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Health Related Quality of Life in Patients with Lung Cancer in Morocco

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Abstract

Background: The Moroccan perspective on quality of life (QOL) in lung cancer has not been studied adequately in a country where the disease represents the leading cause of cancer among men.

Methods: Data on Health Related QoL were collected within a Moroccan multicenter prospective study in patients with lung cancer. We used the EORTC QLQ–C30 and the lung specific module (EORTC QLQ–LC13) to highlight the health-related QOL of Moroccan patients with lung cancer. We also assessed the socio-demographic and clinical variables that predict the scales of the QLQ–C30 and QLQ-LC13.

Results: The mean age of the 497 participants was 61.24 ± 10.55 years. The majority of patients (91.8%) were male and 76.9% had stages III and IV disease. Patients study reported an impaired HRQoL as compared to the normal population with an exception for social functioning, where the mean score was higher (77.7 *vs.* 71.3)). For the QLQ-LC13, Moroccan patients seemed to have more severe symptoms compared to the normal population especially for dyspnea, coughing and chest pain. Patients with low performance status and advanced stage disease had poorer HRQOL scores.

Conclusion: This was the first HRQoL study in lung cancer patients in Morocco. The combination of an advanced disease, aging and low performance status along with poor quality of life emphasizes the importance of supportive care in this group of patients.

Abbreviations: EORTC QLQ–C30: European Organization for Research and Treatment of Cancer Quality of Life Questionnaire C30; EORTC QLQ–LC13: European Organization for Research and Treatment of Cancer Quality of Life Questionnaire LC13; HRQoL: Health Related Quality of Life; LC: Lung Cancer; QOL: Quality of Life; SPSS: Statistical Package for the Social Sciences; SD: Standard Deviation; v2: Chi 2

Introduction

Lung cancer (LC) is the leading cause of cancer-associated mortality worldwide. In Morocco, according to the Metropolitan Casablanca Region's Register and Rabat Cancer Registry, lung cancer constitutes the leading cause of cancer in men [1,2]. The rate of incidence of lung cancer in women remains lower than that observed in other countries in Europe and North America. More than 70% of cases are diagnosed with stages III and IV. Thus, survival rate among this population remains poor.

Health–related QOL (HRQOL) is mainly attributed to the disease and its treatment, which consists of assessments of global wellbeing and functional health status [3].

The importance of HRQOL has increased in the last decade in the oncology field especially in lung cancer. According to a recent systematic review of HRQOL in non–small-cell lung cancer randomized controlled trials, the authors concluded to an increase in the number of studies involving HRQOL measurement and published in high-impact journals since 2002 in comparison with the period between 1980 and 2002 [4]. This interest is due to the short median overall survival of patients with metastatic disease despite recent therapeutic advances making it necessary to judge efficacy of drugs by their effects on both quantity and quality of life. Thus, HRQOL is currently considered as important end point in lung cancer clinical trials [5]. Furthermore, some studies reported that HRQOL in lung cancer patients is a significant indicator of survival. It has been hypothesized that HRQoL reflects severity of the disease that may not be apparent in the tumor burden. It is probably related to some tumor's factors production which affects general health perceived by the patients. This HRQOL association with tumor severity and survival emphasizes the need of its recognition by physicians to determine the therapeutic strategy [6].

In Morocco, based on the high incidence rate of lung cancer and in the light of above, the assessment of HRQOL for lung cancer patients is becoming increasingly essential. However, up to date, no quality of life study was carried out in the country. Thus, the aim of this study was to assess HRQL in a population of patients with newly diagnosed primary lung cancer. Data presented in this article, were obtained using the European Organization for Research and Treatment of Cancer (EORTC) QLQ-C30 (with QLQ-LC13 Lung Cancer Module) instruments.

EORTC QLQ was chosen because it has been found to be reliable and valid in diverse cultures including the United Arab Emirates [7], Iran [8] and Turkey [9]. Furthermore, a Moroccan translation of the questionnaire already exists, approved by the authors of the instrument.

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This study had two objectives: First, to determine the HRQOL scale scores for Moroccan patients with lung cancer and compare the results with the international data. The second objective was to examine the association between HRQOL and age, sex, performance status and disease stage. Thereafter, and according to the study results, health care of lung cancer patients in Morocco would be managed taking into consideration patients' quality of life baseline assessment.

