Should intervening benign tissue be included in the measurement of discontinuous foci of cancer on prostate needle biopsy? Correlation with radical prostatectomy findings

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Currently, there is no consensus as to the optimal method for measuring tumor length or percentage of cancer on a core when there are 2 or more foci of prostate cancer in a single core separated by benign intervening stroma. One option is to measure discontinuous foci of cancer as if they were 1 single continuous focus. The other option is to add the measurements of the individual separate foci of cancer, ignoring the extent of the intervening benign prostate tissue. The surgical pathology database at The Johns Hopkins Hospital was searched for outside consult cases of prostate needle biopsies reviewed between 2005 and 2010 when the patient came to our institution for radical prostatectomy (RP). Cases were restricted to those with biopsy Gleason score 6 in which there was at least 15% discordance between the outside and our institution in terms of the reported highest percentage of cancer per core per case. One hundred and nine patients were identified fulfiling our inclusion criteria. Seventy-nine showed the same Gleason score in the RP, and 30 had an upgrade to Gleason ≥ 7. Including all cases (scores 6, 7, and 8 at RP), there was no significant association between the maximum percentage of cancer per core with organ-confined disease or risk of positive surgical margins, regardless if the cores were measured at Hopkins or at the outside institutions. For cases with no upgrade at RP, the differences between the maximum percentage of cancer per core per case recorded at Hopkins and the outside institutions ranged from 15% to 80%, in which the mean and median differences were 35% and 30%, respectively. The maximum percentages of tumor involvement on a core per case given at our institution more strongly correlated with the presence of organ-confined disease ($P = 0.004$) compared with the percentages given at the outside institutions ($P = 0.027$). Surgical margin positivity was also associated with the maximum percentages of tumor involvement per core given at our institution ($P = 0.004$), whereas the outside percentages were not significant predictors of margin status ($P = 0.2$). In a multivariable analysis, maximum percentage of cancer per core per case measured at Hopkins which includes intervening benign prostate tissue in the measurement was also more predictive of stage and margins than ignoring intervening benign tissue. In summary, our study demonstrated

that for prostate cancer in which the needle biopsy grade is representative of the entire tumor, quantifying cancer extent on biopsy by measuring discontinuous cancer on biopsy from one end to the other as opposed to "collapsing" the cancer by subtracting out the intervening benign prostate tissue correlates better with organ-confined disease and risk of positive margins.

Editorial Comment

The article discusses how to measure on a needle biopsy the linear extent of 2 discontinuous foci of tumor. One option is to measure discontinuous foci of cancer as if they were 1 single continuous focus. The other option is to add the measurements of the individual separate foci of cancer, ignoring the extent of the intervening benign prostate tissue.

The study from Johns Hopkins demonstrated that for prostate cancer in which the needle biopsy grade is representative of the entire tumor, quantifying cancer extent on biopsy by measuring discontinuous cancer on biopsy from one end to the other as opposed to "collapsing" the cancer by subtracting out the intervening benign prostate tissue correlates better with organ-confined disease and risk of positive margins.

There is no consensus among pathologists on this issue. How to measure 2 distinct foci of tumor on a needle biopsy may have implications whenever applying criteria for insignificant cancer (1). For example: in a particular case with only one core showing 2 distinct foci of tumor each one at the very end of the core the resultant percentage of involvement may differ according to the option used for the measurement. Opting to measure the 2 foci of cancer as if they were 1 single continuous focus the percentage of involvement may be more than 50% therefore without criteria for insignificant cancer; opting to add the measurements of the individual separate foci of cancer, ignoring the extent of the intervening benign prostate tissue, the percentage of involvement may be only 10% therefore with criteria for insignificant cancer.

Reference

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