Presence or absence of a positive pathological margin outperforms any other margin-associated variable in predicting clinically relevant biochemical recurrence in Gleason 7 prostate cancer.


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Abstract

WHAT'S KNOWN ON THE SUBJECT? AND WHAT DOES THE STUDY ADD?: The presence of a positive pathological margin is an independent risk factor for clinically significant disease recurrence only in intermediate-risk disease when the a priori risk of micrometastatic disease is accounted for. The study examines patients with Gleason 7 prostate cancer to assess the relative importance of various margin-related variables (focality, linear length, tumour grade at margin, presence of diathermy artifact and plane of tumour) with regard to biochemical recurrence. We found that the presence or absence of a positive pathological margin outperforms any other margin-associated variable in predicting significant disease recurrence.

OBJECTIVE: To determine the influence of pathological margin variables on the risk of clinically significant biochemical recurrence in Gleason 7 prostate cancer.

MATERIALS AND METHODS: Patients with Gleason 7 prostate cancer with complete clinical and pathological data and detailed follow-up were identified from a prospectively recorded prostatectomy database. Slides from all patients with positive pathological margins were reviewed by a single expert uropathologist and the following information recorded: multifocality, linear length, predominant Gleason grade at the margin, presence of diathermy artifact and margin plane. Cox regression models were generated to determine the impact of positive pathological margins on the risk of biochemical recurrence (using various definitions thereof).

RESULTS: Of 1048 patients with Gleason 7 prostate cancer, 238 (23%) patients had positive margins. With a median follow-up of 11 months, biochemical recurrence occurred in 9.7% of patients with negative surgical margins and 28.4% of patients with positive margins. Positive margins were significantly associated with higher serum prostate-specific antigen (PSA) level, tumour grade, stage and volume. In patients with positive pathological margins, controlling for other factors, no margin-derived variable (focality, linear length, tumour grade at margin, diathermy artifact or plane of tumour) was a consistent predictor of biochemical recurrence, although the presence of Gleason score 4 or tertiary Gleason score 5 tumour at the margin edge was an independent predictor of recurrence with PSA doubling times ≤ 6 and ≤9 months. Similarly, in the cohort as a whole, the pathological margin status was a more important predictor of recurrence than any other margin-derived variable.

CONCLUSIONS: In Gleason 7 prostate cancer, positive pathological margin status was the only consistent margin-derived variable determining biochemical failure. The presence of high-grade disease at the margin may also have an impact on the development of clinically significant biochemical recurrence.

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