The Factors Significantly affecting the Quality of Life of Patients Who undergo Radical Cystectomy due to Bladder Cancer

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Objective: Bladder cancer is, in Poland, the fourth most common malignancy in men and the eighth most common in women. Radical cystectomy often seems to be the only method of treatment. This mutilating procedure may affect the quality of life of the patient. The aim of our study was to analyze the impact of factors influencing quality of life in patients after a cystectomy.

Methods: From January to August 2015, 50 consecutive patients treated in the Department of Urology of the Wroclaw Medical University in Wroclaw were enrolled into the study. Sixty-three percent of the respondents were men. Fifty-two percent of the respondents lived in urban areas. Patients ranged in age from under 25 to over 51 years. Clinical and demographic data were collected. Quality of life was evaluated with the SF-36 health survey questionnaire. For statistical analysis, Student's t-test, the Mann–Whitney U test and Spearman's rank correlation coefficient were used. Statistical analysis was carried out with IBM SPSS Statistics for Windows Version 21.0.

Results: A decrease in quality of life was observed in both genders. The impact of place of residence on the occurrence of pain, health perception, vitality, and levels of physical and mental activity was found to be significant ($p<0.05$). Pain intensity, health perception, vitality, and levels of physical and mental activity were higher in patients living in urban areas.

Conclusion: Patients with bladder cancer who underwent a radical cystectomy were more likely to have a reduced quality of life if they lived in a village or small town than if they lived in an urban area. [*P R Health Sci J 2018;37:160-164*]

Key words: Bladder cancer, Quality of life, Cystectomy

Bladder cancer is an important public health problem. It is the fourth most common neoplasm in men and the eighth most common in women, with an overall incidence of 5.4%. In 2010, the prevalence of bladder cancer was 7% in men and 2% in women, which translated into almost 5,000 men and 1,400 women who suffered from this neoplasm. In Poland, the highest number of deaths due to bladder cancer occurred in 2008, in male patients aged from 55 to 79 years. In 2010, the incidence of bladder cancer decreased in Poland, though mortality from the disease still remained higher in Poland than it was in the other countries in the European Union (1,2).

Bladder cancer occurs 3 times more frequently in men than in women, with the highest incidence occurring in Caucasian men over 45 years of age. Mortality and morbidity rise along with age, with the highest rates being seen in patients from 80 to 84 years old (2–4). The most common risk factors include smoking, occupational hazards (e.g. those found in aluminum smelters and rubber factories), and exposure to chemical substances (which later get excreted with the urine) (4–7). Treatment of bladder cancer is complex, often consisting of cystectomy combined with neoadjuvant chemotherapy (8,9).

Radical cystectomy is associated with limitations in different spheres of life and results in physical disability. Dysfunctions may negatively affect quality of life, which plays an important role in the oncologic treatments. There are many ways to improve survivors' quality of life after radical cystectomy. They include the application of different types of urinary diversion with the creation of a neobladder as well as nerve-sparing

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procedures (which can be used in both men and women) (9–11). Although quality of life measures might productively be used to evaluate the outcomes of uro-oncology surgeries, studies on the subject are scarce. Our study assessed quality of life in a cohort of consecutively recruited Polish patients who had undergone radical cystectomy. To do so, we used a standardized questionnaire that had been validated for the Polish population. To our best knowledge, ours is the first study to attempt such a task.

After cystectomy, patients must adapt to a new way of living life, which is completely different than that played so far. Their system of values, which was stable throughout their lives, changes. Quality of life in chronically ill patients consists of several dimensions, i.e., physical condition, social functioning, somatic sensations, and often even spiritual needs. Understanding a patient's pain and suffering can help the personnel attending that individual to empathize with him or her. For cancer patients, quality of life depends mostly on whether and to what degree their physical or mental (or both) well-being is negatively affected but positive assessment of treatment results and perceived hope play important roles as well. Additionally, contact with the family and other people is of great importance for this group of patients, as such contact is an avenue for positive emotional support and bolsters their awareness that help is available (12).

The aim of the study was to evaluate the influence of selected factors on quality of life in patients who had undergone radical cystectomy due to bladder cancer.

Material and methods

The study included 50 consecutive patients treated for bladder cancer with radical cystectomy (which included the creation of a neobladder from a segment of bowel) in the Department of Urology and Oncological Urology, Wroclaw Medical University, Wroclaw, Poland, from January 2015 to August 2015. The survey took place 1 month after each of their surgeries. All the patients answered the questions in the presence of an interviewer after receiving instructions on how to fill in the survey form (the response rate was 100%).

