Abstract:

INTRODUCTION: The prostate cancer volume (PCvol) is described as a significant predictor for tumor progression after radical prostatectomy, but its determination has not become a routine procedure yet due to high demands on technical standards, labor intensity, and costs. The objective of this study is to predict the PCvol by using common preoperative variables. MATERIAL AND METHODS: Between 1996 and 2001, 365 whole-mounted prostatectomy specimens, processed according to the Stanford protocol, were used for computerized reconstruction of the total PCvol. Widely accepted preoperative variables such as prostate-specific antigen (PSA), digital rectal examination findings, and Gleason score and grading (WHO) of the biopsy cores were correlated and analyzed for a relation to the PCvol by Spearman rho method and Mann-Whitney U test. Integrating these parameters in a multiple linear regression model, independent variables predicting the PCvol were determined, multiplied by their risk factors, and used for calculation of the estimated PCvol. In order to evaluate the precision of our results, we correlated measured and estimated tumor volumes. A nomogram was constructed, in order to visualize our results. RESULTS: Multiple linear regression analysis revealed categorized PSA, grading (WHO), and Gleason score to be independent predictors for the PCvol. The estimated PCvol ranged from 0.5 to
9.8 cm(3) and the measured PCvol from 0.02 to 53 cm(3). An identical mean value of 4.1 cm(3) was observed. The Spearman rho method showed a highly significant correlation (coefficient = 0.5) between estimated and measured PCvol (p< 0.001). CONCLUSIONS: The PCvol is regarded as a significant predictive parameter of tumor progression after radical prostatectomy, but due to its time-consuming determination, it has not become a routine procedure yet. Currently used preoperative parameters such as PSA and grading (WHO) and Gleason score of the biopsy cores do predict the total tumor volume. These results were reconfirmed by correlation analysis. Consequently, by use of our nomogram, the labor-intensive measurement of the PCvol becomes unnecessary.