The Impact of Hormonal Therapy On Sexual Quality of Life in Men Receiving Intensity Modulated Radiotherapy (IMRT) for Prostate Cancer

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INTRODUCTION

Sexual function is an important concern in men receiving radiation therapy for prostate cancer. Our aim was to study the impact of radiation on sexual function over time as well as the effectiveness of sexual medications, with a special interest in the impact of androgen deprivation therapy (ADT). We report the results of prospectively-obtained longitudinal data in patients who underwent dose-escalated IMRT with or without ADT. Additionally, we report on the utility of phosphodiesterase (PDE) inhibitors in both groups of men.

MATERIALS AND METHODS

Men treated with definitive radiation therapy for prostate cancer from 2007-2010 at an academic institution were identified in an institutional database. All men completed two surveys, the Expanded Prostate Cancer Index Composite-26 (EPIC) and a sexual medicines/devices survey, for at least one time point. Surveys were prospectively collected at baseline (prior to the initiation of IMRT or ADT), and at 2, 6, 12, 18, and 24 months following completion of IMRT. Global scores were generated for the EPIC-26 sexual questions, ranging from 0-100 (full health).

Table 1 describes our patient population. ADT was administered at the discretion of the treating physician to 59% of patients. Duration of ADT was known in 85% of patients who received it, and 84% of these patients received ≤12 months of therapy. Neoadjuvant and concurrent ADT typically consisted of dual androgen blockade with an anti-androgen and luteinizing hormone-releasing hormone (LHRH) agonist. Adjuvant ADT was typically the LHRH agonist only.

Percentages of men with moderate/severe distress in each EPIC-26 QOL domain were tabulated at each time point and tested for an association with ADT, tobacco use, diabetes, and age by chi-square analysis. The global health score was tested for an association with ADT at each time point.

RESULTS

Table 2 describes the proportion of patients with symptoms as well as median global scores in those who received IMRT with or without ADT. It also describes the use of PDE inhibitors and likelihood of benefit. There is a significant difference between those who received ADT and those who did not in multiple sexual function domains at a time point of 2-6 months; by 24 months, the only significant difference is in the likelihood to be sexually active.

After excluding those who received long-term ADT (>12 months) and those with unknown duration of ADT, 34% of men who had received ADT in the past (N=54) were sexually active at 24 months compared to 46% of those who had not (N=67, p=0.16). Of those who had good sexual function at baseline (N=41), the proportion of men with "poor" sexual function at each time point was: 44% (2 months), 43% (6 months), 34% (12 months), 38% (18 months), and 51% (24 months).

Table 1. Patient and Treatment Characteristics (n=179)

	Total (N=179)	No ADT (N=79)	ADT (N=100)	P-value
Median Age	69 (63-74)	69 (64-73)	67.5 (63-74)	0.99
Race				**0.01**
Caucasian	26%	18%	32%	
African-American	72%	77%	68%	
Other	2%	5%	0%	
% Smoking History	67%	69%	65%	0.66
% Diabetes	18%	21%	16%	0.34
Median Dose (Gy)	76 (75.6-78)	76 (75.6-78)	76.4 (76.5-78)	**0.002**
Median ADT Duration (months)		N/A	5 (3.1-19.6)	
T stage				**<0.0001**
T1-T2a	69%	89%	53%	
T2b-T2c	15%	10%	20%	
T3-T4	15%	0%	27%	
Median PSA (ng/ml)	9 (5.7-14.9)	7.1 (5.0-10.5)	11.11 (6.9-25.3)	**0.02**
Gleason Score				**<0.0001**
6	31%	52%	14%	
7	46%	46%	46%	
8	14%	1%	24%	
9	9%	0	16%	

Abbreviations: ADT=androgen deprivation therapy; PSA = prostate-specific antigen.
For continuous variables, interquartile range is provided.

Table 2. Percent of Symptomatic Men, with/without ADT (* = p<0.05)

	Baseline (n=79)	2 months (n=99)	6 months (n=106)	12 months (n=116)	18 months (n=129)	24 months (n=158)
Median Global Score (0-100)	46/52	**21/44***	21/39	32/39	32/39	27/35
Poor erections	46/49	**75/49***	71/54	58/61	61/61	63/58
Difficulty with orgasm	50/37	**70/42***	64/46	52/57	58/48	62/53
Erections Not Firm	64/59	**86/56***	**85/65***	74/72	63/68	78/68
Sexually Active	41/60	**20/61***	**25/53***	31/39	34/49	**27/46***
Poor Sexual Function	49/47	**73/43***	70/52	63/56	62/57	68/63
Considered to be a Problem	46/41	39/35	37/26	33/27	59/33	39/43
Patients Attempting Use of PDE inhibitor	37/45	**22/49***	**30/50***	35/48	45/47	48/54
Benefited from PDE inhibitor	77/67	77/85	67/70	54/78	62/72	67/66

Abbreviations: ADT=androgen deprivation therapy; PDE=phosphodiesterase

Table 3. Univariate Analysis for Poor Sexual Function

Variable	6 month	p-value	24 month	p-value
Smoking History				
Yes	67%	**0.08**	71%	**0.02**
No	50%		51%	
Current smoker				
Yes	63%	0.87	74%	0.19
No	61%		62%	
Diabetes				
Yes	63%	0.86	68%	0.76
No	62%		65%	
Age				
≥69	64%	0.62	61%	0.26
<69	60%		70%	
Pelvic Nodal RT				
Yes	76%	**0.02**	75%	**0.07**
No	54%		61%	
RT Dose				
≥76 Gy	63%	0.84	69%	0.11
<76 Gy	61%		56%	
ADT				
Yes	70%	**0.05**	67%	0.53
No	51%		62%	

Abbreviations: ADT=androgen deprivation therapy; RT = radiation therapy

CONCLUSIONS

The addition of ADT to dose-escalated IMRT has a modest impact on sexual function, with the most striking effect within 6 months of the completion of radiation. There was less impact on sexual bother. Many of the sexual side effects from ADT appear to resolve by 24 months following radiation therapy, provided that only a short (<12 mos) course of ADT was administered.

There appeared to be no difference in the efficacy of PDE inhibitors, although more patients who received IMRT alone attempted it compared to those who also received ADT. The results of this study can be useful in patient counseling regarding the anticipated impact of IMRT and ADT on sexual QOL in men with localized prostate cancer.

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