

The ability of different clinical-pathological criteria's to detect insignificant prostate cancer after transperineal template mapping biopsies

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Kincius M.¹, Vezelis A.², Lesauskaite J.³, Ulys A.², Jankevicius F.²

¹National Cancer Institute, Dept. of Oncourology and Laboratory of Clinical Oncology, Vilnius, Lithuania, ²National Cancer Institute, Dept. of Oncourology, Vilnius, Lithuania, ³National Center of Pathology, Pathology Laboratory, Vilnius, Lithuania

Introduction & Objectives: The objective of this study was to assess the utility of different clinic-pathological risk criteria to predict insignificant prostate cancer in radical prostatectomy specimens.

Materials & Methods: Men who underwent radical prostatectomy for clinical stage $\leq T2$, PSA < 20 ng/ml, Gleason score < 8 prostate cancer diagnosed by transperineal template mapping biopsy were included to this analysis. The performance of Klotz (cT1c-T2a, PSA ≤ 10 ng/ml for patients of age under 70 years and ≤ 15 ng/ml patients of age over 70 years), Roemeling (cT1c, ≤ 15 ng/ml, Gleason ≤ 7), Epstein (cT1c, PSA density < 0.15 , Gleason 6, no more than two cores with cancer or cancer involving no more than 50% of any core), D'Amico (cT1c-T2a, PSA ≤ 10 ng/ml, Gleason 6) and Simmons (Gleason 6 and maximum cancer core length ≤ 3 mm) criteria to predict insignificant prostate cancer upon radical prostatectomy defined as Gleason score ≤ 6 and total tumor volume < 2.5 mL were assessed.

Results: Between January 2016 and December 2018 at our department we identified 43 men who fulfilled the inclusion criteria. Final pathological prostate examination revealed 34 (79%) patients with pT2a and 9 (21%) with pT3a stage disease. Gleason score upgrade was found in 15 (34.9%) and downgrade and 3 (7%) patients. After radical prostatectomy only 7 (16.3%) men turned to harbor clinically insignificant prostate cancer. Based on biopsy results 3 (7%) men fulfilled Epstein criteria, 5 (11.62%) fulfilled Roemeling criteria, 40 (93%) fulfilled Klotz criteria, 24 (55.8%) fulfilled D'Amico criteria and 10 (23.25%) fulfilled Simmons criteria. The ability of the five criteria to predict insignificant PC in RP specimen was examined, showing a sensitivity that ranged between 8.6% (Klotz criteria) and 97.2% (Epstein criteria) and a specificity that varied between 66.7% (Epstein criteria) and 100% (Klotz, Roemeling and D'Amico criteria). Calculated positive and negative predictive values were 100% and 17.5%, 100% and 18.42%, 87.5% and 66.7%, 100% and 29.2%, 93.9% and 50% for Klotz, Roemeling, Epstein, D'Amico and Simmons criteria, respectively. Receiver operator characteristics to assess the performance model ranged between 0.542 (Klotz criteria), 0.569 (Roemeling criteria), 0.629 (Epstein criteria), 0.764 (D'Amico criteria) and 0.788 (Simmons criteria) suggesting moderate positive discrimination at best.

Conclusions: Simmons criteria showed a superior trade-off between sensitivity and specificity for clarifying insignificant prostate cancer that can guide treatment and be used as the best reference test after transperineal prostate mapping biopsy.