RESEARCH ARTICLE

Evaluation of Health-Related Quality of Life in Patients Receiving Treatment for Penile Cancer: A Single-Center Cross-Sectional Study

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Abstract

Introduction: Penile cancer is one of the uncommon types of cancer in men. The treatment could significantly impact a patient's quality of life (QOL), leading to difficulties in fulfilling life functions. **Methods:** This descriptive observational study aimed to describe a situation using a cross-sectional design objectively. The population of this study was all patients with a diagnosis of penile cancer who underwent therapy at the Haji Adam Malik Hospital from September 2020 to September 2021. Quality of life was assessed using EORTC QLQ-C30. **Results:** The respondents' mean age and standard deviation were 54.44 and 8.647 years, respectively. The youngest was 38 years, while the oldest age was 64 years. Most respondents had no history of circumcision (55.6%). All respondents had a poor QOL based on the 28 components in the questionnaire. This study showed that erectile function, changes in sexual function, and overall sexual function were correlated with health-related quality of life (HRQoL) post-treatment. In general, lack of sexual activity is the primary factor responsible for decreasing HRQoL in penile cancer patients. It has been reported that 70% of patients experienced a negative impact on sexuality post-treatment. **Conclusion:** The quality of life in patients receiving treatment for penile cancer at RSUP H. Adam Malik, Medan, was poor. It is associated with a lack of sexual activity.

Keywords: Quality of life- penile cancer- penile cancer therapy- EORTC QLQ-C30

Introduction

Penile cancer in men is rare but quite detrimental to sufferers and is often a diagnostic and therapeutic challenge for urologists (Pettaway et al., 2021). Penile cancer is still rare in Western countries, with an incidence of <1 per 100,000 men in Europe and the United States. However, it is more common in African, Asian, and South American countries and accounts for about 10% of all cancers in men in the United States (Van Poppel et al., 2013). For example, Prayoga and Tranggono (2016) found 35 cases of penile cancer in 2006-2013 at Sardjito Hospital, with the dominant age being 40-60 years and 91.4% being the type of squamous cell carcinoma. However, these numbers may vary especially in Medan, as epidemiologic data regarding penile cancer is still unavailable.

There are several risk factors associated with penile cancer, which includes phimosis, balanitis, chronic inflammation, penile trauma, smoking, poor hygiene (Clark et al., 2013). Despite that, circumcision has been found to be a protective factor towards penile cancer, especially if circumcised since birth (Van Poppel et al., 2013). On the other hand, history of sexually transmitted diseases, particularly human immunodeficiency virus (HIV) and human papillomavirus (HPV), is also a significant risk factor to penile cancer (Clark et al., 2013). This corresponds to previous literatures as HPV infection is involved in the pathogenesis of penile cancer, as E6 and E7 proteins are associated with penile cancer carcinogenesis processes that influence cell apoptosis and cell cycle regulation (Rodney et al., 2016).

Cancer and its treatment have a significant impact on the patient's life which can result in difficulties in fulfilling family roles, ability to work, or participation in usual social activities. Even when successfully treated, cancer can cause long-term physical and psychological morbidity (Velikova et al., 2012). Therefore, a robust family support system must be established before proceeding with therapy. In addition, the patient's psychological well-being and partner support are essential in the patient's follow-up process (Cassell et al., 2020). As cancer patients

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are required to undergo massive burden throughout its management, there is a need to consider their impact on health-related Quality of Life (HRQoL) when making patient management or treatment decisions (Fayers and Bottomley, 2002).

In order to reliably assess quality of life among penile cancer patients, usage of an internationally-accepted assessment tool is required. Additionally, the assessment tool needs to have been validated in the local language, Bahasa Indonesia. However, there are currently no such questionnaires. Meanwhile, one of the most commonly used measuring tools in the HRQoL assessment of cancer patients is the EORTC-QLQ C-30 questionnaire developed by the European Organization for Research and Treatment of Cancer (EORTC) (Sosnowski et al., 2016). The EORTC-QLQ C-30 consists of five functional scales (Physical, Social, Role, Cognitive, and Emotional Functions), a scale for the Global QoL, and nine symptom scales (Fatigue, Pain, Nausea/Vomiting, Shortness of Breath, Loss of Appetite, Sleep Disorders, Constipation, Diarrhea, and Financial Difficulties) (Giesinger et al., 2014). Additionally, the EORTC-QLQ C-30 questionnaire has also been validated and translated into Indonesian by Perwitasari et al., (2011) so that it can be used to help assess the quality of life of cancer patients, in this case, especially penile cancer patients.

