

P023 Stereotactic body radiation therapy using Cyber-Knife in the treatment of patients with localized prostate cancer

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Introduction & Objectives: Prostate cancer is one of the crucial issues of modern oncology. In the USA and some European countries PC rates first in the structure of oncological diseases in males. In 2015, 220 800 cases were registered in the USA, the mortality rate was 12,5%. In 2018, 41 577 new cases of PC were registered in the Russian Federation, 58,6% of which were localized forms T1-T2. First year mortality rate reached 7,8%. The main options for the treatment of localized prostate cancer are radical prostatectomy, radiotherapy (standard radiotherapy and brachytherapy), stereotactic body radiation therapy and radiosurgery using the Cyber-Knife system. The objectives were to assess efficacy of the stereotactic body radiation therapy using the Cyber-Knife system in the treatment of patients with localized prostate cancer, and to detect early and delayed complications of the treatment.

Materials & Methods: In the period from August 2015 to April 2019, 185 patients with localized prostate cancer were treated at the Cyber-Knife Department of the Nuclear Medicine Center "PET-Technology" Ltd. in Ufa. 78 patients were low-risk, 107 patients were intermediate risk. Mean age was 65 (from 47 to 75 years). The initial PSA level amounted to 9,75 ng/ml (from 1,34 to 20,0 ng/ml). All patients received stereotactic body radiation treatment course based on Cyber-Knife system according to the Stanford University Protocol, total boost dose - 36,25 Gy for 5 fractions, single boost dose – 7,25 Gy. The mean time of observation was 20 months (from 1 to 36 months).

Results: All patients showed positive dynamics. The PSA level in 94,0% of patients in 6 months after the end of treatment didn't exceed 2,0 ng/ml. In 9 months, the total level of PSA decreased less than 1,5 ng/ml in 91% of patients, and in 12 months the PSA level in 86,0% of patients was less than 1,0 ng/ml. In 24 months, the PSA level in 93% of patients was less than 1,0 ng/ml, two patients had the PSA level of no more than 2,0 ng/ml. Radioreactions in the form of grade I proctitis were observed in 11 patients (5.9%), grade II proctitis - in 5 patients (2.7%). Cystitis grade I was detected in 21 patients (11.3%), cystitis grade II - in 6 patients (3.2%). One patient (0.5%) developed acute urinary retention. There were no delayed complications observed.

Conclusions: Stereotactic body radiation therapy using Cyber-Knife has proven to be a highly effective method for the treatment of patients with localized prostate cancer. A low toxicity of the Cyber-Knife system ensures high safety of the treatment.