LIFE QUALITY AFTER ORCHIECTOMY OF THE BONE METASTATIC PROSTATE CANCER PATIENT

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Prostate cancer (PC) with bone metastasis has many clinical symptoms that very much affected to the patient's quality of life (QoL). Improving cancer patient's QoL is a mission for the health care professional workers. The study using questionaires SF-36 and UCLA-PCI-SF- a simple and common methods to evaluate the progress of orchiectomy treatment for bone metastases PC to assess the QoL and prostate-specific functions before and after orchiectomy. Clinical manifestations such as urinary tract, sexual function symptoms, anxiety, bone pain and insomnia affected the HRQoL (health related quality of life) of 53 participated patients were quite high from 69.8% up to 90.6%. After 1 month of orchiectomy, these symptoms were markedly reduced to less than 20%; Anxiety and Insomnia still affected 50.9% and 47.1% of study participant, respectively. HRQoL of 53 PC patients with bone metastasis after orchiectomy was remarkably improved. All domains of SF-36 and UCLA-PCI-SF after orchiectomy were statistically significantly increased with p-value < 0.05, except sexual bother.

Keywords: HRQoL, orchiectomy, PC with bone metastasis, SF-36, UCLA-PCI-SF.

I. INTRODUCTION

Prostate cancer (PC) is one of the most prevalent malignancies in males and is one of the leading causes of cancer-related deaths globally.[1] PC progresses slowly over many years in silence and when it presents clinically, the disease is already at a late stage, with distant metastases.[2] Bone is the most common site of PC metastasis, with approximately 90% of PC patients.[3] PC patients with bone metastasis often experienced symptoms of body fatigue, urinary tract problems such as painful urination or incontinence, night frequently urination; at the risk of severe pain, spinal cord compression, all created poor quality of life (QoL).[4]

Androgen deprivation therapy (ADT), accomplished with medical castration or orchiectomy by eliminating the source of life for PC cells to growth, has the advantage of high patient compliance and cost savings.[5,6] Studies showed orchiectomy improved prostate cancer-specific functional indexes QoL and urinary functions.[7,8]

To evalutate QoL, a short survey sample SF-36 including: physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional are simple and reliable, has been used widely. To assess prostate specific function a UCLA-PCI-SF questionnaire of California Los Angeles University which was applied throuthly in clinical practice and research, a specific and useful questionaire, was designed in 6 subscales included urinary function, urinary bother, sexual function, sexual bother, bowel function, and bowel bother, are toolkits often used in combination to assess HRQoL in men

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with PC.[7,8]

To support nursing practice, study was conducted to evaluate the QoL of PC patients with bone metastatic and to compare HRQoL before and after 1 month of orchiectomy using SF-36 and UCLA-PCI-SF questionnaires.

II. MATERIALS AND METHODS

1. Subjects

Inclusion criteria: Patients with prostate cancer with bone metastases have orchiectomy and biopsy result confirm diagnostic.

Exclusion criteria: Patient who was not able to answer questions, not agreed to participate in the study and no biopsy result

2. Methods

Study design: A cross-sectional description, comparing before and after surgery.

Sampling: Non-probability convenience sampling study, including all patients meeting research criteria, during the period of the study.

The actual number of sample collected was 53.

Time: Research was conducted from May 2023 to September 2023 at the Department of Urology Surgery of Vietnam National Cancer Hospital.

Variables collection

- Clinical symptoms: Bone pain, Urinary symptoms, Anorexia, Fatigue, Anxiety… compared before and after orchiectomy using percentage.

- Physical and mental health compared before and after orchiectomy using mean scores.

- Physical and mental health components collected by interviewing using questionaires SF-36 and Urinary function/bother; Bowel function/bother; Sexual function/bother by interviewing using questionaires UCLA-PCI-SF were converted into scores and comparing before and after orchiectomy. The lowest and highest possible scores are set at 0 to 100 and higher scores correspond to better quality of life. The score is categorized in four levels according to Silveira CB: From 0 to 25: very poor HRQoL; from 26 to 50: poor HRQoL; from 51 to 75: medium HRQoL; from 76 to 100: good HRQoL.

Statistical analysis: Data were analysed using SPSS 20.

- Description: Mean, median, standard deviation, max and min values.

- Comparative testing: Using Student T-test. The comparisons are statistically significant with $p < 0.05$.

3. Research ethics

Study was carried in accordance with requirements of Hanoi Medical University Ethical Committee. Informed consent was obtained from all subjects. Recorded data were used for studying purpose only.

III. RESULTS

From May to September 2023 a total of 53 prostate cancer patients with bone metastasis were participated in the study with an average age was 68.57 ± 8.18 years old.

Before orchiectomy 90.6% patients had urinary symptoms (including difficulty urinating, decreased or slowed urine flow, urine leakage, urinary incontinence, hematuria, frequent urination especially at night). Other common symptoms were sexual dysfunction, anxiety, bone pain and insomnia with occurrence rates of 86.8%, 84.9%, 75.5%, 69.8% respectively (Table 1).