As such, this study aims to further investigate the quality of life, specifically those health-related, for patients receiving penile cancer treatment in Haji Adam Malik General Hospital, Medan. Results from this study are hoped to be incorporated into the health services for penile cancer in order to develop a more accurate, and holistic patient-centered care for penile cancer patients.

Materials and Methods

The method used in this research is a descriptive observational research method with the primary objective of accurately describing a situation with the type of research design, namely a cross-sectional study. The study was conducted at Haji Adam Malik (HAM) General Hospital, Medan. The study was carried out after the ethics committee approved the proposal in September 2021. The population of this study was all patients with a diagnosis of penile cancer who underwent therapy at the HAM Hospital from September 2020 to September 2021, while the sample of this study was taken based on the total sampling technique considering the very high incidence of cases. Therefore, in total sampling, the number of samples is the same as the total population.

The inclusion criteria consisted of penile cancer patients who underwent therapy from September 2020 to September 2021, who are willing to be included in the study and are competent to make such decision, marked by signing the informed consent. The exclusion criteria

Table 1. Frequency Distribution of Research Respondents by Age

Variable	Mean+SD (Min-Max)
Age	54.44+8.647 years (38-64 years)

consisted of penile cancer patients who had undergone therapy before September 2020, penile cancer patients receiving second-line chemotherapy, patients experiencing penile cancer, not as the primary tumor, and uncooperative patients experiencing decreased consciousness.

The research was conducted after obtaining a research permit from the Universitas Sumatera Utara (USU) Medical Faculty and then sending the permit to the Haji Adam Malik Hospital as the place for the research. After getting permission, the researcher can collect data. Furthermore, before asking about the patient's willingness to be a respondent, comprehensive information regarding the study was given. If willing, participants will then be asked to sign the consent form, and to fill out the questionnaire. Participants would be accompanied by a researcher in case of any need of assistance.

The instrument used in this study is a questionnaire consisting of several questions filled in directly by the respondent. The questionnaire has two parts; the first part contains patient demographic data, namely age, ethnicity, religion, marital status, education, occupation, and history of circumcision. The second part contains a list of questions in the standardized EORTC-QLQ C-30 from the European Organization for Research and Treatment of Cancer (EORTC), which has been validated by previous studies (Sosnowski et al., 2016).

Data analysis is done using IBM SPSS Statistics v.26, which will be carried out when all data has been collected and the data has been checked and re-assures that the demographic information and the answers to the questionnaire have been filled in according to the instructions. Demographic data and each questionnaire assessment variable will be presented using descriptive analysis presenting the frequency and percentage distribution table.

Results

This research is a descriptive observational, cross-sectional study. The study was conducted at Haji Adam Malik General Hospital Medan, carried out in September 2021. In this study, the number of respondents studied was nine respondents. The following presents the distribution of frequencies and percentages based on the variables studied.

Based on Table 1 related to age, it is found that the average age of the respondents is 54.44±8,647 (38-64) years old. Table 2 shows that most of the respondents are Bataknese, with as many as 5 (55.6%) respondents. Respondents with Javanese ethnicity of as many as 2

Table 2. Frequency Distribution of Research Respondents by Ethnicity

Ethnic group	Frequency	Percentage (%)
Java	2	22.2
Batak	5	55.6
Malay	1	11.1
Nias	1	11.1
Total	9	100.0

Table 3. Distribution of Frequency and Percentage by Religion

Religion	Frequency	Percentage (%)
Islam	4	44.4
Catholic	3	33.3
Protestant	2	22.2
Total	9	100.0

Table 4. Distribution of Frequency and Percentage Based on Marital Status

Marital status	Frequency	Percentage (%)
Marry	9	100.0
Total	9	100.0

(22.2%), whereas respondents with Malay and Nias ethnic groups each as many as one people (11.1%).Based on Table 3, it is known that the religion consists of 4 Muslims (44.4%), Catholics (33.3%), and Protestants (22.2%). Based on Table 4, it is known that all respondents are married.