Materials and Method

Settings

Data on HRQoL were collected in a Moroccan multicenter prospective study from consecutive patients presenting to these centers with lung cancer. Consent was obtained from all patients. For illiterate participants, assessments were based on private interviews by a physician who read out the questions and rated the responses. The study was approved by the Ethics Committee of Fez.

Patients

A total of 497 patients from 10 clinics in Morocco were included during the period of 2009 to 2011. To be eligible for inclusion, patients should be diagnosed with lung cancer within the last 3 months, be above 18 year old and signed an informed consent. Exclusion criteria were previous treatment for the current cancer and severe neuropsychiatric disorders. Clinical, biological and radiological data were collected from medical records of patients. No patient declined to participation.

Instruments

Patients' quality of life was assessed using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) [10], and the EORTC Lung Cancer Questionnaire (EORTC QLQ-LC13) [11,12]. The EORTC QLQ-C30 is a core cancer-specific questionnaire that contains five functional subscales (physical, role, cognitive, emotional and social), four symptoms scales (fatigue, pain, nausea and vomiting, lung cancer symptoms), and six single items (dyspnea, appetite loss, insomnia, constipation, diarrhea and financial difficulties). The QLQ-LC13 is a site-specific questionnaire consisting of 13 items on lung cancer symptoms (cough, haemoptysis, dyspnoea and site-specific pain) and treatment-related side-effects (sore mouth, dysphagia, peripheral neuropathy and alopecia).

Each item is measured on a 4-point response scale (not at all, a little, quite a bit, very much), with the exception of the two items measuring global health and quality of life, which are measured on a 7-point response scale. Scale and item scores were transformed to a 0 to 100 scale, as described in the EORTC scoring manual.

For the functional and global health/QL subscales, higher scores indicate a better level of functioning, whereas for the symptom scales, higher scores represent more symptoms.

Data collected from our sample were compared with those of the reference population provided by EORTC Quality of Life Group Members and other users of the QLQ-C30.

Data analysis

The statistical analyses were performed with the SPSS v. 17. Standard descriptive analyses (mean, standard deviation [SD], chi-squared [v2] and t-tests) were performed to assess patient's characteristics. All independent variables were entered simultaneously in the linear regression multivariate analyses. Statistical significance was defined as a two-tailed p-value <0.05 for all statistical tests.

Results

A total of 497 patients were included in the study. Four hundred fifty six patients (91.8%) were male. The mean age was 61, 24 ± 10.55 years. The majority (75.3%) indicated that they lived in a city and were married (89.7%). 47.1% were illiterate, 27.4% unemployed and 65.1% of them did not have health insurance. The distribution of disease stages of lung cancer showed that the majority had stage IV lung cancer (46.1%) while stages I and II constituted only 13.1% of all cases. Table 1 displays the demographic and clinical characteristics of participants.

HR QoL Measured with QLQ C30

Description of the HR QoL results with QLQ C30: Table 2 presents the mean scores of the functional and the symptom scales. Patients seemed to perform from poor to average on both Symptom Scales and Functional Health Status Scales. The mean score for the global health status for lung cancer patients was 46.36. The best functional outcomes were found for the cognitive (78.25) and social physical subscales (77.69) while the evaluations of the role functioning scored the lowest, the mean score was 42.22. In the Symptom Scale, fatigue and pain were the most pronounced symptoms (the respective mean scores were 61.05, 56.04), and the mean evaluation of the financial trouble aspect was 68.34.

Comparison to HRQoL in the population of reference: Mean scores for functioning and symptom measures at baseline are shown in Table 2.

