Feasibility of multi-parametric magnetic resonance imaging in detection and local staging of prostatic carcinoma

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Abstract

Background

The objective of this study was to assess the feasibility of multi-parametric magnetic resonance imaging (mpMRI) in detection, localization and local staging of prostate cancer (Pca).

Methods

The study included 58 patients with Pca who underwent mpMRI before radical prostatectomy (RP) at two university hospitals, during the period June 2014 to April 2018. All prostatectomies were performed on the basis of preoperative transrectal ultrasound-guided prostatic biopsies. For tumor localization, the prostate in each patient was divided into six segmental regions. Biopsy specimens, for each segmental region, were evaluated for the presence of cancer. The diagnostic performance of mpMRI in tumor localization as well as extracapsular extension (ECE) and seminal vesicle (SV) invasion of the tumor was evaluated, by using the histopathological findings of RP specimens as reference standard.

Results

The mean age of patients was 63.45 ± 7.45 years. Of the total number of 348 segmental regions, tumor was detected in 143. From them, cancer was detected in 142 regions by mpMRI. The sensitivity and specificity of mpMRI for cancer localization were 99.30% and 97.56%. On RP specimen, nine cases had ECE and five had SV invasion. All of them were detected preoperatively by mpMRI. The sensitivity and specificity of mpMRI for detection of ECE were 100% and 97.96%. For detection of SV invasion, the sensitivity and specificity were 100% and 98.11%.

Conclusions

mpMRI enables localization and staging of cancer prostate with reasonable accuracy. Its combination with ultrasound should be counted on for improvement in efficacy of the prostatic biopsy procedure.