Thresholds for PSA doubling time in men with non-metastatic castration-resistant prostate cancer.

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Abstract

OBJECTIVES: To examine whether prostate-specific antigen doubling time (PSADT) correlates with metastases, all-cause mortality (ACM), and prostate cancer-specific mortality (PCSM) and to identify PSADT thresholds that can be used clinically for risk stratification in men with M0 castration-resistant prostate cancer (CRPC).

MATERIALS AND METHODS: We collected data on 441 men with M0 CRPC in 2000-2015 at five Veterans Affairs hospitals. Cox models were used to test the association between log-transformed PSADT and the development of metastasis, ACM and PCSM. To identify thresholds, we categorized PSADT into 3-month groups and then combined groups with similar hazard ratios (HRs).

RESULTS: The median (interquartile range) follow-up was 28.3 (14.7-49.1) months. As a continuous variable, PSADT was associated with metastases, ACM and PCSM (HR 1.40-1.68, all P < 0.001). We identified the following PSADT thresholds: <3 months; 3-8.9 months; 9-14. months; and ≥15 months. As a categorical variable, PSADT was associated with metastases, ACM and PCSM (all P < 0.001). Specifically, PSADT <3 months was associated with an approximately ninefold increased risk of metastases (HR 8.63, 95% CI 5.07-14.7) and PCSM (HR 9.29, 95% CI 5.38-16.0), and a 4.7-fold increased risk of ACM (HR 4.71, 95% CI 2.98-7.43) on multivariable analysis compared with PSADT ≥15 months. The median times to metastasis for patients with PSADT <3, 3-8.9, 9-14.9 and ≥15 months were 9, 19, 40 and 50 months, respectively.

CONCLUSION: Prostate-specific antigen doubling time was a strong predictor of metastases, ACM and PCSM in patients with M0 CRPC. As with patients at earlier disease stages, <3, 3-8.9, 9-14.9 and ≥15 months are reasonable PSADT thresholds for risk stratification in men with M0 CRPC. These thresholds can be used for selecting high-risk men for clinical trials.

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