Patients study reported an impaired HRQoL as compared to the

Characteristics	N (P)
Age (years)	
Mean ± dt	61.24 ± 10.55
<70	378 (76)
≥ 70	119 (24)
Sex	
Men	456 (91.8)
Women	41 (8.2)
Performance statuts (WHO)	
0-1	110 (24.60)
2	202 (45.20)
3-4	135 (30.20)
Stage	
I-II	65 (14.54)
III	153 (34.22)
IV	229 (51.23)
Educational level	
Up to elementary	125 (47.53)
Up to secondary	108 (41.06)
Up to university	30 (11.41)
Marital status	
Single	31 (6.2)
Married	446 (89,7)
Divorced/separated/widowed	20 (4.0)
Employment	
Employed	230 (46.3)
Unemployed	266 (53.7)

Table 1: Characteristics of patients with lung cancer, Morocco, 2009-2011.

population of reference with an exception for social functioning, where the mean score was higher (77.69 *vs.* 71.3). All the differences were statistically significant (p<0.05)

Associations with age, gender, cancer stage and performance status: Analysis was carried out to better define whether the HRQoL scores were related to age, gender, performance status or disease's stage. Analysis showed that gender was associated with dyspnea (the impairment of this symptom in the female patients was significantly higher than that observed in the male patients: 64.64 *vs.* 52.2; p=0.044). The age factor (>70 years) was associated with impairment of physical functioning (p=0.013) and financial difficulties (p=0.045). The disease's stage was related to global health status, physical, role, emotional and cognitive functioning, fatigue, pain, dyspnea, insomnia and anorexia (p<0.01 for all of these parameters).

Performance status was statistically related with all the parameters of EORTC QLQ-C30 except constipation, diarrhea and financial difficulties.

The estimates of the effects of the associations are reported in Tables 3 and 4.

HR QoL measured with QLQ LC13

HR QoL measured with EORTC QLQ-LC13: Table 5 presents the scale QLQ-LC13 description for patients with lung cancer. 438 subjects responded to at least one dimension of the specific scale. The mean score of the scale dimensions QLQ LC-13 ranged from 4.49 for "alopecia" to 52.71 for "dyspnea". The most pronounced symptoms were dyspnea, coughing, chest pain and soreness in the arm and shoulder with mean scores of 52.71, 50.91, 48.42 and 43.98 respectively.

Association with gender, age, cancer stage and performance status: Age of patients was not related with any parameter of EORTC QLQ-LC13. Gender was associated with alopecia (3.86 for men versus 12.12 for women; p=0.004). The cancer stage was associated with sore mouth (4.61 for stages I and II, 9.05 for stage III and 14.12 for stage IV; p=0.015) and dysphagia. Low performance status was statistically associated with dyspnea, cough, dysphagia, chest pain and shoulders and other body parts.

The estimates of the effects of the associations of age, gender, and performance status and cancer stage with EORTC QLQ-LC13 dimensions are reported in Table 6.

Discussion

Our study is the first study to evaluate the HR QoL in lung cancer patients in Morocco. We assessed HRQL in a large group of unselected population of patients with newly diagnosed primary lung cancer, most of them had an advanced tumor stage and only one third had good performance status at diagnosis.

Our results revealed a worse HRQoL among older lung cancer patients regarding physical functioning compared to younger patients. This contrasted with results found in other studies which indicated worse HRQoL among younger lung cancer patients [13]. On the other hand, financial difficulties were increased among younger patients. This highlights the need to provide supportive and social care for both young and older patients.

It is expected that advanced stage was associated with HRQoL especially global health status, physical functioning, fatigue, pain, dyspnea, insomnia, anorexia, sore mouth and dysphagia, since such symptoms are common in patients with locally advanced and metastatic disease.

Low Performance status was related to impairment in several domains of functioning and symptoms scales. This parameter is commonly used in clinical decision making. It is considered as an important indicator of HRQoL since it was associated with global health status and almost all functional scales and the prominent symptoms dyspnea, cough, dysphagia and pain.

Furthermore, gender was associated with certain aspects of HRQoL. For example, women had more alopecia and dyspnea than men. The association with alopecia might be related to the perception of this parameter by women. However it is difficult to explain the association between gender and dyspnea.

In addition, no significant relationship between the effect of lung cancer and gender was detected for the other domains and symptom scores. This may be due to the fact that males and females showed similar behavior even if various differences observed in females did not reach the level of statistical significance, probably due to the low number of female cases.

The majority of the studied HRQoL aspects were deteriorated compared to the reference population except for social functioning.

