The Effect of Comorbidity and Socioeconomic Status on Sexual and Urinary Function and on General Health-Related Quality of Life in Men Treated with Radical Prostatectomy for Localized Prostate Cancer

Pierre I. Karakiewicz, MD,* Naeem Bhojani, MD,† Alfred Neugut, MD,‡ Shahrokh F. Shariat, MD,§ Claudio Jeldres, MD,† Markus Graefen, MD,¶ Paul Perrotte, MD,* Francois Peloquin, MD,† and Michael W. Kattan, MD**

*University of Montreal Health Center (CHUM)—Cancer Prognostics and Health Outcomes Unit, Montreal, Canada; †University of Montreal—Urology, Montreal, Canada; ‡Columbia University—The Departments of Medicine and Epidemiology, New York, NY, USA; §University of Texas Southwestern—Urology, Dallas, TX, USA; ¶University of Hamburg, Hamburg, Germany; **Cleveland Clinic Foundation—Department of Biostatistics and Epidemiology, Cleveland, OH, USA

ABSTRACT

Introduction. Different treatments for localized prostate cancer (PCa) may be associated with similar overall survival but may demonstrate important differences in health-related quality of life (HRQOL). Therefore, valid interpretation of cancer control outcomes requires adjustment for HRQOL.

Aim. To assess the effect of comorbidity and socioeconomic status (SES) on sexual and urinary function as well as general HRQOL in men treated with radical prostatectomy (RP) for PCa.

Methods. We sent a self-addressed mail survey, composed of the research and development short form 36-item health survey, the PCa-specific University of California at Los Angeles (UCLA) Prostate Cancer Index (PCI), as well as a battery of items addressing SES and lifetime prevalence of comorbidity, to 4,546 men treated with RP in Quebec between 1988 and 1996.

Main Outcome Measures. The association between comorbidity, SES, and HRQOL was tested and quantified using univariable and multivariable linear regression models.

Results. Survey responses from 2,415 participants demonstrated that comorbidity and SES are strongly related to sexual, urinary, and general HRQOL in univariable and multivariable analyses. In multivariable models, the presence of comorbid conditions was associated with significantly worse HRQOL, as evidenced by lower scale scores by as much as 17/100 points in general domains, and by as much as 10/100 points in PCa-specific domains. Favorable SES characteristics were related to higher general (up to 9/100 points) and higher PCa-specific (up to 8/100 points) HRQOL scale scores.

Conclusions. Comorbidity and SES are strongly associated with sexual, urinary and general HRQOL. **Karakiewicz PI, Bhojani N, Neugut A, Shariat SF, Jeldres C, Graefen M, Perrotte P, Peloquin F, and Kattan MW. The effect of comorbidity and socioeconomic status on sexual and urinary function and on general health-related quality of life in men treated with radical prostatectomy for localized prostate cancer. J Sex Med 2008;5:919–927.**

Key Words. Sexual Function; Urinary Function; Health-Related Quality of Life; Comorbidity; Socioeconomic Status; Radical Prostatectomy

Introduction

Different treatments for localized prostate cancer (PCa) may be associated with similar overall survival, but may demonstrate impor-tant differences in health-related quality of life (HRQOL) [1–3]. Therefore, valid interpretation of cancer control outcomes requires adjustment for HRQOL, which is the case in methodo-logically sound studies [2,4]. Unfortunately, the

majority of HRQOL do not adjust their HRQOL scores for population characteristics or case mix [5–7]. Unadjusted HRQOL scale score comparisons might be confounded by effects stemming from population differences, such as comorbidity and socioeconomic status (SES). In many cancers, including PCa, comorbidity has been shown to affect survival [8–10]. Similarly, SES has been shown to represent a predictor of outcome [8,11,12]. In this study, we explored and tested the strength of the effect of comorbidity and SES on sexual, urinary, and general HRQOL scales in men treated with radical prostatectomy (RP) for PCa in the Province of Quebec between 1988 and 1996.

Aims

This study aimed to assess the effect of comorbidity and SES on sexual and urinary function as well as general HRQOL in men treated with RP for localized PCa.

Methods

The patient population included 4,997 men treated with RP in the Province of Quebec, between January 1, 1988 and January 16, 1996. They were identified from the Quebec Health Care Plan Database using the RP-specific billing code. The Quebec Health Plan represents the exclusive medical insurer in the Province; therefore, the billing code-based identification results in virtually complete ascertainment of RP. The Quebec Health Care Plan Database contains no clinical, surgical, or pathological data. In consequence, the effect of these variables cannot be assessed according to the database; of men treated with RP during this period, 4,546 were alive as of August 1, 1997. They were contacted with a self-administered mail survey and no patient was excluded from the mailing. The time between treatment and survey participation ranged from a minimum of 17 months for those treated in January 1996, to 8.5 years for those treated in January 1988. The study format was approved by the Patient Privacy Protection Branch of the Quebec Health Plan.

The survey focused on sexual, urinary, and general HRQOL outcomes, in addition to age, comorbidity, and SES. Age at surgery and age at survey administration were defined according to the Quebec Health Plan Database records. Comorbidity was assessed with a 12-item medical

Table 1 Overall descriptives for response rate, age, baseline erectile function, comorbidity, and socioeconomic status in the cohort of 2,415 men treated with radical prostatectomy in the Province of Quebec between January 1, 1988 and January 16, 1996

Year of surgery	1988–1996
Mean age at surgery (years)	63.6
Standard deviation	(5.8)
Mean age at survey administration (years)	69.6
Standard deviation	(5.8)
Number of survey respondents	2,415
Participation rate (%)	53.1
Number of respondents reporting erections prior to therapy	2,227
Prevalence of comorbid conditions (%)	
Diabetes	9.4
Heart attack, chest pain	15.4
Stroke	4.0
Amputation	1.8
Circulation problems in legs or feet	21.1
Asthma, emphysema, breathing problems	12.5
Stomach ulcer, irritable bowel	14.8
Kidney disease	4.9
Major depression	3.7
Seizures	1.4
Alcoholism or alcohol problems	4.7
Drug problems	0.9
Annual household income in Canadian dollars (%)	
0–20,000	24.9
20,001–30,000	23.8
30,001–50,000	27.3
50,001 and higher	24.0
Education (%)	
Less than high school	29.2
High school or some college	45.8
College degree or higher	24.9
Working full- or part-time (%)	17.3
Married (%)	81.4
Living with spouse or partner (%)	87.8

history checklist based on an established rating [4]. This checklist has been used extensively in HRQOL studies addressing PCa outcomes [4]. It focuses on the lifetime prevalence of 12 comorbid conditions, such as heart disease, stroke, diabetes, lung disease, kidney disease, gastrointestinal disease, and others. SES was characterized by five items, which had also been used in studies of men with and without PCa (Table 1) [4].

General HRQOL was assessed using eight multi-item research and development (RAND) 36-Item Health Survey 1.0 scales (short-form [SF]-36) (RAND, Santa Monica, CA) [4]. SF-36 reliability and validity were confirmed in men treated for localized PCa in the United States and in Canada [4,13]. A validated French-Canadian translation of the survey was used for Francophone participants and it may be obtained from the authors [13]. PCa-specific outcomes were addressed with the self-administered UCLA Prostate Cancer Index (PCI) [4,13]. The original PCI