One month after orchiectomy, the incidence of symptoms decreased with most symptoms occurring in less than 20%. Anxiety and insomnia still affected 50.9% and 47.1% of study participants, respectively. Erectile dysfunction or maintaining an erection still affected 79.2% patient (Table 2).

Table 1. Symptom burden affects HRQoL before and 1 month after orchiectomy

Symptoms	Before		After 1 month	
	Patient (n = 53)	Percentage (%)	Patient (n = 53)	Percentage (%)
Bone pain	40	75.5	17	32.1
Locations of bone pain				
Lumbar spinal column	22	41.5	12	22.6
Pelvis	21	39.6	5	9.4
Femoral bones	5	9.4	2	3.7
Urinary symptoms	48	90.6	10	18.9
Dysuria	22	41.5	1	1.9
Urinary retention	16	30.2	0	0
Frequent nocturia	20	37.7	7	13.2
Burning urine	8	15.9	2	3.8
Urine leakage	11	20.8	2	3.8
Urinary incontinence	9	17.0	3	5.7
Hematuria	5	9.4	2	3.8
Constipation	30	56.6	8	15.1
Sexual function symptoms	46	86.8	42	79.2
Anorexia	15	28.3	12	22.6
Insomnia	37	69.8	25	47.1
Muscle weakness	5	9.4	2	3.7
Fatigue	31	58.5	10	18.9
Anxiety (Worry)	45	84.9	27	50.9

Table 2. Physical health and mental health before and after 1 month orchiectomy

	Before (Mean score)	After 1 month (Mean score)	p value
Physical functioning	51.32 ± 24.32	87.21 ± 11.21	0.001
Role physical	41.39 ± 21.09	70.28 ± 15.02	0.000
Bodily pain	47.92 ± 17.10	89.95 ± 9.56	0.045
General health	33.11 ± 12.38	67.45 ± 10.07	0.002
Physical Component Summary (PCS)	*43.43 ± 15.64*	*78.72 ± 9.04*	*0.000*
Role emotional	51.88 ± 21.78	68.08 ± 14.86	0.010
Vitality	54.95 ± 17.98	85.05 ± 11.88	0.000

	Before (Mean score)	After 1 month (Mean score)	p value
Mental health	58.77 ± 19.92	84.85 ± 13.03	0.000
Social functioning	57.54 ± 21.97	90.61 ± 11.67	0.023
Mental Component Summary (MCS)	*55.79 ± 18.03*	*82.15 ± 10.11*	*0.000*

Before orchiectomy, the patients' mean Physical health score was 43.43 ± 15.64 at a poor level. The average score of the physical health domains ranges from 33.11 ± 12.38 to 51.32 ± 24.32 corresponding to poor and medium levels. The patients' mean mental health score was 55.79 ± 18.03 at a medium level. The average score of the mental health domains ranges from 51.88 ± 21.78 to 58.77 ± 19.92 corresponding medium levels.

One month after orchiectomy, the overall physical health score of the patients in the study was 78.72, an increase of about 30 points per patient compared to the time before orchiectomy. All domains related to physical health had statistically significant score improvements. The overall mental health score of the patients in the study was 82.15, stood at a good level compared to the time before orchiectomy. All domains related to mental health had statistically significant score improvements.

Table 3. SF-36 and UCLA-PCI compared before and after 1 month orchiectomy

		Before	After 1 month	p value	The change in score
SF-36	PCS	43.43 ± 15.64	78.72 ± 9.04	0.000	35.28 ± 12.47
	MCS	55.79 ± 18.03	82.15 ± 10.11	0.000	26.36 ± 13.55
UCLA PCI-SF	Urinary function	48.82 ± 23.41	89.25 ± 8.73	0.031	40.43 ± 23.77
	Urinary bother	52.35 ± 24.15	94.81 ± 10.23	0.020	42.45 ± 25.75
	Bowel function	61.82 ± 22.84	92.81 ± 9.59	0.023	30.99 ± 21.84
	Bowel bother	57.26 ± 25.16	94.81 ± 11.34	0.037	37.54 ± 26.17
	Sexual function	16.89 ± 16.47	35.97 ± 20.24	0.000	19.07 ± 18.34
	Sexual bother	87.26 ± 21.71	93.39 ± 11.12	0.096	6.13 ± 26.35

Most of patients (52/53) had improvements in QoL and Prostate cancer-specific HRQOL in function, accounting for 98.1%. All domains assessed by SF-36 and UCLA-PCI 1 month after orchiectomy had an increase in average scores compared to before orchiectomy. The domains with the highest improvement in scores included Urinary function and Urinary bother while Sexual Function and Sexual bother had the least improvement. All changes between before and after orchiectomy were statistically significant ($p < 0.05$), except for the Sexual bother field.