Based on Table 5, respondents with junior high school education were 2 (22.2%), high school were 6 (66.7%), and vocational diploma were 1 (11.1%). Based on Table 6, it is known that the number of respondents with government employees is 1 (11.1%), private employees are 2 (22.2%), laborers are 1 (11.1%), and self-employed are 3 (33.3%), and not working as much as 2 (22.2%).

Based on Table 7, respondents with a history of circumcision were 4 (44.4%), with no history of circumcision, and as many as 5 (55.6%). Table 8 shows that six respondents had a history of partial penectomy (66.7%), and 3 had a history of total penectomy (33.3%). Based on Table 9, regarding how participants rate their overall health, as many as 1 (11.1%) respondents assessed 4, as many as 6 (66.7%) respondents assessed 5, and 2 (22.2%) respondents gave an assessment of 6. Based on Table 10, regarding how participants rate their quality

Table 5. Distribution of Frequency and Percentage by Education

Education	Frequency	Percentage (%)
Junior High School	2	22.2
Senior High School	6	66.7
Diploma	1	11.1
Total	9	100.0

Table 6. Distribution of Frequency and Percentage by Occupation

Work	Frequency	Percentage (%)
Government officials	1	11.1
Private employees	2	22.2
Laborer	1	11.1
Self-employed	3	33.3
Does not work	2	22.2
Total	9	100.0

Table 7. Distribution of Frequency and Percentage Based on History of Circumcision

Circumcision History	Frequency	Percentage (%)
Found	4	44.4
Not Found	5	55.6
Total	9	100.0

Table 8. Distribution of Respondents' Answers: How would you rate your overall health during the past week?

How would you rate your overall health condition during the past week?	Frequency	Percentage (%)
Rating 4 from intervals 1-7	1	11.1
Rating 5 from intervals 1-7	6	66.7
Rating 6 from intervals 1-7	2	22.2
Total	9	100.0

Table 9. Distribution of Respondents' Answers: How would you rate your quality of life during the past week?

How would you rate your quality of life during the past week?	Frequency	Percentage (%)
Rating 5 from intervals 1-7	6	66.7
Rating 6 from intervals 1-7	3	33.3
Total	9	100.0

of life, 6 (66.7%) respondents assessed 5, and 3 (33.3%) respondents assessed 6. Based on Table 11, regarding the conclusion of the EORTC-QLQ C-30, it is known that all respondents have a poor quality of life.

Discussion

According to the National Comprehensive Cancer Network (NCCN), penile cancer accounts for less than 1% of all cancers affecting men, representing 0.91 per 100,000 population. In general, treatment includes surgery, which significantly impacts the patient, considering that part of the penis is removed, affecting the quality of life and daily functions. The quality of life of patients treated for penile cancer is not always mentioned in the medical literature, considering that the success of treatment is measured by healing the disease. However, quality of life an important part of its management (Montes Cardona and

Table 10. Frequency Distribution by Quality of Life

Quality of Life	Frequency	Percentage (%)
Bad	9	100.0
Total	9	100.0

Table 11. Frequency Distribution by History of Therapy

Therapy History	Frequency	Percentage (%)
Partial penectomy	6	66.7
Total penectomy	3	33.3
Total	9	100%

García-Perdomo, 2017).

The areas with the highest incidence worldwide are characterized by a high prevalence of human papillomavirus infection and phimosis, which, together with low socioeconomic status, are major predisposing factors for developing penile cancer. The incidence of penile cancer peaks in the sixth decade of life, but penile cancer also affects younger men. For obvious reasons, organ-sparing penile cancer treatment is the preferred method of non-invasive and localized treatment of the disease, which can be managed in most cases with topical chemotherapy, laser ablation, or resurfacing of the gland. (Harju et al., 2021). Radiotherapy modalities may be considered for particular cases of invasive penile cancer; however, surgery remains the most reliable option for providing long-term healing (Kieffer et al., 2014). Most studies report a compromised quality of life among patients with penile cancer and a correlation between surgery rates and symptoms. In addition, as many as 50% of penile cancer patients may suffer from symptoms resembling traumatic stress disorder, which underscores the disease's impact on the patient's psyche (Suarez-Ibarrola, Cortes-Telles, and Miernik, 2018).