	Study patients N=497		Reference data N=3 332	
	Mean	**Dt**	**Mean**	**Dt**
Global health status	46,36	22,22	56.6	24.3
Physical Functioning	49,11	29,00	71.9	22.9
Role Functioning	42,22	35,54	61.5	33.9
Emotional functioning	53,05	29,13	68.9	24.4
Cognitive functioning	78,25	26,93	82.3	22
Social functioning	77,69	31,00	71.3	29.4
Fatigue	61,05	30,01	41.1	27.2
Nausea	15,46	25,96	10.8	19.7
Pain	56,04	33,66	29.7	30.7
Dyspnea	53,14	34,17	37.9	32.2
Insomnia	48,68	36,01	31.6	32.6
Appetite loss	48,68	36,98	28.1	33.5
Constipation	18,90	30,91	19.2	29.7
Diarrhea	7,99	21,68	7.4	17.9
Financial difficulties	68,34	35,58	17.4	28.9

Table 2: Comparison of QoL of the reference population and the QoL of patients with lung cancer, Morocco, 2009-2011.

	GHS	PF	RF	EF	CF	SF
Age						
<70	46,55	50,89	43,60	52,16	78,65	78,16
≥ 70	45,44	42,64	36,56	55,92	76,59	75,58
p (UA)	*	**	*	*	*	*
p (MA)	-	**	-	-	-	-
Sex						
Men	46,31	49,14	42,61	52,58	78,69	77,98
Women	46,96	48,68	37,37	58,83	72,72	73,95
p (UA)	*	*	*	*	*	*
p (MA)	-	-	-	-	-	-
PS						
0-1	56,11	64,85	61,63	61,87	87,57	87,26
2-4	43,64	44,56	36,36	50,52	75,89	74,85
p (UA)	***	***	***	***	***	***
p (MA)	***	***	***	**	**	**
Stage						
I-II	60,62	59,57	53,59	61,76	85,62	83,00
III	48,77	53,62	46,44	54,67	82,13	80,43
IV	40,13	42,52	35,02	48,47	72,85	73,89
p (UA)	***	***	***	***	***	*
p (MA)	**	***	**	*	**	-

GHS: Global Health Status; PF: Physical Functioning; RF: Role Functioning; EF: Emotional Functioning; CF: Cognitive Functioning; SF: Social Functioning; *: Not Significant, **: p<0.05, ***: p<0.001 UA: Univariate Analysis; MA: Multivariate Analysis

Table 3: Association of age, gender, performance status and stage withEORTC QLQ C30.

	F	N	P	Dy	I	AL	C	Di	FD
Age									
<70	60,35	15,68	55,00	53,07	48,03	48,13	18,92	8,11	70,11
≥ 70	63,74	14,98	59,93	53,74	51,17	50,84	18,85	7,74	61,95
P (UA)	*	*	*	*	*	*	*	*	**
P (MA)	-	-	-	-	-	-	-	-	*
Sex									
Men	60,93	15,11	56,16	52,20	48,85	47,95	18,38	7,66	68,71
Women	62,50	19,69	54,54	64,64	46,46	57,57	25,25	12,12	63.54
P (UA)	*	*	*	**	*	*	*	*	*
P (MA)	-	-	-	**	-	-	-	-	-
PS									
0-1	46,13	9,59	39,30	41,26	36,79	38,05	14,77	6,91	71,1
2-4	65,39	16,86	60,94	56,55	34,54	36,17	31,46	22,61	35,70
P (UA)	***	**	***	***	***	**	*	*	*
P (MA)	***	**	***	***		***	-	-	-
Stage									
I-II	46,62	7,84	41,17	42,66	37,90	32,02	14,37	4,57	67,34
III	59,17	15,70	53,95	52,41	47,82	50,00	17,14	8,87	68,13
IV	67,99	17,43	61,33	58,10	52,99	53,45	21,81	9,37	67,57
P (UA)	***	*	***	*	**	***	*	*	*
P (MA)	***	-	***	-	-	***	-	-	-

F: Fatigue; N: Nausea; P: Pain; Dy: Dyspnea; I: Insomnia; AL: Appetite Loss; C: Constipation; Di: Diarrhea; FD: Financial Difficulties
*: Not Significant, **: p<0.05, ***: p<0.001
UA: Univariate Analysis; MA: Multivariate Analysis

Table 4: Association of age, gender, performance status and stage withEORTC QLQ C30 (con't).

