Achieving an undetectable PSA after radiotherapy for biochemical progression after radical prostatectomy is an independent predictor of biochemical outcome--results of a retrospective study.


Abstract

PURPOSE: Salvage radiotherapy (SRT) is commonly used to treat patients with biochemical failure after radical prostatectomy (RP). Retrospective series have demonstrated biochemical response in approximately 60-75% of patients, but only a significantly lower rate of patients achieves a response with a decrease of the prostate-specific antigen (PSA) to a value below the limits of detectability. Therefore, long-term response at 10 years is only about 20-25% in all of these patients. The purpose of this study was to determine prognostic factors with impact on achieving the undetectable PSA range after SRT and to define the role of this end point.

METHODS AND MATERIALS: Between 1997 and 2004, 162 patients received SRT at the Charité Universitätsmedizin, Berlin. No patient had hormonal treatment before SRT and 90% of the patients (143) had a SRT dose of 66 Gy. We analyzed the impact of nine potential risk factors on achieving an undetectable PSA after RT and on biochemical relapse-free survival (bNED) after SRT.

RESULTS: Median follow-up time was 41.5 months and median PSA pre-RT was 0.33 ng/mL. Calculated bNED for 3.5 years was 54%. A total of 60% of the patients achieved an undetectable PSA after SRT. Univariate analysis demonstrated statistically significant predictors of biochemical progression after SRT: Gleason score (p = 0.01), PSA pre-SRT (p = 0.031), tumor stage (p = 0.047), and persistent detectable PSA after RT (p < 0.00005). In multivariate analysis, margin status (p = 0.017) and PSA pre-SRT (p = 0.002) were significant predictors of an undetectable PSA after SRT. The most significant independent predictor of bNED was "PSA undetectable after RT" (p < 0.00005) with a hazard ratio of 8.4, thus leading to a calculated bNED at 3.5 years of 75% compared with only 18% for those patients, who did not achieve an undetectable PSA after SRT. The rate of severe Grade 3-4 side effects was below 2.5%.

CONCLUSIONS: The study represents one of the largest retrospective single-institution series of SRT for increasing PSA after RP in patients without any hormonal treatment before the initiation of SRT. Our findings suggest that achieving an undetectable PSA after RT is an important prognosticator for a high chance of cure and patients with a low PSA pre-SRT, positive surgical margins, and low tumor stage at the time of RP are best candidates for SRT.

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