Abstract Title

Incremental Diagnostic Value of US-MRI Targeted Prostatic Biopsy Versus Random Biopsy: A Prospective Study

Authors

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Background

Prostate cancer is the leading cause of cancer in men and the second most common cause of cancer-related death. The conventional practice of prostate biopsy using transrectal ultrasound uses the technique described about 25 years ago, with random biopsies performed respecting prostate sextants. Many biopsies result in the detection of microfocal lesions with low clinical significance, whereas the incidence of false-negative biopsies, conceptualized as clinically relevant tumors undetected, can reach 35%, remaining high mortality rates from the disease. Thus, the prostate cancer requires better tools to prevent overdetection of low-risk disease and to improve the identification of high-risk tumors.

Hypothesis

To assess the incremental diagnostic value of US-MRI (ultrasound-magnetic resonance imaging) targeted biopsy in addition to transrectal ultrasound random prostate biopsy with 14 fragments to detect clinically significant prostate tumors.

Methods

Uni-institutional, prospective paired blinded study, comparing prostate US-MRI targeted biopsy with sextant-extended systematic random 14-fragments biopsy in 94 consecutive patients between April 2015 and December 2015. Men with RMmp with prostatic lesion with Likert score scale higher or

equal to 3. Patients previously diagnosed with prostate cancer in tumor staging or active surveillance programs were excluded. The patients were submitted initially to transrectal ultrasound guided biopsy obtaining at least 14 fragments with blinded to MRI data examinator, following US-MRI fusion biopsy, guided by virtual navigation to obtain additional targeted fragments.

Results

There was an increase of 56% positive biopsies (random technique) to 61% (combined technique with US-MRI targeted biopsy), especially for clinically relevant lesions, diagnosing 57% more intermediate-high risk lesions (17 to 30 patients) and 27% less low-risk lesions (38 to 28 patients) using updated Epstein criteria, with potential impact on clinical outcome. The comparison between the methods provided $p = 0.00004$.