Baseline Prostate-specific antigen (PSA) levels in midlife predict aggressive prostate cancer in African-American men

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Abstract

Background: Baseline prostate specific antigen (PSA) levels measured in midlife predict future prostate cancer mortality among white men. There are minimal data on whether a baseline PSA in African-American men, who experience the highest incidence and mortality of this disease, predicts future aggressive prostate cancer.
Methods: We undertook a nested case-control study among African-American men age 40 to 64 years who gave prediagnostic blood at enrollment in the Southern Community Cohort Study between 2002-2009 and were followed a median of 9 years for cancer incidence and mortality through 2015. Baseline total and free PSA levels were available for 197 prostate cancer cases (55 aggressive cases, Gleason ≥4+3=7, AJCC Stage III or IV, or cancer-specific death) and 569 age-matched controls. Conditional logistic regression was used to estimate odds ratios (ORs) with 95% confidence intervals (CIs) for the association between baseline PSA levels and risk of total and aggressive prostate cancer.
Results: Median PSA among controls was 0.72, 0.80, 0.94, and 1.03 ng/mL for men aged 40 to 49, 50 to 54, 55 to 59, and 60 to 64 years, respectively. Relative risk of total prostate cancer was strongly associated with baseline PSA levels in midlife: ORs (95% CIs) comparing PSA levels in the >90th percentile vs. ≤median were 93.7 (22.5-390) at 40 to 54 years and 77.0 (24.9-238) at 55 to 64 years. Risk of aggressive prostate cancer was also strongly associated with baseline PSA levels in midlife: ORs (95% CIs) comparing PSA levels in the >90th percentile vs. ≤median were 80.8 (14.7 to infinity) at 40-54 years and 31.1 (5.64 to 172) at 55-64 years. 100% (22/22) of aggressive cases in men age <55 years occurred among those with a baseline PSA above the age-specific median.
Conclusions: PSA levels in midlife strongly predict aggressive prostate cancer in a cohort of African-American men subject to opportunistic screening. Risk-stratified screening based on mid-life PSA should be considered.

Conflicts of Interest: None.

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