Prostate-specific antigen (PSA) rate of decline post external beam radiotherapy predicts prostate cancer death.

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Abstract

BACKGROUND AND PURPOSE: To assess the association between PSA velocity (PSAV) in the first 24 months after external beam radiotherapy (EBRT) and prostate cancer-specific mortality (PCSM) and all cause mortality.

MATERIALS AND METHODS: All eligible patients in the South Australian (SA) Prostate Cancer Clinical Outcomes registry were followed. 848 Patients treated by definitive EBRT with more than one PSA recorded in the two year post-treatment were included. We calculated PSAV by linear regression. The mean number of PSA measurements in the 2 year period was 4.4 (SD1.9). The median PSAVs across quartiles (Q1-Q4) were -4.17, -1.29, -0.38 and 0.20 ng/ml/yr. In multivariable analysis, a U-shaped relationship was seen between PSAV and PCSM with Q1-Q4 hazard ratios (HR) being 3.82 (1.46-10.00), 3.07 (1.10-8.58), 1, 5.15 (1.99-13.30) respectively. HR for all cause mortality in a similar model were 1.79 (1.07-2.98), 1.55 (0.93-2.59), 1.00 and 1.74 (1.04-2.90) for Q1 to Q4 respectively. A rapid PSA decline in the first year was a strong predictor of PCSM. However, in the second year PSA increase was positively associated with PCSM.

CONCLUSION: A rapid decline in PSA in the first year following EBRT is positively associated with PCSM. This may be a useful early indicator of the need for additional therapies.

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