

Criteria for Assessing Prostate Structure after Proton Radiotherapy for Prostate Cancer

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Abstract : After 6 months, a violation of the differentiation of the structure of the gland due to edema in 100%. 20% retained signs of a tumor according to DWI/ADC data. By 12 months, the reduction in the size of the gland is 100%. In all cases, no diffusion restriction was observed. The study after 18 months showed no significant changes in all (100%) patients. In the study, 24 months after treatment, the size of the gland was stable in all cases (+/- up to 5%). Diffuse decrease in T2VI signals from peripheral zones, without signs of diffusion restriction in 100%. After 30 months, signs of recovery of adenomatous changes in the transient zone were revealed in 85%. After 36 and 42 months, the restoration of organ differentiation was observed in 93% of patients. In 4 patients, by the 48th month, signs of biochemical relapse were clinically noted. According to the MRI data, signs of a local relapse were revealed. After 48 months, there were signs of restoration of organ differentiation, which allowed the use of PI-RADS criteria. The study after 54 months showed no changes compared to the control. 60 months after treatment, 97% of patients showed a restoration of differentiation of the gland structure, which allows evaluating the organ according to PI-RADS criteria. **Conclusions:** The beginning of restoration of the structure of the prostate gland began 24 months after proton radiation therapy, the PI-RADS criteria can be fully applied after 48 months of treatment. Control studies every 6 months without clinical signs of relapse are not advisable. Local control of the prostate tumor after proton radiation therapy was achieved in 95% of patients during the entire follow-up period (60 months).

Keywords : proton therapy, prostate cancer, MRI imaging, PI-RADS

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