The survey consisted of 2 parts. The first part was developed by the authors and included questions about sex, marital status, age, education, place of residence, and number of cigarettes smoked (if any). In the second part, health-related quality of life was assessed using an established measurement method, i.e., the SF-36 questionnaire (Polish version). Each item of the questionnaire is scored from 0 to 100. Every item is scored so that a high score defines a more favorable health state. Next, items are grouped, and the average score is calculated for 8 domains, including physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning, pain, and general health. The higher the total score, the better the health state the respondent has (13–15).

Participation in the survey was anonymous. This study was approved by the Lodz Medical University Ethics Committee (approval number RNN/149/15/ KB). All the procedures were done in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All the patients provided written informed consent to have their data used in this study.

Data were statically analyzed and presented as means, medians, and standard deviations. For comparisons between groups of variables with normal distribution, Student's t-test for independent variables was used; for comparisons between 2 groups of variables with distribution other than normal, the Mann–Whitney U test was used. To evaluate associations between patients' characteristics and SF-36 scale score, Spearman's rank correlation coefficient was used. Data were considered to be statistically significant when the associated p-value was less than 0.05. Statistical analysis was carried out with IBM SPSS Statistics for Windows Version 21.0 (Armonk, NY: IBM Corp.).

Results

Completed questionnaires were returned by 50 patients aged from 25 to 79 years old (mean age, 62.8 years). A comparison of the SF-36 questionnaire scores with the norms for a Polish population of healthy subjects indicated that patients after radical cystectomy noticed more physical and social limitations in their lives but that the intensity of pain and emotional problems were

Table 1. SF-36 score distribution in the study group and norms for Polish population.

	Number of patients	Mean	Median	Standard deviation (SD)	Norms for Polish population (mean, SD)*
Physical Functioning (PF)	48	66.67	72.5	25.27	56.08 (30.17)
Role limitations due to physical problems (RP)	48	46.35	50	41.25	45.56 (32.21)
Bodily pain (BP)	50	52.35	47.5	24.01	55.75 (26.6)
General health perception (GH)	50	40	40	15.05	48.67 (19.79)
Vitality (VT)	47	26.43	31	14.18	47.17 (14.86)
Mental health (MH)	48	17.95	18	8.27	50.89 (15.54)
Role limitations due to emotional problems (RE)	49	40.13	33.33	41.37	58.17 (32.45)
Social functioning (SF)	49	51.78	50	24.34	45.99 (15.37)
Physical component score (PCS)	43	50.18	49	22.015	-
Mental component score (MCS)	46	37.03	31.79	18.28	-

*Żołnierczyk-Zreda D., Wrześniewski K., Bugajska J., Jędryka-Góral A.: Polish version of the questionnaire SF-36v2 for the quality of life evaluation. CIOP-PIB, Warszawa 2009.

lower in this population than in the general population. The results of the SF-36 questionnaire are presented in Table 1.

Twenty-one (42%) of the respondents were over 50 years of age; 19 (38%) were aged from 41 to 50 years, and 2 (4%) respondents were below 25 years of age. No associations were found between the ages of the respondents and the results of the SF-36 questionnaire except in terms of the physical functioning score, which was significantly negatively correlated (R = -0.315) with age.

The study group included 19 (38%) women and 31 (62%) men. No associations were found between men and women in terms of perceived quality of life. In both groups, the scores of quality of life were similar; the mean score in women was 40.79 (±13.57), while in men, it was 39.52 (±16.9).

The study group included 41 smokers and 8 non-smokers. The number of cigarettes smoked varied from 10 to 40 per day. Smoking was significantly correlated with the results of the social functioning score (R = -0.29); however, due to the small number of non-smoking patients in this study, the effect of smoking may have insufficient power to determine correlation. The majority of the study subjects had relatively high levels of education (42%) and lived in relationships (32%). Having a higher level of education was significantly correlated with improved physical functioning (R = 0.39) and role limitations due to physical problems (R = 0.28).

Twenty-six (52%) respondents lived in cities, while 24 (48%) lived in a rural area. Significant differences were found between these groups in the following scales: bodily pain, general health, vitality, physical component score, mental component score, role limitations due to physical problems, and role limitations due to emotional problems. The results are presented in Table 2 and Table 3.

mental component score. The correlation coefficients are presented in Table 4.

