

Commentary on genitourinary cancer survivorship: physical activity and prostate cancer survivorship

Garjae Lavien, Uwais Zaid, Andrew C. Peterson

Division of Urology, Genitourinary Cancer Survivorship Program, Duke University Medical Center, Durham, NC, USA

Correspondence to: Garjae Lavien, MD. Division of Urology, Genitourinary Cancer Survivorship Program, Duke University Medical Center, DUMC 3146 Durham, NC 27710, USA. Email: garjae.lavien@duke.edu.

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Introduction

Previous definitions outlining cancer survivorship referred mostly to individuals who had life-threatening disease, but remained disease free for a minimum of 5 years (1-3). However the current iteration of the term “cancer survivor” as proposed by the National Consortium for Cancer survivorship refers to those “living with, through and beyond a cancer diagnosis” (4). This definition, accepted by the Institute of Medicine, the Centers for Disease Control and Prevention and the American Society for Clinical Oncology represents a forward thinking practice of embracing all individuals affected by cancer regardless of oncologic status, and encourages advocacy for quality care for all patients.

Recent epidemiologic studies estimate more than 15 million cancer survivors in the United States, with nearly 3 million of these being prostate cancer survivors (5,6). Definitive treatments for prostate cancer, whether in the form of hormonal therapy, radiotherapy, ablative procedures or surgery can lead to well described physical and psychological complications that can impact the quality of lives of those affected. With a relative survival rate of 98% and 91% at 10 and 15 years respectively (7), this continuously growing population of long-term survivors will eventually present to their health care providers with cancer-specific needs. Although stress urinary incontinence and erectile dysfunction represent well recognized complications that patients face after prostate cancer treatment, survivors also deal with multiple health and psychosocial issues, cancer-related complications, and issues related to exposure to therapy. All clinicians caring for men with prostate cancer should be cognizant of issues that

can affect individuals from the time of diagnosis to death. Future research efforts focusing on lifestyle modification and secondary prevention can improve the quality of lives and health of all cancers survivors.

Physical activity and prostate cancer-specific survival

Physical activity is well recognized for maintenance of overall health, with multiple studies demonstrating that greater physical activity is inversely associated with coronary artery disease, stroke, total cardiovascular disease and all-cause mortality (7-9). Physical activity has been shown to reduce disease- and treatment-related symptoms and improve quality of life during and after treatment (10,11). Moreover, other studies have demonstrated an inverse association between physical activity and development of other malignancies such as renal cancer, gastroesophageal, and bladder cancer (12-14).

The evidence of physical activity and association with cancer-specific survival after diagnosis of prostate cancer is limited. With this mind, Friedenreich and colleagues (15) conducted a prospective cohort study of prostate cancer survivors who resided in Alberta, Canada with the aim of determining whether men who were more physically active before and after diagnosis of prostate cancer would survive longer. This longitudinal study focused on patients diagnosed with stage II-IV prostate cancer in Alberta, Canada. The Lifetime Total Physical Activity Questionnaire was administered using cognitive interviewing methods to determine the frequency, duration and intensity of physical activity from childhood to diagnosis. A similar

questionnaire was administered on average 2.5, 4.7 and 6.8 years after diagnosis. A total of 830 participants with a median age of 68 at diagnosis with a median follow up of 15.5 years were identified. Postdiagnosis activity of >119 MET-hours/week versus 42< MET-hours/week per year was associated with a 42% significantly lower risk of all-cause mortality. With particular attention to physical activity after diagnosis, the authors demonstrated that increased post-diagnosis recreational activity is associated with lower risk of all-cause mortality and prostate cancer specific mortality. No associations between prediagnostic physical activity and prostate cancer specific mortality were appreciated. Furthermore, no association was noted between postdiagnosis activity and the development recurrence or disease progression.

These results are in consonance with previous studies. Kenfield *et al.* (16) prospectively followed 2,705 prostate cancer survivors with nonmetastatic disease identified from the Health Professionals Follow-up study over an 18 year period. In multivariable analysis, men who were physically active had lower risk of all-cause mortality and prostate cancer specific mortality. Those who walked ≥ 90 minutes per week at a normal to very brisk pace had a 46% lower risk of all-cause mortality (HR 0.54; 95% CI, 0.41–0.71) compared with shorter durations at an easy walking pace. Men with ≥ 3 hours per week of vigorous activity had a 49% lower risk of all-cause mortality (HR 0.51; 95% CI, 0.36–0.72). Men with ≥ 3 hours per week of vigorous activity had a 61% lower risk of PCa death (HR 0.39; 95% CI, 0.18–0.84; $P=0.03$) compared with men with less than 1 hour per week of vigorous activity.

Clinicians should view these findings as another reason to encourage prostate cancer survivors to be physically active during and after treatment as a part of their survivorship care plan. Although reduction of oxidative stress and decrease in insulin-like growth factors with physical activity have been purported as potential mechanisms (17), further workup is warranted to determine a potential biologic explanation to these findings.

Interestingly, the authors have identified a subset of prostate cancer survivors who present with a decline in physical activity, due to difficulty walking with concomitant groin or suprapubic pain. When recognized in patients who have undergone prior radiotherapy or ablative procedure for prostate cancer treatment, clinicians should strongly consider workup of pubic related disorders such as prostatosymphiseal fistula or pubic symphysis osteomyelitis (18,19). Definitive management in these patients can provide

immediate relief of pain and improve functional status that facilitates a patient pursuing a physically active lifestyle.

Conclusions

Cancer care in the United States continues to evolve, with increasing research efforts focusing on cancer survivorship and the improvement of the quality of lives of survivors regardless of oncologic status. Clinicians treating prostate cancer survivors should be steadfast in promoting physical activity as part of an individualized survivorship care plan, with the goal of not only mitigating treatment-related side effects and improving overall cardiovascular health, but also improving overall (and cancer-specific) survival. While the biologic underpinnings of physical activity and the link to these findings need further characterization, it is now quite clear that physical activity not only leads to improve quality of life but overall survival as well.

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Footnote

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