Quality of Life of Lung Cancer Patients

Alexander M.J. Saudale,* Arry H. Reksodiputro,** Zulkifli Amin,***
Asril Bahar,*** Sumedi Sudarsono,**** Joedo Prihartono****

ABSTRACT

Aim: to assess the quality of life (QOL) of lung cancer patients.

Subject and methods: Twenty-four subjects were interviewed, and questionnaires were filled to evaluate the subjective quality of life of the patients. Objective evaluation was conducted using the Karnofsky Performance Status (KPS). Subjective evaluation included physical, social, and spiritual dimensions. Evaluation was conducted at the time of diagnosis (initial phase, 24 subjects), and reevaluation was conducted during the adaptive phase (21 subjects).

Time and place: the Department of Internal Medicine, Faculty of Medicine of the University of Indonesia, Dr. Cipto Mangunkusumo National Central General Hospital and Dharmais Cancer Hospital, Jakarta, from January 2001 to January 2002.

Results: At the time of diagnosis 1 subject had poor QOL, 18 (75%) had moderate QOL, and 5 had high QOL. At the reevaluation, 8 had mild QOL and 13 had high QOL.

Conclusions: There was a significant increment of quality of life from the time of diagnosis to the second evaluation.

Abbreviations: (QOL) quality of life,(KPS)Karnofsky Perfomance Status

Key words: Lung Cancer, Quality of Life (QOL)

* *Department of Internal Medicine, Faculty of Medicine of The University of Indonesia/Dr.Cipto Mangunkusumo National General Hospital. Jakarta. Indonesia*
** *Division of Hematology and Medical Oncology, Department of Internal Medicine, Faculty of Medicine of The University of Indonesia/Dr.Cipto Mangunkusumo National General Hospital. Jakarta. Indonesia*
*** *Division of Pulmonology, Department of Internal Medicine, Faculty of Medicine of The University of Indonesia/Dr.Cipto Mangunkusumo National General Hospital, Jakarta, Indonesia*
**** *Department of Community Health Science, Faculty of Medicine of The University of Indonesia/Dr.Cipto Mangunkusumo National General Hospital. Jakarta. Indonesia*

INTRODUCTION

Cancer represents a group of frightening diseases, since is often fatal,[1] is incurable,[2] and is associated with pain. Various developments have provided various results, where a number of malignancies can now be treated.[3] Lung cancer is still the malignancy with the worst prognosis, even for stadium Ia.[4] Untreated lung cancer at stadium Ia demonstrates very rapid progression, with a survival rate of only 6-13 weeks. Various treatment modalities that have been used to fight lung cancer have failed to create a change in the past decade.[5] In 1995, the treatment success rate still ranges around 10-13%, and in 2001, the mortality rate of 157.000 places lung cancer as the most common cause of death by cancer for both sexes,[6,7] and all races.[7]

The effect of the disease and treatment that greatly influences the patient's physical and psychological condition, the uncertainty of the success of treatment, the limited survival rate,[8] and chronic disability that inflicts cancer patients bring attention to the patient's quality of life (QOL).

QOL is a multidimensional concept that includes physical, psychological, social, and spiritual aspects associated with disease and treatment.[10] Cella and Cherin defined QOL as an assessment of the patient's satisfaction to various levels of life functions compared to the ideal condition or that which could be achieved according to the patient. Individuals with great functional limitations often report a high satisfaction to life,[11] which is what we would expect.

Treatment efforts are still being developed, but the aim of cancer treatment no longer emphasizes the curative side, but also emphasizes the palliative side to reduce the impact of the cancer, and improve the patient's QOL.[12] It is very important to pay great attention to QOL, particularly for cancers with a low success rate for treatment such as lung cancer.

