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HEALTH-RELATED QUALITY OF LIFE AFTER RADICAL PROSTATECTOMY OR RADIOTHERAPY FOR LOCALIZED PROSTATE CANCER--A FOLLOW-UP STUDY

Hypothesis / aims of study
Prostate cancer is a common disease among men in many developed countries. Radical prostatectomy (RP) and radiotherapy (RT) are the two primary treatment options for localized prostate cancer. However, when these treatments are done, they always carry a higher risk for side effects such as incontinence or erection problems. To better understand these impacts, we compared the effects of two treatments on general health, urinary, bowel, and sexual functions on health related quality-of-life (HRQOL) outcomes over a 6-month period following initial treatment.

Study design, materials and methods
A cohort of patients who were newly diagnosed with localized prostate cancer (stages I and II) and received either RP (n = 47) or RT (n = 35) were recruited in the urology outpatient clinic of a university teaching hospital.
Each enrolled patient was asked to do the blood test, biopsies and the Gleason grading system of cells at the baseline assessment. They were also were invited to complete two HRQOL questionnaires, the European Organization for Research and Treatment of Cancer core questionnaire (EORTC QLQ-C30), and the prostate-specific questionnaire (EORTC QLQ-PR25) before treatment and during follow-up (1, 3, and 6 months after treatment).
The EORTC QLQ-C30 evaluates cancer patients' general HRQOL and the EORTC QLQ-PR25 assesses urinary symptoms, bowel symptoms, and sexual functioning. For each domain a score ranging from 0 to 100 was calculated. Higher scores reflected either more symptoms (e.g., urinary and bowel symptoms) or higher levels of functioning (e.g., general HRQOL and sexual function).
Differences in patient characteristics and HRQOL scores between treatment groups were tested with Chi-square tests and Students's t-tests. To assess within-group changes in HRQOL from baseline to 1, 3, and 6 month, generalized estimating equations (GEE) models were used by treatment group after adjusting for age, Gleason score, and the amount of PSA at diagnosis.
All data were analysed using the SPSS 22.0 software package (Chicago, Illinois, USA). P-values < 0.05 were considered statistically significant. The minimum sample size in each group was estimated to be 34 using the statistical software G*Power 3.1 with the formula for calculation of samples of repeated measures to detect an effect size of 0.25 on each domain score, with 80% power and 5% type 1 errors.

Results
We recruited a total of 82 patients. After treatment for prostate cancer, the PSA levels of the patients had all returned to normal. The chronic pain in patients markedly reduced the general HRQOL (P = 0.01). Compared to patients receiving RP, patients who underwent RT were older, had a higher PSA level, and a better baseline sexual functioning (P < 0.05). Patients with RT also showed a significant increment symptoms of urinary and bowel, while the increment symptoms of urinary among RP patients at 1-month post-treatment. However, these domains had recovered to the baseline level after 3 months follow-up. The comparison of time trends showed that a decreased sexual functioning is more common in RP group than that of RT group. RT group had lower scores than baseline levels at 1 month and improved after 3 months follow-up. (Table 1)

Interpretation of results
After RP for prostate cancer, PSA level had returned to normal but HRQOL score were rapidly reduced in urinary symptom domain and sexual function domain. Sexual functioning had not yet returned to baseline until 6 months after therapy. While RT patients were affected their urinary symptom domain and bowel symptom domain and just required 3 months to return to baseline HRQOL. Moreover, in RT group, if the patient was older or with lower PSA level, the better their general HRQOL score.

Concluding message
After adjustment for baseline Gleason score, PSA level, and age, the patients under RT reported increased urinary and bowel symptoms, while patients under RP only increased urinary symptoms but experienced considerable impairment in sexual functioning. These differences has provided important information about the HRQOL for patients who are considering RP or RT for localized prostate cancer.

Disclosures
Funding: NONE **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Institutional Review Board of the China Medical University Hospital **Helsinki:** Yes **Informed Consent:** Yes

Table 1. Results of linear regression model with GEE method on each domain score by treatment group

Parameter	Urinary symptom			Bowel symptom			Sexual function		
	Estimate	SE	P-value	Estimate	SE	P-value	Estimate	SE	P-value
Radical prostatectomy									
(Intercept)	-17.405	20.448	0.395	-3.640	6.078	0.549	61.090	20.385	0.003
Follow-up month 6	1.809	2.680	0.500	-0.591	1.351	0.662	-21.442	5.575	<0.001
Follow-up month 3	2.499	2.791	0.371	-0.546	1.258	0.664	-17.514	4.892	<0.001
Follow-up month 1	10.541	2.970	<0.001	0.379	1.441	0.793	-14.731	7.192	0.041
Baseline (reference)	0.000			0.000			0.000		
Gleason score	0.982	0.746	0.188	0.232	0.257	0.366	-0.711	1.590	0.655
PSA level	-0.107	0.120	0.375	-0.008	0.043	0.845	-0.026	0.234	0.910
Age	0.464	0.335	0.167	0.078	0.084	0.354	0.158	0.328	0.630
Radiotherapy									
(Intercept)	36.457	28.310	0.198	21.937	13.637	0.108	93.854	42.270	0.026
Follow-up month 6	-0.521	2.615	0.842	-0.294	1.165	0.801	15.362	7.418	0.038
Follow-up month 3	4.918	3.137	0.117	3.784	2.287	0.098	12.138	7.260	0.095
Follow-up month 1	6.712	2.425	0.006	4.910	1.834	0.007	-4.168	2.303	0.070
Baseline (reference)	0.000			0.000			0.000		
Gleason score	0.691	0.963	0.473	0.416	0.491	0.396	-1.819	2.403	0.449
PSA level	0.105	0.046	0.024	-0.005	0.034	0.888	-0.052	0.116	0.656
Age	-0.329	0.371	0.375	-0.292	0.176	0.099	-0.437	0.455	0.338