Does the addition of targeted prostate biopsies to standard systemic biopsies influence treatment management for radiation oncologists?

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- PMID: 25684394
- DOI: 10.1111/bju.13082

Abstract

Objectives: To study the management impact that magnetic resonance imaging (MRI)-guided targeted prostate biopsies could provide relative to using only non-targeted systematic biopsies in men with clinically localized prostate cancer (PCa).

Patients and methods: A consecutive series of untreated men undergoing Artemis (MRI-ultrasonography fusion) biopsies between March 2010 and June 2013 was evaluated in this retrospective, institutional review board-approved study. Fusion biopsy included MRI-targeted and systematic sampling at the same session. 3-Tesla multiparametric MRI was performed at a median of 2 weeks before biopsy. Patients were included if ≥1 systematic core was found to harbour PCa. The impact of the information obtained from targeted vs systematic biopsies was studied with regard to the following: Gleason score (GS), National Comprehensive Cancer Network (NCCN) risk reclassification, cancer core length, percentage of core positive for tumour involvement, and percentage of positive biopsy cores.

Results: The study sample included 215 men (mean ± sd age 66 ± 8 years). The median (range) prostate-specific antigen (PSA) was 6.0 (0.7-181) ng/mL. The mean number of total biopsy samples was 18 (12 systematic and six targeted samples). Of 215 men, 34 (16%) had a higher GS on targeted vs systematic biopsy. A total of 21/183 men (12%) were stratified into a higher NCCN risk group when incorporating targeted biopsy GS results and 18/101 men (18%) were upgraded to intermediate- or high-risk from the low-risk group. Among the 34 men whose cancer severity was upgraded, increases in cancer core length, percentage of tumour involvement and percentage of cores involved were all statistically significant ($P < 0.01$).

Conclusion: Targeted prostate biopsy provided information about GS, NCCN risk and tumour volume beyond that obtained in systematic biopsies, specifically increasing the proportions of men in the intermediate- and high-risk groups. Such men may be recommended for additional treatments (pelvic nodal irradiation or hormonal therapy). The appropriateness of changing treatment because of targeted biopsy results is still unclear.

Keywords: MRI-guided biopsy; prostate cancer; radiotherapy; risk stratification.