Dimension	N	Mean score	Standard derivation
Dyspnea	432	52,71	31,73
Coughing	438	50,91	35,77
Hemoptysis	437	24,10	29,15
Sore mouth	431	11,06	24,98
Dysphagia	436	11,69	25,54
Peripheral neuropathy	438	17,58	28,84
Alopecia	438	4,49	15,87
Chest pain	433	48,42	33,61
arm and shoulder soreness	432	43,98	35,03
Pain in other body parts	446	23,39	15,27

Table 5: Description of QoL measured with EORTC QLQ-LC13 among lung cancer patients, Morocco, 2009-2011.

	Dyspnea	Coughing	Haemoptysis	Sore mouth	Dysphagia	Peripheral Neuropathy	Alopecia	Pain in Chest	Pain in arm and shoulder	Pain in others parts
Age										
<70	51,66	49,90	23,83	11,41	10,97	17,06	4,43	46,64	42,61	23,25
≥ 70	55,89	54,42	24,82	10,06	14,43	19,72	4,76	54,08	48,26	23,66
P (UA)	*	*	*	*	*	*	*	*	*	*
P (MA)	-	-	-	-	-	-	-	-	-	-
Sex										
Men	52,28	50,45	24,83	10,69	11,46	17,20	3,86	48,29	43,58	23,38
Women	57,91	56,56	15,15	15,62	14,58	22,22	12,12	50,00	48,95	23,52
P (UA)	*	*	*	*	*	*	**	*	*	*
P (MA)	-	-	-	-	-	-	**	-	-	-
PS										
0-1	40,50	44,44	21,90	7,69	6,08	17,46	3,17	36,92	34,30	28,13
2-4	56,27	52,52	24,51	12,13	13,37	17,27	4,94	51,72	46,52	21,85
p (UA)	***	**	*	*	**	*	*	***	***	***
p (MA)	***	**	-	-	*	-	-	***	**	***
Stage										
I-II	53,83	52,94	21,56	4,61	6,86	19,11	3,43	49,50	46,26	25,12
III	51,64	50,17	29,74	9,05	8,24	13,82	6,02	43,11	39,78	21,05
IV	53,89	52,10	22,92	14,12	15,25	18,98	4,50	50,49	45,92	23,45
P (UA)	*	*	*	**	**	*	*	*	*	*
P (MA)	-	-	-	*	*	-	-	-	-	-

EORTC QLQ LC 13.
*: Not Significant, **: $p < 0.05$, ***: $p < 0.001$
UA: Univariate Analysis; MA: Multivariate Analysis

Table 6: Association of age, gender, performance status and stage with

We think that Mediterranean climate and socio-cultural aspects might sound on the perception of patients to social functioning.

The results of this study have certainly some implications for clinical and research practices. First, deterioration of HRQOL in Moroccan lung cancer patients comparatively to the reference population emphasizes the importance of providing more developed supportive care for this group of population. Secondly, the strong association between HRQOL and the most important determinants of the treatment decision (age of patients, performance status and the stage of the disease) suggests that baseline HRQOL should be evaluated and taken this into consideration before starting the treatment in all lung cancer patients. Otherwise, prospective studies are encouraged to evaluate the interest of treatment adaptation in patients with deteriorated HRQOL.

Some methodological limitations should be considered in this study; data from our study were not compared with Moroccan healthy individuals as it is plausible that communities may perceive or describe their QoL differently [14].

Conclusion

This was the first HR QoL study in Lung cancer patients in Morocco. HRQoL markedly deteriorated in those patients. In general, the majority of parameters were worse as compared to general population. An advanced disease, aging and low performance status was all associated with poor quality of life, emphasizing the importance of supportive care in this group of patients.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contribution

The work presented here was carried out in collaboration between all authors. NM and ZB participated in reviewing the scientific literature and contributed to the final version of the manuscript. HM, HE, AB and OE conceived of the study, and participated in its design and coordination and helped to draft the manuscript. SE and CN participated in the design of the study and performed the statistical analysis. All authors read and approved the final manuscript.

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