Table 1. Characteristics Lung Cancer Patients

	n=68	%	n=24	%		n=68	%	n=24	%
Sex					**Religion**				
Male	50	73.5	18	75.0	Islam	28	41.2	12	50.0
Female	18	26.5	6	25.0	R. Catholic	7	10.3	6	25.0
Age					Protestant	18	26.5	3	12.5
30 - 39 years	4	5.9	1	4.1	Budha	11	16.2	2	12.5
40 - 49 years	14	20.6	6	25.0	Hindu	0	0.0	0	0.0
50 - 59 years	18	26.5	6	25.0	No data	4	5.8	0	0.0
60 - 69 years	20	29.4	7	29.2	**Occupation**				
> 70 years	12	17.6	4	16.7	Civil servant			6	25.0
Marital Status					Military			1	4.2
Married	53	77.9	23	95.8	Private Employee			5	20.8
Single	1	1.5	0	0.0	Entrepreneur			3	33.3
Widow/Widower	7	10.3	1	4.2	Housewife			4	16.7
No data	7	10.3			**Eyearslc group**				
Education Level					Javanese			8	33.3
Low	14	20.6	8	33.4	Tionghoa			7	29.2
Moderate	16	23.6	8	33.3	Tapanuli			3	12.5
High	18	26.4	8	33.3	Minahasa			2	8.3
No data	20	29.4			Sunda			2	8.3
					Minang			1	4.2
					Palembang			1	4.2

SUBJECT AND METHODS

This was a descriptive analytic study performed at the Subdivision of Pulmonology and Hematology-Medical Oncology of the Department of Internal Medicine of Dharmais Cancer Hospital and Dr. Cipto Mangunkusumo National General Hospital, Jakarta from September 2001 to February 2002.

The study sample consisted of lung cancer out-patients and in-patients at the Subdivision of Pulmonology and Hematology-Medical Oncology of the Department of Internal Medicine of Dharmais Cancer Hospital and Dr. Cipto Mangunkusumo National General Hospital. The inclusion criteria were as follows: male or female patients, ages 15-79 years, with adenocarcinoma or squamous cell carcinoma of the lung, stages I-IV. The exclusion criteria were as follows: accompanying severe disease or previous psychiatric conditions.

All data associated with the patient's characteristics and his/her disease was obtained from the lung cancer patients. An interview was conducted and a questionnaire was filled out to evaluate the patient's subjective quality of life. The interview and filling out the questionnaires were performed as a primary assessment at the time of the diagnosis, and for reevaluation during the adaptive phase.

The questionnaire that was used was developed from that of a study by Ganz,[13] supplemented with questions from the study by Ishihara,[14] and literature that specifically discusses QOL.[15,16,17] Questions on spiritual aspects were added to complement questions that generally emphasize on physical aspects. The questions on the spiritual aspects had been consented by a religious institution in Indonesia. The questionnaires were tried on 5 subjects, and based on the trial, adjustments were made to create the questionnaire that was used in the study.

All QOL aspects were given the same score value, and the overall QOL was determined by adding the scores of all of the questions. A correlation between the QOL score and other variables such as patient characteristics, disease characteristics, and QOL aspects were then evaluated, and the appropriateness with the objective QOL assessment was evaluated.

The objective QOL of the lung cancer patients was also evaluated by a third person using the Karnofsky performance status (KPS) method.

Subjects that participated in the study voluntarily have received detailed explanations on the aim and benefits of the study, as well as the evaluations that they will go through, and signed an informed consent form.

RESULTS

The study was initiated by means of data retrieval from the Medical Record Center of Dharmais Cancer Hospital. From January 2001 to January 2002. There were 103 lung cancer patients, and there was 1 from

Table 2. Characteristics of the Disease in the Large and Small Groups

NSCLC Stadium	n=68	n=24
Type of Lung Cancer:		
Adenocarcinoma	35 (51.5%)	18 (75.0%)
Squamous Cell Carcinoma	13 (19.1%)	6(25.0%)
No data	20 (29.4%)	0(0.0%)
Stadium:		
IIIa	1 (1.5%)	1 (4.2%)
IIIb	18 (26.5%)	8 (33.3%)
IV	44 (64.7%)	15 (62.5%)
No data	5 (7.3%)	0 (0.0%)

Table 3. Distribution of Disease Stadium in Relation to Age

Age (years)	Stadium		p value
	IIIb	IV	
Large group			
< 50 years	6 (35.3%)	11 (64.7%)	
≥ 50 years	13 (28.3%)	33 (71.7%)	0.589
Small group			
< 50 years	4 (57.1%)	3 (42.9%)	
≥ 50 years	5 (29.4%)	12 (70.6%)	0.356

Cipto Mangunkusumo Hospital. Fourteen medical records were unavailable for study, while out of the 90 medical records assessed, 22 patients turned out with a different diagnosis other than lung cancer, such as ovarian cancer, breast cancer, etc. We attempted to contact 60 lung cancer patients, 44 of which turned out to be dead, while the remaining 24 others were available for the interview and to fill out the questionnaire. After the initial interview, 1 patient died, and after the second interview, 16 patients died, with a total of 61 patients dead out of 68. The shortest time interval between the diagnosis and the death was 1 week, while the longest was 1 year 10 months, while the 7 patients that remained alive survived up to at most 1 year and 5 months.

