

Stereotactic body radiation therapy vs moderate hypofractionated radiotherapy in prostate cancer: propensity-score based comparison of outcome and toxicity.

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OBJECTIVE: Prostate cancer represents the second most common malignancy in the world and majority of patients has diagnosis of localized disease. The aim of the present study was to compare two cohorts of patients treated with moderate hypofractionation (MHRT) or stereotactic body radiation therapy (SBRT).

METHODS: We included patients treated between 2010 and 2015. Inclusion criteria were: adenocarcinoma of the prostate; class risks low or intermediate; WHO performance status 0-2. We evaluated rectal, gastrointestinal toxicity and genitourinary. Measures of outcome were biochemical disease-free survival and overall survival. Propensity score was used to approximate the balance in covariates.

RESULTS: 209 patients were included, treated with MHRT (n = 109) or SBRT (n = 100). Median follow-up time was 37.4 months. Rates of biochemical disease-free survival at 1- and 3 years were 100 and 95%, respectively. There was no significant difference between the two groups (p = 0.868). Rates of overall survival at 1- and 3 years were 100 and 97.1%, respectively with no differences between the two groups (p = 0.312). After propensity scoring matching, no differences were observed in terms of acute and late rectal and gastrointestinal toxicity. While mild genitourinary side-effects were more common in SBRT group (45.5% vs 19.5 %), Grade 2 and 3 toxicity was increased after MHRT (11.7% vs 2.6 %; p = 0.029).

	Before PSM			After PSM		
	Moderate hypofractionation	SBRT	p- value	Moderate hypofractionation	SBRT	p- value
Acute rectal toxicity						
1	13 (11.9%)	15 (15%)	0.263	12 (5.6%)	8 (10.4%)	0.305
2	14 (12.8%)	6 (6%)		9 (11.7%)	5 (6.5%)	
3	1 (0.9%)	0		1 (1.3%)	0	
0-1	94 (86.2%)	94 (94%)	0.062	67 (87%)	72 (93.5%)	0.174
2-3	15 (13.8%)	6 (6%)		10 (13%)	5 (6.5%)	
Acute GI toxicity						
1	6 (5.5%)	6 (6%)	0.770	3 (94.8%)	5 (6.5%)	0.668
2	1 (0.9%)	1 (1%)		1 (1.3%)	1 (1.3%)	
3	0	1 (1%)		0	1 (1.3%)	
0-1	108 (99.1%)	98 (98%)	0.511	76 (98.7%)	75 (97.4%)	0.560
2-3	1 (0.9%)	2 (2%)		1 (1.3%)	2 (2.6%)	
Acute GU toxicity						
1	31 (28.4%)	32 (32%)	0.010	22 (28.6%)	28 (36.4%)	0.023
2	17 (15.6%)	31 (31%)		12 (15.6%)	23 (29.9%)	
3	3 (2.8%)	0		2 (2.6%)	0	
0-1	89 (81.7%)	69 (69%)	0.033	63 (81.8%)	54 (70.1%)	0.090
2-3	20 (18.3%)	31 (31%)		14 (18.2%)	23 (29.9%)	
Late rectal toxicity						
1	6 (5.5%)	14 (14%)	0.019	5 (6.5%)	11 (14.3%)	0.109
2	5 (4.6%)	1 (1%)		4 (5.2%)	1 (1.3%)	
3	4 (3.7%)	0		2 (2.6%)	0	
0-1	100 (91.7%)	99 (99%)	0.014	71 (92.2%)	76 (98.7%)	0.053
2-3	9 (8.3%)	1 (1%)		6 (7.8%)	1 (1.3%)	
Late GI toxicity						
1	1 (0.9%)	3 (3%)	0.272	1 (1.3%)	2 (2.6%)	0.560
Late GU toxicity						
1	21 (19.3%)	44 (44%)	0.000	15 (19.5%)	35 (45.5%)	0.002
2	10 (9.2%)	2 (2%)		6 (7.8%)	2 (2.6%)	
3	3 (2.8%)	0		3 (3.9%)	0	
0-1	96 (88.1%)	98 (98%)	0.005	68 (88.3%)	75 (97.4%)	0.029
2-3	13 (11.9%)	2 (2%)		9 (11.7%)	2 (2.6%)	

GI, gastrointestinal; GU, genitourinary; PSM, propensity scoring matching; SBRT, stereotactic body radiation therapy.

CONCLUSIONS: Moderate hypofractionation and SBRT are two effective and safe options for the treatment of low- and intermediate-risk prostate cancer. The analysis showed no difference in terms of disease's control and survival but increased moderate and severe toxicity after MHRT.

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