Clinical utility of percent prostate needle biopsy tissue with cancer cutpoints to risk stratify patients before radical prostatectomy.

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Abstract

OBJECTIVES: The percentage of total prostate needle biopsy tissue with cancer was previously found to be a stronger predictor of biochemical failure after radical prostatectomy (RP) than either biopsy Gleason score or serum prostate-specific antigen (PSA). To improve our ability to predict preoperatively the risk of biochemical recurrence after RP, we sought to determine the cutpoints of the percentage of biopsy tissue with cancer to separate patients into low, intermediate, or high-risk groups. We then examined whether we could further stratify low, intermediate, and high-risk groups (on the basis of the PSA level and biopsy Gleason score) using the percentage of prostate needle biopsy tissue with cancer.

METHODS: A single pathologist reviewed the prostate needle biopsy specimens of 217 men who underwent RP between 1991 and 2001. Biopsy specimens were examined for Gleason score and the percentage of total biopsy tissue with cancer. Cutpoints were identified to define patients with differing risk of biochemical recurrence after RP. These cutpoints were applied to low, intermediate, and high-risk patients, on the basis of PSA and biopsy Gleason score, to determine whether preoperative risk stratification could be improved.

RESULTS: Using the cutpoints for the percentage of prostate needle biopsy tissue with cancer of less than 20% (low risk), 20% to less than 55% (intermediate risk), and 55% or greater (high risk), patients were separated into three groups with differing risks of biochemical failure after RP (hazard ratio 1.95, 95% confidence interval 1.37 to 2.77, P <0.001). These cutpoints further stratified patients with an intermediate (P = 0.002) or high risk (P = 0.05) of biochemical failure (on the basis of the PSA and biopsy Gleason score). However, these cutpoints provided no improvement in risk stratification for patients who were at low risk (P = 0.501) of biochemical failure (on the basis of PSA and biopsy Gleason score).

CONCLUSIONS: The percentage of total prostate needle biopsy tissue with cancer can be used to stratify patients into low, intermediate, and high-risk groups preoperatively for biochemical recurrence after RP. These cutpoints could further stratify patients preoperatively who were at intermediate or high risk of biochemical failure on the basis of PSA and biopsy Gleason score.

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