AN OVERVIEW OF SCREENING MALIGNANCIES OF THE PROSTATE GLAND USING PSA AS A PREDICTIVE MARKER

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ABSTRACT

Background: *Prostate cancer is the commonest cancer among men in India and early detection is the key to cure and survival, but its screening through prostate-specific antigen (PSA) has remained controversial in the literature. Screening with prostate-specific antigen (PSA) has led to more men diagnosed with prostate cancer than in previous years with potential for negative effects from overdiagnosis and overtreatment.*

Method: *This is a review article on the controversies and recommendations regarding prostate cancer screening following a detailed search of the literature and online databases such as Pubmed and Google using PSA, DRE, prostate cancer, screening as keywords.*

Conclusion: *Prostate cancer screening is fraught with a lot of controversies. Therefore, it should be individualised through discussion between the physician and informed clients using appropriate guidelines and recommendations.*

Keywords: *Cancer, PSA, Prostate, Screening*

Introduction

Prostate Cancer is the number one cancer in men with increasing incidence and morbidity among Indians[1,2]. The worldwide burden of this disease is rising[3]. The cure is possible through early detection from screening, but it is not clear whether early detection and treatment lead to any change in the natural history and outcome of the disease[4]. The goal of prostate cancer screening is to reduce morbidity and mortality from this disease through early detection. However, it has been fraught with controversies in many studies and this has led to heated discussions and debates resulting in many conflicting positions and policy papers[5].

Screening is the presumptive identification of unrecognised disease or defects by means of

tests, examinations, or other procedures that can be applied rapidly[6]. Common screening techniques for prostatecancer include the digital rectal examination (DRE) and assessment of serum prostate-specific antigen (PSA) levels[7].

DRE is the oldest and cheapest. It was the first and only diagnostic tool used for the detection of prostate cancer until the mid-1980 before the discovery of PSA[8]. However, this test has considerable inter-examiner variability and the majority of cancers detected by means of digital rectal examination are atan advanced stage[9,10].

The use of PSA as a serum marker has revolutionised prostate cancer diagnosis but its use for screening is controversial. PSA is organ- but not cancer-specific, therefore, it may be elevated in benign prostatic hyperplasia (BPH), prostatitis and other non-malignant condition.

Controversies Screening generally aims to reduce disease-specific and overall mortality and to improve a person's future quality of life. Screening for prostate cancer has generated considerable debate within the medical and broader community, as demonstrated in the literature and the varying recommendations made bymedical organisations and governed by national policies[11].

Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening trial conducted in the United States. The PLCO studied the mortality of prostate, lung, cervix, and ovary cancer screening in a randomised fashion. The PLCO study showed no mortality differences between its randomised arms for prostate cancer after seven years of follow-up[17]. After 13 years of follow-up, the cumulative mortality rates from prostate cancer in the intervention and control groups were 3.7 and 3.4 deaths per 10,000 person-years, respectively, meaning that there was nosignificant difference between the two groups[17].

In a study by Bangma and colleagues, it showed that the main drawback of prostate cancer screening is the increased risk of overdiagnosis of prostate cancer A number of studies[4,12,13] have demonstrated the meaning detection of cancers that may not give rise to benefits of prostate cancer screening. The European Randomised Study of Screening for Prostate Cancer(ERSPC) found that PSA screening significantly reduces the mortality of prostate cancer but is also associated with a high risk of over-diagnosis. Furthermore, data from the ERSPC showed thecumulative risk of metastatic disease at 9 to 11 yearsof follow-up was 31% to 33% lower in the screenedarm compared to the control arm and that the benefitof screening increases with time[13,14]. Reduction in prostate cancer-specific mortality may take

up to 10years, therefore, men who have a life expectancy lessthan 10 should be informed that screening for prostatecancer is unlikely to be beneficial[15].

The incidence of metastatic disease at presentation has declined by approximately three-fourths in the US since the advent of PSA screening[15]. The ERSPC report was consistent with the Göteborg randomised population-based prostate-cancer screening trial which demonstrated a 56% reductionin risk of metastatic disease and that the benefit of prostate-cancer screening compares favourably toother cancer screening programs[16].

These results however are in contrast with the US symptoms or lead to death during the lifetime of a typical man[18]. This was consistent with the conclusion made in the systematic review of articles according to the Cochrane database system[11] which showed that overdiagnosis and overtreatment are common and are associated with treatment-related harms and that men should be informed of these andthe demonstrated adverse effects when they are deciding whether or not to undertake screening for prostate cancer[10,11].

Recommendations

Based on the results of the PLCO trial, the U.S. Preventive Service Task Force (USPSTF) advised against PSA screening in their draft recommendation issued in 2011[19]. However, many large national urological associations like the American Urological Association (AUA), Canadian Urological Association (CUA) and European Urological Association (EAU) still value the benefit of PSA screening for men after age 45 to 50 and recommend physician-patient discussion about screening on an individual basis. The decision should follow a discussion about the uncertainties, risks, and potential benefits of screening with the age of patients, patients' risk factors, and life expectancy taken into consideration[4,11,15].

Currently, active surveillance for early detected cases is a feasible strategy to reduce overtreatment without compromising the therapeutic window and chance for cure. The review of literature showed that activesurveillance can reduce overtreatment by almost 50 percent at 15 years and that men on activesurveillance are not at immediate risk of death fromthe disease if therapy is deferred until the cancer progresses[4,15].

Conclusion

The topic of prostate cancer screening is controversial in many literatures. It is useful in the early detection of prostate cancer but with the risk ofoverdiagnosis and overtreatment.

Many national urological associations (AUA, EUA, CUA) still findit valuable provided it is individualised and done through discussion between the physician and informed client using appropriate guidelines andrecommendations.

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