socioeconomic status. It was categorized as primary or below, and secondary or above. Self-rated socioeconomic status was assessed by asking participants to place a mark on a figure of an upright ladder with 10 rungs, with the top rung representing people who rated themselves as having the most money, the most education, and

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