

Are Dietary and Environmental Factors Responsible for the Increasing Incidence of Prostate Cancer in Sri Lanka over Past Ten Years?

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ABSTRACT

Prostate cancer is one of the cancers with increasing incidence in Sri Lanka. It elevated from 9th to 5th position during the past decade. This cancer type accounted for 7% of Sri Lankan male malignancies in 2019. Alarming, this cancer type is the 2nd most common neoplasm in the 65 years and above age group of males in Sri Lanka in the same year. The aetiology of prostate cancer is multifactorial, even though familial history or inherited genetic mutations play a vital role in the aetiopathogenesis of this malignancy. In the era of evidence-based medicine, reliable and accurate databases on socio-demographic, clinical and risk factors of prostate cancer patients are of utmost importance. Sri Lanka has been a forerunner in maintaining Healthy Lifestyle Centres (HLCs) since 2011 to address the lack of community based screening for non-communicable disease (NCD). However, community-based annual serum prostate-specific antigen (PSA) testing and digital rectal examinations (DRE) starting by age 50 for men with a life expectancy of at least 10 years are notable service gaps of HLCs which could have reduced the burden of prostate cancers in Sri Lanka. This old age disease of men needs attention of Cancer Epidemiologists, Oncologists, Cancer Researchers as well as Consultant Urological Surgeons. In this context, this commentary aims to make awareness among Medical Scientists to find out the answer to the research question; Are dietary and environmental factors responsible for the increasing incidence of prostate cancer in Sri Lanka?

Keywords: Prostate Cancer, Aetiology, Prostate Specific Antigen, Multifactorial.

INTRODUCTION

Prostate cancer (PCa) denotes a major public health difficulty in the Western world as the most common non-skin cancer among men accounting for an estimated 25.6% (248,530) of all cancer cases in males and 10.7% (34,130) of all cancer deaths in males in the United States of America [1]. Fortunately, there are over 3.2 million men currently alive in this part of the world with a previous diagnosis of the disease [2], encouraging all PCa patients in other countries to survive. The average

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lifetime risk of prostate cancer is reported as 11.7% (1 in 8.5) for Whites and 16.7% (1 in 6) for Blacks, based on 2016–2018 Surveillance, Epidemiology, and End Results (SEER) data [3]. There is a rising trend of PCa incidence in Sri Lanka, being the 5th most common cancer among males and elderly preponderance ≥ 65 yrs in 2019, according to the latest Sri Lanka cancer registry information [4]. Age Standardized Incidence Rate per 1000,000 populations increased from 3.5 in 2005 to 9.3 in 2019 thus demonstrating a 3-fold increase in 14-years [4]. Family history, age, ethnicity and hereditary prostate cancer genes (BRCA1, BRCA2, and HOXB13) are the established aetiological agents of prostate cancer [5]. Asian immigrants in Western countries have higher PCa risk compared to those in their countries of birth [6]. It is noteworthy to find-out the reason for the progression of PCa from 9th position [7] to 5th of major cancer type in Sri Lankan males during past 12 years. Prostate Specific Antigen (PSA) is the biomarker of choice especially for symptomatic men to diagnose PCa coupled with digital rectal examination findings. In many developed countries a PSA test and digital rectal examination are part of a routine medical checkup for older males but not available in lower-middle-income countries like Sri Lanka. There is emerging evidence on possible associations of risk-related diet metrics [5] and environmental risk factors [8] for PCa in a global context. There is no information on risk factors of PCa among different ethnic groups in Sri Lanka. Against this scenario, this commentary proposes a research question warranting scientific explorations with methodological rigour with case-control and cohort study designs.

Correlation between dietary and environmental factors and increased risk of PCa

Research based on the impact of diet and life style risk factors on prostate cancers are still in its infancy. In a study conducted previously on an American cohort, which included 11 014 participants associations between food intake and increased risk for prostate cancer was not found [9]. Association between high-level intake of protein or calcium from dairy products may increase the risk for prostate cancer was found in a subsequent study based on 1 42 251 men in the European Prospective Investigation into Cancer and Nutrition [10]. Thus, several studies suggested that red meat (pork, beef, and lamb) as another main dietary protein positively associated with prostate cancer risk. Nevertheless, there is no consistency of this finding as other studies did not corroborate those findings [10-13]. Thus, uncertainty exists in the observed associations between PCa risk and the intake of other macronutrients [14]. In a very recent study on quantifying the contributions of environmental factors

to prostate cancer and detecting risk related diet metrics, Zhang and Zhang [5] confirmed previous studies showing that high protein and saturated fat levels in diet were related to increased PCa risk, high-level supplementary selenium intake was harmful rather than beneficial for preventing PCa, and supplementary vitamin B6 was beneficial for preventing benign PCa [5]. Moreover, high-level organ meat intake was an independent predictor for increased aggressive PCa risk; supplementary iron, copper and magnesium increased benign PCa risk; and the Non-Hispanic American African diet was “healthy” in terms of the relatively lower protein and fat levels and was “unhealthy” in that it more commonly contained organ meat [5]. Finally, they also established a priority ranking among the contributing factors for PCa and identified several risk-related diet metrics and the racial disparities [5]. Exposure to tobacco smoke, pro occupational exposure to cadmium, herbicides and pesticides, chronic infectious-inflammatory prostatic processes encountered as non-dietary environmental risk factors for PCa in a bibliographic review of the last 25 years of non-dietary environmental risk factors associated with prostate cancer between 1985 and 2010 [15].

CONCLUSION

There may be dietary and environmental factors responsible for the increasing incidence of prostate cancer in Sri Lanka over past ten years, in addition to increased reporting and early detection of PCa and increased geriatric population. However, more concluding evidence should be provided by conducting case-control and cohort studies with methodological rigour.

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CONFLICT OF INTEREST

The authors declare no potential conflicts of interest with respect to the authorship and/or publication of this article.

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