The first sixty lung cancer patients were subsequently referred to as the large group for the purpose of reporting patient and disease characteristics, while the 24 interviewed subjects were subsequently referred to as the small group, whose characteristics will be reported along with the QOL score and its correlation with other variables.

Patient and Disease Characteristics

It is demonstrated in Table 1 that there were more males than females, with a ratio of 2.78 to 1. There were very few lung cancer patients under the age of 40 years, while the most common age group was the 60-69 year age group (29.4%).

Most of the patients were married, only 1 was single. Classification based on education level demonstrated an even distribution between the highly educated, the less educated, and the moderately educated. Most patients were Muslim, and the largest eyearsic group was Javanese. Most of the patients were civil servants. The most common lung tumor was adenocarcinoma (51.5%), followed by squamous cell carcinoma (19.1%). All patients came at late stages, most being in stage IV (64.7%), as shown in Table 2.

Table 3 demonstrates the correlation between the stage of lung cancer and the patient's age. There was no statistically significant correlation between the stage of the disease and the patient's age.

The Quality of Life of The Small Group

The time interval between the time of the diagnosis and the interviewed greatly varied, with a range of 5 days to 1 year and 3 months. To subjects that had been diagnosed over 1 month preceding the interview, we performed retrospective QOL evaluation for the time of diagnosis. The second QOL assessment was only reported in 21 subjects, because 2 subjects left the hospital at their own will and could not be contacted, while 1 subject died after the initial interview.

At the time of the diagnosis, 1 subject (4.2%) had a low QOL, 18 subjects (75%) had a moderate QOL, while

Table 4. Distribution of the Quality of Life Score During Reevaluation in Relation with the Quality of Life Score at the Time of Diagnosis for the Small Group

Quality of Life Score at the Time of Diagnosis	Quality of Life Score During Reevaluation					
	Low-Moderate		High		Total	
	n	%	n	%	n	%
Low-Moderate	8	50.0	8	50.0	16	100.0
High	0	0.0	5	100.0	5	100.0
Total	8		13		21	

Mc Nemar Statistical analysis, p value=0.008

Table 5. Statistical Analysis the Correlation Between the Quality of Life and the Characteristics of the Small Group

Subject Characteristics	p value
At the Time of Diagnosis (n=24)	
Sex	0.633
Age	0.538
During Reevaluation (n=21)	
Sex	0.410
Age	0.111

5 subjects (20.8%) had a high QOL. During reevaluation, no subject had a low QOL, 8 subjects had a moderate QOL (38.1%), and 13 subjects (61.9%) had a high QOL. There was a statistical significant increase in the patients' QOL (Table 4).

The QOL score was not related to the patient's sex or age (Table 5). Patients with stage IV lung cancer had a tendency to have a lower QOL than those in stage III, but this is not statistically significant (Table 6).

Table 7 demonstrates objective QOL based on the Karnofsky Performance Status (KPS). The table demonstrates that patients with a high KPS do not necessarily have a high QOL.

Table 8 demonstrates the statistical calculations of various physical complaints in relation to QOL. During the time of the diagnosis, there was no complaint that demonstrated a statistically significant correlation with QOL. During the reevaluation, it is shown that most factors demonstrated a stronger correlation with QOL compared to that at the time of the diagnosis, but statistical calculations only demonstrate significance for sexual complaints and fatigue.

Table 9 demonstrates the statistical calculations for the correlation between radiation treatment and cisplatin with QOL. For the two means of treatment, there was no significant correlation with the QOL score.

At the time of the diagnosis, 13 subjects had a low psychological morale, all of which had a moderate to low QOL. There were 11 subjects in good psychological condition, 6 of which had a moderate to low QOL, and 5 of which had a high QOL. Statistical calculations demonstrated a significant correlation between QOL and the psychological condition of the patient at the time of the diagnosis (Table 10). At the time of the diagnosis, there was no significant correlation between QOL and the patient's social and spiritual aspects.

During the reevaluation, there was a statistically significant increase in the patients' psychological and spiritual aspects, while there was no increment in the patient's social aspect (Table 11).