Discussion

The study described herein found that, compared to the population of healthy people in Poland, patients who had undergone radical cystectomy had reduced quality of life in the domains of general health, vitality, mental health, and emotional functioning.

Patients living in the urban areas had significantly higher levels of quality of life in the domains of bodily pain, general health, vitality, physical component score, mental component score, role limitations due to physical problems, and role limitations due to emotional problems than did patients living in rural areas.

The comparison of our study group of bladder cancer survivors with like groups from large epidemiologic studies revealed that our study group had similar characteristics to those of other groups (2,3). The disease was more frequent in men than in women (62% vs. 38%) and affected mainly older people (42% of the study group was over 51 years of age). All the subjects were treated with radical cystectomy, which is a very difficult procedure that requires a decision about the type of a urinary diversion the patient would prefer. This decision should be consistent with that patient's expectations and the extent of his or her cancer as well as with the patient's ability to handle a catheter (should that be the chosen method of diversion). Additionally, the surgeon must strike a balance between the amount of tissue to remove and that which must remain to preserve an acceptable quality of life. The method chosen for the reconstruction of the urinary system after radical cystectomy

Table 2. Comparison between respondents living in urban and rural areas - results of Student's t-test for independent variables for selected scales of SF-36 questionnaire.

		F	One-tailed p-value	t	df	Two-tailed p-value	Difference in means	Place of residence	M	SD	N
Bodily pain	Equal variances	0.11	0.74	2.18	47	0.035	14.277	City	59.7	23	26
	Unequal variances			2.18	46.4	0.035	14.277	Village	45.4	22.8	23
General health	Equal variances	0.05	0.83	2.3	47	0.024	9.5903	City	44.8	14.5	26
	Unequal variances			2.3	46.47	0.024	9.5903	Village	35.2	14.3	23
Vitality	Equal variances	2.5	0.12	3.2	44	0.003	12.185	City	32.6	11.3	24
	Unequal variances			3.17	39.64	0.003	12.185	Village	20.4	14.5	22
Physical component score	Equal variances	0.16	0.69	2.57	41	0.014	16.254	City	57.7	21	23
	Unequal variances			2.58	40.76	0.013	16.254	Village	41.5	20	20
Mental component score	Equal variances	1.72	0.2	2.44	44	0.019	12.501	City	43.3	18.3	23
	Unequal variances			2.44	43.46	0.019	12.501	Village	30.8	16.4	23

F: test statistic; df: degrees of freedom; M: mean; SD: standard deviation; N: number of patients; p: probability value.

The obtained results show that respondents living in urban areas had significantly higher scores than respondents living in rural areas did. Place of residence was also significantly correlated with the results obtained in role limitations due to physical problems, general health, vitality, role limitations due to emotional problems, physical component score, and has an impact on the extent of impairment of urinary or sexual (or both) function. In the simplest procedure, urine is diverted through a segment of the bowel to the skin's surface and collected outside of the body. Another option is the creation of an intestinal reservoir which is periodically emptied with a catheter. The most advanced and comfortable technique includes the

Table 3. Comparison between respondents living in urban and rural areas; results of Mann–Whitney U test for selected scales of SF-36 questionnaire.

	Mann–Whitney U	W Wilcoxon's	Z	Two-tailed p-value	N Urban	N Rural	Urban	Rural
Role limitations due to physical problems (RP)	160.5	413.5	-2.52	0.012	26	22	M = 61.00 SD = 38.92	M = 31.82 SD = 38.72
Role limitations due to emotional problems (RE)	190.5	466.5	-2.12	0.034	25	23	M = 53.33 SD = 45.13	M = 26.09 SD = 33.27

Table 4. Spearman correlation coefficients for place of residence and scales of SF-36 questionnaire.

	PF	RP	BP	GH	VT	MH	RE	PCS	SF	MSC
Spearman correlation coefficients	-0.16	-0.37	-0.25	-0.36	-0.43	-0.28	-0.31	-0.36	-0.25	-0.34
Two-tailed p-values	0.28	0.01	0.08	0.01	0.003	0.06	0.033	0.019	0.085	0.023
N	48	47	49	49	46	48	48	43	48	46