IV. DISCUSSIONS

Many PC patients come to hospital not just for one symptom but for many other symptoms due to local tumor damage, spread, and manifestations in metastatic organs. The commonly clinical symptoms were urinary tract symptoms (90.6%), sexual function symptoms (86.8%), anxiety (84.9%), bone pain (75.5%), and insomnia (69.8%). These common clinical symptoms were the same as those in the study of Drudge-Coates L et al. but the incidence of symptoms was higher in this study.[10] It might be patients in this study were in later stage of disease. Urinary tract symptoms, bone pain, insomnia are clinical symptoms that directly effected to patient's daily life. Cancer patient treatment is not only a purpose to kill cancer cell, to improve and prolong patient's QoL is very worthy and assist them to have a motivation to continue their treatment.

After 1 month of orchiectomy, symptoms affecting HRQoL of PC patients with bone metastasis were markedly reduced. This should be a result of orchiectomy treatment, which affects prostate cancer cells in the case of bone metastases by reducing testosterone levels. Testosterone is the hormone that prostate cancer cells utilize to growth; in decreasing the testosterone level, we reduce the size and growth rate of prostate cancer cells, including those that have spread to the bones;[11,12] thereby, symptoms related to local invasion of the tumor and symptoms of damage to metastatic organs and the bones are also reduced. Anxiety and insomnia still affected 50.9% and 47.1% of study participants, respectively. There was almost no change in the proportion of patients with sexual function symptoms

Physical health-related QoL was self-evaluated through 21 questions of the SF-36 questionnaire, the physical component summary score was 43.43 ± 15.64 ranging from 12.19 to 78.75. In the research of Porreca A. et al., the PSC score was 51.7 ± 6.8, higher than this study.[13] It can be explained that this study's participants were diagnosed with bone metastases of PC, whose disease stage was more severe compared to the newly diagnosed. PC patients with bone metastasis self-assessed their general health status as poor and had difficulty performing work or activities. Most of the patients suffered bone pain and had feelings that the pain increased with movement, which explained the deterioration of their physical health. Mental health-related QoL of prostate cancer patients with bone metastasis was poor. It was assessed through 14 questions of the SF-36 questionnaire, the mental component summary score was 55.79 ± 18.03 ranging from 18.44 to 95.94. Most patients usually feel fatigued (58.5%) and lost of energy, proven by a mental health score in a medium QoL level, although Emotional disorders in this research was higher than Porreca A. et al with a MCS score was 50.2 ± 9.3.[13]

Patients have poor urinary function because of the variety of urinary symptoms they experienced, especially urinary leakage and the discomfort of using pads to control their urinary problems. The mean score bowel function and bowel bother were recorded at medium level. Although symptoms of constipation and difficulty defecating are not the most commonly appearing in this study, these symptoms also affect 56.6% of patients and are problems in daily life. Sexual function and sexual bother recorded at an average score. With the erectile dysfunction problems that most patients experienced, it was clear that their sexual function was rated at a very poor level. However, this problem was not a nuisance in the lives of the elderly men in this study, most of them were

no longer sexually active for a long time.

After one month, the PCS, MCS, and prostate cancer-specific functions had clearly improvement in scores. It was suggested that most patients were satisfied with the rapid relief of symptoms after orchiectomy. Almost patients had very few symptoms as the result of orchiectomy and could perform their normal daily activities. However, sexual function was still rated as poor by patients. Not being sexually active for a long time, combined with the decline in male sex hormones after orchiectomy, caused the level of sexual function to not improve in the patients in this study.

Quality of life (QoL) factors such as physical health, mental health, and prostate cancer-specific functional indexes are significant improved in PC patients after surgery; QoL improvement deserved to be valued as a treatment result.

Research on QoL provides patients with more information about the course of the disease as well as their health status after treatment, allowing them to consider different treatments and assisting patients in improving their health, adapting, and integrating into life after treatments.

The 36-item short-form health survey (SF-36) and the UCLA-PCI University of California Los Angeles Prostate Cancer Index questionnaires were translated into many languages, a toolkit often used in combination to assess HRQoL and prostate functions in PC patients, has. These questionnaires has being used widely and have a high reliability and specificity.[9] The analysis method using Cronbach's alpha of the SF-36 scale to evaluate QoL were 0.963 and 0.934, respectively before and after orchiectomy as well Cronbach's alpha of the UCLA-PCI-SF to evaluate prostate-specific functions were 0.847 and 0.813, respectively. The reliability coefficients of the SF-36 and UCLA-PCI-SF domains in this study are all at an acceptable level or higher.

Results data were collected by interviewing patients, althought Cronbach's alpha used to limit the bias study results, study has a limitation as depended on patient's subjectivity.

V. CONCLUSION

Patients with bone metastasized PC have many symptoms that negatively affect their QoL. Orchiectomy was effective in reducing symptom burden.

HRQoL and prostate-specific functions of PC with bone metastasis after orchiectomy showed significant improvement (p-value < 0.05), except sexual bother.

PC patients should be observed and supervised about the course of the disease as well as their health status, the SF-36 and UCLA-PCI questionnaires should be used to assess and supervise PC patient's QoL.

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