However, more consensus has yet to be reached regarding the optimal metric to measure the quality of life among these patients. A recent systematic review highlighted this shortcoming and reported the many unmet needs experienced by patients with penile cancer. Therefore, further investigation is needed into the specific deficits that have the most profound effects on the quality of life of patients with penile cancer (Sosnowski et al., 2016a).

The average age of the respondents was 54.44 years with a standard deviation of 8,647 years, where the youngest age was 38 years, and the oldest age was 64 years. The results of previous studies showed that the average age of penile cancer patients was 67 years with an interquartile range of 53.1–72.0, and patients were followed up for an average of 26.4 months (12.0–62.8). Another study in India on penile cancer patients aged from 22 years to 88 years with a mean age of 58.75 ± 12.30 years. Another study also found that the mean age of the sample was 54.3 years (range 37-77) at the time of diagnosis (Troiano and Nante, 2018).

Our results are comparable with other analyses, notably the Maddineni et al. study in which treatment was reported to harm 40% of patients. However, the only consideration used in the investigator's study, the only one validated for the Mexican population, was EORTC-QLQ-30. Although valuable evaluation tools, other instruments may be used for various cancers or other pathologies but have not been developed specifically for patients with penile cancer in Indonesia, which would require a validated translated version. (Troiano and Nante, 2018; Kusumajaya and Safriadi, 2022).

Concerning sexual function, the mean age of the patients was 63.4 years. Therefore, it is essential to ask whether the absence of sexual activity is due to the disease itself, as indicated in previous analyses, such as the study by Opjordsmoean et al., or external factors,

such as age-associated metabolic changes or marital problems (Sosnowski et al., 2016b). However, as this was not included in the questionnaire, personal investigation regarding sexual function towards each patient is important to note.

Another study on penile cancer patients in Germany showed that the mean self-reported global QoL score was 54.0 (SD 5.9), which corresponds to the mean QoL (0-100 score) and is significantly below the mean age standard for German patients. For general function scores, the following mean scores were determined: physical (n=73), social (n=61), emotional (n=60), cognitive function (n=69), and role function (n=63). Compared with the German reference group, there were significant differences in role function (P < 0.001) and emotional (P < 0.001), social (P < 0.001), and cognitive (P < 0.001) functions, that is, to be expected from a significant reduction in this patient area by disease (Sosnowski et al., 2016b; Pardo et al., 2020).

Concerning general symptom scores and individual items, the following scores were found: fatigue (n=35), nausea (n=6), pain (n=27), dyspnea (n=23), insomnia (n= 41), loss of appetite eating (n=25), constipation (n=19), diarrhea (n=10), and financial difficulties (n=25). These scores further represent healthcare-related aspects. Again, there were differences in the reference groups, especially in the areas of dyspnea (P < 0.005), insomnia (P < 0.001), loss of appetite (P < 0.001), constipation (P < 0.001), diarrhea (P < 0.001). 0.001), and financial difficulties (P < 0.001)(Vieira et al., 2020; Monteiro et al., 2021). It is mostly considered a classic side effect of systemic treatment. In particular, diarrhea was described as part of the 5-fluorouracil treatment. Furthermore, about 50% of the included patients were under 65 years of age, so some of these patients were employed. However, having to get back to work before diagnosis is no longer possible due to cancer and treatment, resulting in a loss of livelihood (Draeger et al., 2018; Sosnowski et al., 2019).

In conclusion, the average age of the respondents was 54.44±8,647 (38-64). Most respondents are Bataknese and Muslims. Education level of most respondents were high school. Patients have various employments, however all patients were married. Patients who were circumcised are approximately equal to those who are not. Additionally, most underwent parnial penectomy as therapy. From our study, it can be concluded that the quality of life is poor among all penile cancer patients according to the EORTCQLQ-C30.

Author Contribution Statement

All authors contributed equally in this study.

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