PF - physical functioning, MH - mental health, RP - physical role, RE - role emotional, BP - bodily pain, PCS - physical component summary, GH - general health, SF - social functioning, VT - vitality, MCS - mental component summary

creation of an orthotopic neobladder from a segment of the bowel (9,11,16). Surprisingly, researchers have not yet found differences in terms of the different urinary diversion methods used in the levels of quality of life sustained by patients after radical cystectomy. Protogerou et al. measured quality of life with the QLQ C-30 questionnaire in 3 groups of participants: group 1 had an ileal conduit diversion, group 2 had a modified S-pouch neobladder, and group 3 was composed of healthy subjects. They found no statistically significant differences in the levels of quality of life among the 3 groups. However, the control group tended to have higher scores for overall quality of life and for overall health and functional scales than the other 2 groups did, while cancer patients scored insignificantly higher than the individuals in the healthy control group did on the emotional functional scale. On the symptom score scale and in all the single items (fatigue, nausea/vomiting, pain), the patients in group 1 had insignificantly worse outcomes than did those in groups 2 and 3 (17). Using the SF-36 survey, Fujisawa et al. also found no significant differences in health-related quality of life between patients with a neobladder or an ileal conduit. They concluded that both groups of patients were satisfied with their overall quality of life and health (18). Many papers in the literature show similar outcomes (19–21).

In the present study, respondents noticed more limitations related to social and physical activity; in addition, their mental functioning was perceived to be worse than what is seen in general population (15). This indicates that patients understand their disease and accept the type of treatment. Despite their acceptance of the disease, they still may feel limited due to the non-physiological way that their urine is handled.

The influence of place of residence is rarely assessed in studies on quality of life. In the present study, 54% of respondents lived in cities, while 46% lived in rural area. Our results showed that place of residence affects the level of quality of life. Reports from the literature do not confirm similar association. Eskitzis et al. assessed quality of life in 155 women undergoing surgical treatment for breast cancer. They found that place of residence had no effect on any of the subscales of quality of life and remained stable as measured before and 1 year after surgery (22). Nowicki et al. found that the level of quality of life in patients with lung cancer subjected to palliative care was not correlated with the place of residence or financial condition (23). On the contrary, place of residence affected satisfaction with life and disease acceptance in patients with a stoma resulting from surgical treatment for rectal cancer (24). Nowicki et al. concluded that people living in rural areas usually perform physical labor, so a physical handicap can limit their occupational possibilities and financial condition. In the present study, the impact of place of residence is visible in nearly all aspects of quality of life.

There is a need to give more attention to the problems of bladder cancer survivors living in rural areas and further explore factors affecting their quality of life. We agree with Nowicki et al. that health problems may negatively affect financial condition in this group of patients (24). However in our study, no significant differences were observed in the characteristics of patients living in urban areas versus those living in rural areas, so it is possible that living in a rural area may limit access to specialized healthcare centers due to distance and the need to commute. Family doctors and social workers may play an important role in the care of rural-living cancer patients after radical cystectomy.

Conclusions

Radical cystectomy affects quality of life, especially in the physical and social dimensions. The quality of life sustained by bladder cancer patients who had undergone radical cystectomy and who lived in small towns or villages was lower than that of their urban-living counterparts.

Resumen

Objetivo. El cáncer de vejiga es el 4º maligno más frecuente en hombres y el octavo en mujeres en Polonia. La cistectomía radical a menudo parece ser el único método de tratamiento. Este procedimiento mutilante puede afectar la calidad de vida. El objetivo del estudio fue analizar el impacto de los factores que influyen en la calidad de vida en los pacientes después de la cistectomía. Métodos. De enero a agosto de 2015, 50 pacientes

consecutivos tratados en el Departamento de Urología del Universidad Médica de Breslavia en Breslavia fueron inscritos en el estudio. El 63% de los encuestados eran hombres. El 52% de los encuestados vivía en zonas urbanas. Los pacientes tenían una edad comprendida entre menos de 25 y más de 51. Se recogieron datos clínicos y demográficos. La calidad de vida se evaluó con el cuestionario de encuesta de salud SF-36. Para el análisis estadístico se utilizaron la prueba t de Student, la prueba U de Mann-Whitney y el coeficiente de correlación de rango de Spearman. El análisis estadístico se realizó con SPSS Statistics V21.0. Resultados. La disminución de la calidad de vida se observó en ambos sexos. Se observó un impacto significativo del lugar de vida en la aparición del dolor, la percepción de la salud, la vitalidad y las actividades físicas y mentales ($p<0.05$). La intensidad del dolor, la percepción de la salud, la vitalidad y las actividades físicas y mentales fueron mayores en los pacientes que vivían en áreas urbanas. Conclusión. Vivir en un pueblo reduce la calidad de vida en los pacientes después de la cistectomía radical debido al cáncer de vejiga en comparación con los pacientes que viven en zonas urbanas.

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