DISCUSSION

We realize the limitations of this study. The number of new lung cancer cases is very small, and the time span of the study was also limited. Thus, new and old cases were combined, even though the patients were in different psychological response phases. As a solution, old patients underwent retrospective evaluation for the time of the diagnosis, while the supposed reevaluation was directly obtained. With such time lapse and reduced memory recall ability, the accuracy of the data is also reduced.

Table 6. Distribution of Subjective Quality of Life in Relation to the Disease Stadium in the Small Group

Disease Stadium	Quality of life score		p value
	Low-Moderate	High	
Stadium IV	13(86.7%)	2(13.3%)	
Stadium IIIa-IIIb	6(66.7%)	3(33.3%)	0.255

Table 7. Distribution of Subjective Quality of Life in Relation with Karnofsky Performance Status for the Small Group

Karnofsky Performance Status	Subjective quality of life						Statistical Test	p value
	Low-Moderate		High		Total			
	n	%	n	%	n	%		
At the Time of Diagnosis (n=18)								
<80 %	1	100.0	0	0.0	1	100.0		
≥ 80	*12	70.6	5	29.4	17	100.0	Fisher	0.722
During Reevaluation (n=21)								
<80 %	3	60.0	2	40.0	5	100.0		
≥ 80 %	5	31.3	11	68.7	16	100.0	Fisher	0.262

* 1 Subject had a Low Quality of Life

Seeing the facts, there has not been a patient that survived for over a year, demonstrating a very poor long-term survival rate in the study subjects. The male to female ratio of 2.78:1 is still in accordance with literature that states a ratio of 2.1:1 to 5.5:1.18 The age of the patients were also in accordance with literature that states that lung cancer is rarely found in patients under 40 years of age, and the incidence is increased over 50.1 is most common in ages 55-65 years,[7] with an average of 60 years.[1]

The most common religion of the patients was Islam, and the largest eyearsic group was Javanese, which is in line with conditions in Indonesia, where most of its inhabitants are Muslim and are Javanese. The patients were evenly distributed among levels of education, and almost 100% were married.

In accordance with literature, most patients suffered from adenocarcinoma.[7] All of the patients came at late stages, and older patients had a tendency to come at later stages. Literature states that most lung cancer is diagnosed as advanced local tumor or with metastasis. Early stages of lung cancer are hard to detect due to the absence of complaint. When complaints do manifest, they are most commonly associated with old age, or other diseases such as tuberculosis.[19]

Objective functional state evaluation by another person is often performed to obtain information on the influ-ence of the disease on the patient's physical condition. The Karnofsky Performance Status (KPS) is the most commonly used objective functional state evaluation.[20] Subjective QOL evaluation and objective functional patient level does not necessarily have to go hand in hand. Individuals with great functional limitations or those at terminal stages often report adequate satisfaction with their lives.11 This is demonstrated in Table 7.

The Quality of Life of the Small Group

QOL is a multi-dimensional concept that incorporates physical, social, psychological, and spiritual welfare. All dimensions are closely related and influence one another. Disturbance in the physical dimension would affect all other QOL aspects. The perception of QOL varies among individuals. For some people, social support from the family might be the most important thing, while for others, spiritual welfare might be the most important thing. QOL also varies within an individual from time to time.[21]

Patients who have been diagnosed with cancer would demonstrate the normal characteristic response. The first period is that of disbelief, denial, or hopelessness. The second phase consists of dysphoria, anxiety, depression, anorexia, insomnia, and irritability. Adaptation usually occurs after several weeks along with new information that the patient received, the patient's real-

Table 8. Statistical Analysis of the Correlation Between Subjective Quality of Life and Physical Complaint for the Small Group

Physical Complaint	Statistical Analysis	p value	
		At the time of diagnosis	During Reevaluation
Pain	Fisher	0.538	0.608
Difficulty Breathing	Fisher	0.500	0.502
Sleep Disturbance	Fisher	0.634	0.381
Nausea	Fisher	0.538	0.316
Sexual Problems	Fisher	0.075	0.002
Fatigue	Fisher	0.500	0.047

Table 9. Statistical Analysis of the Correlation Between Quality of Life and Radiation and Cisplatin Treatment

Type of Treatment	p value
Radiation Treatment	0.336
Cisplatin Treatment	0.309

ity, activity, and discovery of reasons to be optimistic.[22] Thus, it is assumed that the QOL at the time of the diagnosis should be lower than that during the reevaluation, after the patient has supposedly accepted his or her condition. In this study, this was proven, as seen by a statistically significant increase in QOL score from the time of the diagnosis to the reevaluation.

