ORIGINAL RESEARCH—ONCOLOGY

Prevalence of Baseline Erectile Dysfunction (ED) in an Australian Cohort of Men with Localized Prostate Cancer

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ABSTRACT

Introduction. Erectile dysfunction (ED) is a common complication following prostate cancer treatment. Post-treatment erectile function (EF) preservation is strongly dependent on the baseline EF prior to treatment.
Aim. To assess the baseline EF among patients with localized prostate cancer, and the factors associated with baseline EF.
Methods. All men with clinically localized prostate cancer had their baseline EF assessed prior to brachytherapy at our institution. Six hundred ninety-nine men who completed the International Index of Erectile Function five-item questionnaires pre-treatment between 2001 and 2013 were included in the study. Data on patient factors (medical comorbidities and smoking history) and prostate cancer clinicopathological characteristics were recorded. Ordinal logistic regressions were used to estimate the effects of each variable on the severity of ED.
Main Outcome Measures. Baseline EF among men with localized prostate cancer, and factors associated with ED.
Results. Prior to permanent seed brachytherapy, 335 (48%) patients reported no ED, 129 (17%) mild ED, 42 (6%) mild–moderate ED, 37 (5%) moderate ED, and 165 (24%) severe ED. In multivariate analyses, age, diabetes, and hypertension remained to be independently associated with ED, with diabetes most strongly associated with worse ED (odds ratio = 2.6; 95% confidence interval = 1.3–5.3).
Conclusions. ED is common among patients with localized prostate cancer prior to any curative treatment. Assessment of baseline ED is important prior to curative treatment of prostate cancer in order to offer appropriate advise on likelihood of EF preservation post-treatment and avoid patient dissatisfaction with treatment outcomes due to unrealistic expectations. **Ong WL, McLachlan H, and Millar JL. Prevalence of baseline erectile dysfunction (ED) in an Australian cohort of men with localized prostate cancer. J Sex Med 2015;12:1267–1274.**

Key Words. Erectile Dysfunction; IIEF-5; Prostate Cancer; Epidemiology

Introduction

Erectile dysfunction (ED) is a common medical problem that confronts many men. The underlying etiologies for ED are multifactorial, including metabolic, vascular, neurogenic, and psychogenic causes. ED is also a common complication following curative treatment for prostate cancer with surgery, or radiation with or without antiandrogen treatment. Sexual function is one of the most commonly impaired aspects of the quality of life outcomes following prostate cancer treatment, and is closely related with patients' outcome satisfaction [1,2]. Unfortunately, patients often have unrealistic expectations following prostate cancer treatment. Symon et al. reported that independent of the treatment modalities, patients' pre-treatment expectation regarding their urinary and bowel outcomes closely reflected the eventual observed outcomes, but their expectation of the sexual or erectile function (EF) outcomes significantly exceeded their observed EF outcomes at 1 year post-treatment [3]. Given that post-treatment EF outcomes are strongly dependent on the

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pre-treatment EF [4,5], it is important to assess and determine each patient's baseline EF prior to initiation of prostate cancer treatment in order to offer appropriate advice on the expected post-treatment EF preservation and avoid patients' dissatisfaction with treatment outcomes due to unrealistic expectations.

Earlier studies reported approximately one in two prostate cancer patients had some degree of ED prior to radical prostatectomies [6,7]. However, given that patients who were referred for surgery are likely to be systematically different in terms of their general fitness and underlying medical comorbidities compared with patients referred for radiation treatment, the prevalence of pre-treatment EF among radiotherapy patients could be different. Hence, direct comparison of the long-term EF outcomes following surgical vs. radiation treatment could be misleading if the baseline EF is not comparable.

Aims

The aim of our study is to investigate the baseline prevalence of ED among men with localized prostate cancer prior to permanent seed brachytherapy. The secondary aim of this study is to explore the patient and tumor characteristics that influence the baseline EF in these men.

Materials and Methods

Study Cohort

From 2001, as part of the practice at the William Buckland Radiation Oncology Service (WBRO) at the Alfred Health, patients with biopsy-confirmed clinically localized prostate cancer had their baseline EF assessed prior to permanent seed brachytherapy treatment, using the International Index of Erectile Function abridged five-item (IIEF5) questionnaire. The IIEF5 is a validated patient-completed diagnostic tool for EF, with normal EF defined as IIEF5 score of 22–25, mild ED 17–21, mild-moderate ED 12–16, moderate ED 8–11, and severe ED 1–7 [8,9]. Six hundred and ninety-nine patients who had complete information on the IIEF5 questionnaire prior to treatment were included in the current study.

Patient factors assessed for association with baseline EF include age at prostate cancer diagnosis, presence of medical comorbidities, and smoking histories. Medical comorbidities are defined as any history of hypertension (on antihypertensive medication), diabetes mellitus (on oral hyperglycemic agents or insulin), or ischemic heart disease (any prior histories of coronary artery bypass grafts or coronary stent insertion). For smoking histories, ex smoker was defined as individuals who have ceased tobacco smoking for more than 6 months prior to diagnosis of prostate cancer. The prostate cancer characteristics included in the analysis are Gleason score at biopsy, serum PSA level at diagnosis, clinical stages, and prostate volume. All information was recorded in the electronic medical records at WBRO, Alfred Health. The study was approved by the Alfred Health Ethics Committee.

Statistical Analysis

The primary outcome of interest is the baseline (pre-treatment) EF. The differences in the patient and tumor characteristics between patients with different severity of ED was analyzed with Kruskal–Wallis test for continuous variables and Pearson's chi-squared test for categorical variables. Univariate ordinal logistic regression was used to estimate the effect of each patient and tumor characteristic on the baseline ED severity, treating each level of severity as ordinal categories. All factors with $P < 0.1$ in the univariate analysis were included as covariates in multivariate ordinal logistic regression models. No violation of the proportional odds assumptions was observed. A two-sided $P < 0.05$ was considered to indicate statistical significance. All statistical analyses were performed using STATA/IC 13 (STATA Corp, College Station, TX, USA).

Results

Figure 1 shows the distribution of the baseline IIEF5 scores for the study population. Prior to brachytherapy treatment for prostate cancer, 335 (48%) patients reported no ED, 120 (17%) mild ED, 42 (6%) mild-moderate ED, 37 (5%) moderate ED, and 165 (24%) severe ED. Table 1 summarizes the patient and tumor characteristics of the study population. The mean age at prostate cancer diagnosis was 63 (SD = 6.8), with patients diagnosed at younger age statistically significantly less likely to report any ED: a mean age of 61 among those with no ED and 67 among those with severe ED ($P < 0.001$). Figure 2 shows the distribution of baseline EF, stratified by patients' age group. With increasing age, the proportion of patients with no ED significantly decreases with a corresponding increase in the proportion of

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