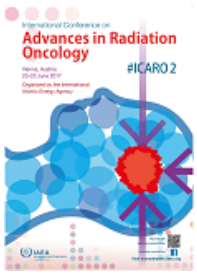

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Evaluation of radiation doses to organs at risk and comparison the toxicity with application of modern techniques radiotherapy of treatment patients for prostate cancer

Tuesday, June 20, 2017 3:50 PM (5 minutes)

Keywords: Hypofractionated radiotherapy, IMRT, prostate cancer, toxicity.

Background: Cancer of the prostate is one of the most important medical problems facing the male population. Radiotherapy (RT) is one of the major methods of treatment for prostate cancer.

Purpose. The aim of this study was to compare doses for the bladder and the rectum and to estimate manifestations of acute genitourinary toxicity (GU) and gastrointestinal toxicity (GI) with application three-dimensional conformal RT (3D-CRT) and intensity modulated RT (IMRT) with using the classic mode of fractionation and hypofractionation regime.

Material and Methods: 102 patients with intermediate-risk prostate cancer were treated 5 days per week: using 3D-CRT 74 Gy in 37 fractions (n=33), using IMRT with classic mode 76 Gy in 38 fractions (n=32) and using IMRT with hypofractionation regime 67.5 Gy in 27 fractions (n=35). Compare the medium doses for the bladder and the rectum was performed using dose-volume histogram. Acute local toxicity was assessed with the scale RTOG/EORTC. Acute toxicity scores were recorded weekly during treatment and 3 months after radiotherapy.

Results: Median dose for the bladder was: 3D-CRT 55.10±8,65 Gy, IMRT with using the classic mode of fractionation 44.84±9.10 Gy, with using hypofractionation regime 44.31±4.36 Gy . Median dose for the rectum was: 3D-CRT 52.39±6.88 Gy, IMRT with using the classic mode of fractionation 44.19±8.49 Gy, with using hypofractionation regime 42.29±8.83 Gy. GU toxicity grade 1 was 3D-CRT for 21 evaluated patients (65.6.9 %), IMRT with using the classic mode of fractionation –18 (56.3 %), IMRT with using hypofractionation regime –19 (51.4 %). Also grade 2 was 3D-CRT –7 (21.9 %), IMRT with using the classic mode of fractionation –6 (18.6 %), IMRT with using hypofractionation regime –7 (20.0 %). And grade 3 was 3D-CRT –2 (6.25 %). GI toxicity grade 1 was 3D-CRT for 22 (66.8 %) patiens, IMRT with using the classic mode of fractionation –20 (62.5 %), IMRT with using hypofractionation regime –20 (57.1 %)/ Also grade 2 was 3D-CRT –8 (24.2 %), IMRT with using the classic mode of fractionation –5 (15.6%), IMRT with using hypofractionation regime –6 (17.1 %). And grade 3 was 3D-CRT –3 (9.0 %). The median follow-up was 22•0 months (IQR 14•4–38•2).

Conclusions: According to the survey, with 3D-CRT dose to organs of risk more than an average of 11.0 Gy to the bladder (U-test, $p<0.05$) and 9.0 Gy - to the rectum (U-test, $p<0.05$). Analysis dose to organs of risk proves that using IMRT with using hypofractionation regime the values of radiation dose comparable to IMRT with using the classic mode of fractionation. Only in the group 3D-CRT we observed acute toxicity grade 3.

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