Higher stages of disease are associated by increased physical complaints and greater fear. These two things were expected to reduce the QOL as the disease moves into higher stages. This was in accordance with the percentages in Table 6. even though they were statistically insignificant. If more samples were to be obtained incorporating stages I-IV, this tendency should be more apparent.

Among various physical complaints, pain is the most commonly stated complaint in various literature, the most feared, and that which has the highest impact on QOL.[23] Moderate to severe pain is felt by one third of the patients during the time of the diagnosis and over two thirds of patients with advanced stages of cancer.[24] In this study, 17 subjects (70.8% from 24) had complaints of pain at the time of the diagnosis. Even though the percentage of pain was high, such complaint did not greatly burden the patient. This finding was strengthened by the fact that only few patients used analgesics. It seemed that the intensity of pain in these patients was not very great. In addition, it seemed that there are other factors aside from physical factors, such as social, psychological, and spiritual aspects that greatly determine QOL. This could also be the reason why no correlation was found between difficulty breathing/other physical complaints and QOL, aside from sexual factors and fatigue. If we assess all of the data (not revealed in this paper), it seemed that if a patient complains of sexual problems or fatigue, he or she also states many other physical complaints, including psychological and spiritual ones, thus reducing his or her overall QOL score.

Even though this study does not attempt to evaluate the influence of treatment intervention towards QOL, we also attempted to see its correlation with treatment. It turned out that neither cisplatin nor radiation played a role in increasing or reducing QOL. Surgical treatment was not evaluated, since only 2 patients underwent surgery.

While foreign literature found depression to be a common condition,[24] or even the most common condition in lung cancer patients,[25] such findings were not found in this study. No patient fulfilled the diagnostic criteria for depression, such as suffering from continuous sadness, ongoing irritability, hopelessness, feelings of punishment, etc. Complaints such as unspecific fear, fear of death, fear of madness, lack of attention, palpitation, chest pain, and other complaints of anxiety were not found. Nevertheless, the study subjects were found to

Table 10. Distribution of Subjective Quality of Life in Relation to the Psychological Aspect of the Patients in the Small Group

Psychological Aspect	Subjective Quality of Life						Statistical Analysis	p value
	Low - Moderate		High		Total			
	n	%	n	%	n	%		
At the Time of Diagnosis (n=24)								
Poor	*13	100.0	0	0.0	13	100.0		
Good	6	54.5	5	45.5	11	100.0	Fisher	0.01

Table 11. Distribution of Psychological, Social and Spiritual Scores During the Reevaluation in Relation to Psychological, Social and Spiritual Scores at the Time of Diagnosis

	Psychological Aspect 2			Social Aspect 2			Spiritual Aspect 2	
	Poor	Good		Poor	Good		Poor	Good
Psychological Aspect 1			Social Aspect 1			Spiritual Aspect 1		
Poor	0(0.0%)	11(100.0%)	Poor	1(25.0%)	3(75.0%)	Poor	0(0.0%)	8(100.0%)
Good	1(10.0%)	9(90.0%)	Good	1(5.9%)	16(94.1%)	Good	1(7.7%)	12 (92.3%)
McNemar Statistical Analysis,								
	p value=0.006			p value= 0.625			p value = 0.039	

undergo the same psychological response towards cancer as that stated in literature: fear was more greatly felt at the time of diagnosis compared to at this moment. Fear of the future also demonstrated improvements, as well as feelings of being a family burden. Psychological aspects demonstrated significant improvement from the time of diagnosis to the reevaluation.

During the interview, almost all patients were accompanied by the family, and it seemed that the family gave great support. This was admitted by the patients, as seen from answers to questionnaire questions that demonstrate social aspects both at the time of diagnosis as well as during the reevaluation.

Just as the psychological aspect, the spiritual aspect also demonstrated significant improvement from the time of diagnosis to the reevaluation. The diagnosis of lung cancer did not seem to cause psychological or spiritual problems that reduced the patient's subjective QOL score. The subjects in this study fully accepted their illness, became closer to God, as seen from the frequency of religious practice. No patient felt treated unfairly, and there was a reduction in worry and fear that burdened the patient.

CONCLUSION

At the time of the diagnosis, most patients had a poor-moderate subjective QOL, while during the reevaluation, there was a significant increment in the patient's QOL score. Psychological and spiritual aspects also demonstrated an improvement from the time of the diagnosis to the reevaluation. It seemed that these two things were the reason for the overall increment in QOL.

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