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ORIGINAL ARTICLE

Baseline PSA in a Spanish male population aged 40–49 years anticipates detection of prostate cancer☆

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KEYWORDS
Prostate cancer;
Screening;
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Abstract

Introduction: We researched the usefulness of optimizing prostate cancer (PC) screening in our community using baseline PSA readings in men between 40 and 49 years of age.

Material and method: A retrospective study was performed that analyzed baseline PSA in the fifth decade of life and its ability to predict the development of PC in a population of Madrid (Spain). An ROC curve was created and a cutoff was proposed. We compared the evolution of PSA from baseline in patients with consecutive readings using the Friedman test. We established baseline PSA ranges with different risks of developing cancer and assessed the diagnostic utility of the annual PSA velocity (PSAV) in this population.

Results: 4304 men aged 40–49 years underwent opportunistic screening over the course of 17 years, with at least one serum PSA reading (6001 readings) and a mean follow-up of 57.1 ± 36.8 months. Of these, 768 underwent biopsy of some organ, and 104 underwent prostate biopsy. Fourteen patients (0.33%) were diagnosed with prostate cancer. The median baseline PSA was 0.74 (0.01–58.5) ng/ml for patients without PC and 4.21 (0.76–47.4) ng/ml for those with PC. The median time from the reading to diagnosis was 26.8 (1.5–143.8) months. The optimal cutoff for detecting PC was 1.9 ng/ml (sensitivity, 92.86%; specificity, 92.54%; PPV, 3.9%; NPV, 99.97%), and the area under the curve was 92.8%. In terms of the repeated reading, the evolution of the PSA showed no statistically significant differences between the patients without cancer ($p = 0.56$) and those with cancer ($p = 0.64$). However, a PSAV value >0.3 ng/ml/year revealed high specificity for detecting cancer in this population.

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Conclusions: A baseline PSA level ≥1.9 ng/ml in Spanish men aged 40–49 years predicted the development of PC. This value could therefore be of use for opportunistic screening at an early age. An appropriate follow-up adapted to the risk of this population needs to be defined, but an annual PSAV ≥ 0.3 ng/ml/year appears of use for reaching an early diagnosis.

PALABRAS CLAVE
Cáncer de próstata;
Cribado;
PSA basal;
Velocidad de PSA;
Biopsia

El PSA basal en una población de varones españoles de 40-49 años anticipa la detección de cáncer de próstata

Resumen

Introducción: Investigamos en nuestro entorno la utilidad de optimizar el cribado de cáncer de próstata (CaP) mediante determinación de PSA basal en varones entre 40-49 años.
Material y método: Estudio retrospectivo que analiza el PSA basal en la quinta década y su capacidad para predecir desarrollo de CaP en una población de Madrid (España). Se realiza curva ROC y se propone un punto de corte. Se compara la evolución del PSA desde basal en pacientes con determinaciones consecutivas mediante el test de Friedman. Se establecen rangos de PSA basal con diferente riesgo de desarrollo de cáncer y se evalúa la utilidad diagnóstica de la velocidad de PSA (VPSA) anual en esta población.
Resultados: Un total de 4.304 varones de 40-49 años fueron sometidos a cribado oportunista a lo largo de 17 años, con al menos una determinación sérica de PSA (6.001 determinaciones) y con seguimiento medio de 57,1 ± 36,8 meses. A 768 se les practicó biopsia de algún órgano y a 104 biopsia prostática. Catorce pacientes (0,33%) fueron diagnosticados de cáncer de próstata. La mediana de PSA basal fue 0,74 ng/ml (0,01-58,5) para pacientes sin CaP y 4,21 ng/ml (0,76-47,4) con CaP. La mediana de tiempo desde la determinación hasta el diagnóstico fue 26,8 meses (1,5-143,8). El punto de corte óptimo para detectar CaP fue 1,9 ng/ml (sensibilidad 92,86%, especificidad 92,54%, VPP 3,9%, VPN 99,97%) y el área bajo la curva 92,8%. Respecto a las determinaciones repetidas, la evolución del PSA no mostró diferencias estadísticamente significativas entre pacientes sin cáncer (p = 0,56) o con cáncer (p = 0,64); pero un valor de VPSA > 0,3 ng/ml/año revela elevada especificidad para detectar cáncer en esta población.
Conclusiones: Un PSA basal ≥ 1,9 ng/ml en varones españoles de 40-49 años predice el desarrollo de CaP, por lo que podría resultar de utilidad para el cribado oportunista en edad temprana. Se necesita definir un seguimiento apropiado adaptado al riesgo en esta población, pero una VPSA anual ≥ 0,3 ng/ml/año parece de utilidad para conseguir un diagnóstico temprano.

Introduction

The debate about the appropriateness of conducting the screening for prostate cancer (PCa) is still far from being closed.[1] Current recommendations of many scientific societies consider that population screening in men at medium risk of developing the disease may make sense in men between 55 and 69, provided they are properly informed and they want it, and they are also willing to take the risk that the disease can be diagnosed and treated in excess with the diagnostic and therapeutic methods available to us today.[1–5] The overall evidence to address this issue comes mainly from the data obtained in the prospective multicenter European Randomized Study on Prostate Cancer (ERSPC) and from some major national sub-studies that comprise it and meta-analyses derived therefrom.[6–9]

The evidence available in our country on this issue rests primarily on the experience of the Spanish ERSPC group, where a curious imbalance between the incidence and mortality of the disease is observed, especially when compared to that of other malignancies.[10] In fact, in our environment, a greater number of diagnoses with screening and migration at diagnosis in earlier stages has been verified, but despite a long follow-up (over 15 years), no benefit has occurred in terms of overall or cancer-specific survival.[11] PCa mortality in the Spanish arm of the ERSPC is surprisingly low, possibly due to the relative numerical limitation of the series (18,612 men).[10,11] This fact makes the doubts and uncertainties of screening have greater interest and great respect to avoid overtreatment in our environment.

Recent guidelines from the European Urological Association (EAU) show a high interest in improving the screening strategy at the expense of determining a baseline PSA in men over 40 or 45 years old, and of adapting the efforts of the future screening strategy to the risk defined by age and baseline PSA.[12] This recommendation is supported primarily by a systematic review of the literature, and it is based on the fact that early detection of cancer reduces the disease-related mortality[8] and the risk of developing advanced and/or metastatic cancer.[6,13] The aim of raising a mass screening of PCa focuses on reducing overall and cancer-specific mortality and improving quality of life