

Characterization of Lung Cancer: A 10-Year Experience from a Tertiary Hospital in Yaounde, Cameroon

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Abstract

The incidence rate of lung cancer in Africa is low. However, there are few studies reporting clinical characteristics of lung cancer in African countries. We did a study of lung cancer at the Medical Oncology Service of the Yaounde General Hospital, Cameroon, from January 1998 to December 2007. Out of the 2,355 cancer patients seen at this hospital over a 10-year period, 48 patients (28 men and 20 women) were diagnosed with lung cancer. The average age (SD) of patients was 53 (13) years and ranged from 25 to 80 years. Seven patients were cigarette smokers. The median duration from initial symptoms to visiting doctors was 5 months (interquartile range: 3-11 months). The most common histology types were squamous cell carcinomas (31, 65%), followed by adenocarcinomas (8, 17%), large cell carcinomas (4, 8%), small cell carcinomas (4, 8%), and fibrosarcoma (1, 2%). Of the 19 patients with stage classification, 8 had stage IV and 11 had stage III disease. Only 14 patients reported

having received treatment, including chemotherapy, radiotherapy, and/or surgery. In conclusion, lung cancer was uncommon in Yaounde, Cameroon, but most of patients presented with advanced stage due to long delay in seeking diagnosis. Less than half of the patients received chemotherapy, radiotherapy, or surgery.

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Key Words: Lung Cancer, Africa, Cameroon

Introduction

Lung cancer is one of most common malignancies and the leading cause of cancer-related mortality in the world.¹ There is a large international variation in lung cancer incidence rates, with a low of 2.0 cases per 100,000 person-years among women in Africa and 61.2 cases per 100,000 person-years among men in North America.¹ Lung cancer incidence started to decrease in the developed countries but it is increasing in the developing countries, especially in men.² During 1998-2002 in South Africa, lung cancer incidence was 5.8 cases per 100,000 person-years in men and 0.8 cases per 100,000 person-years in women.³ In Uganda, lung cancer incidence increased from 0.8 cases per 100,000 person-years in 1960s to 3.2 cases per 100,000 person-years in 1990s among males, and from 0.6 cases per 100,000 person-years in 1960s to 3.2 cases per 100,000 person-years in 1990s among females.⁴ Probably because of the low incidence rate of lung cancer in Africa, there are few studies reporting clinical characteristics of lung cancer in African countries. Here we describe the clinical characteristics of lung cancer diagnosed over 10 years at a central hospital in Yaounde, Cameroon.

Methods

This study was conducted at the Medical Oncology Department of the Yaounde General Hospital, at Yaounde, Cameroon. Yaounde is the capital of Cameroon, Central Africa and is the second largest city in Cameroon with a population of 1.2 million. Yaounde General Hospital is the most advanced hospital in Yaounde and serves as a referral hospital for the country. We conducted retrospective chart reviews from January 1998 to December 2007 in the Hospital. Only histologically confirmed lung cancer cases were included in the study. If there were recurrent lung cancer they were only counted once. Patients with secondary pulmonary metastasis of another cancer were excluded. For a subset of lung cancer patients, we developed a standardized

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form to collect demographics, symptoms, stage, histological type, treatment information, and limited follow-up data. For the other patients, diagnoses were made and then they were lost to follow-up so we only know their age and histological diagnosis.

Several platinum-based chemotherapy protocols were used at the Medical Oncology Department, including cisplatin plus etoposide, cisplatin plus vinorelbine, cisplatin plus vindesine, cisplatin plus doxorubicin, and cisplatin monotherapy. Radiotherapy based on telecobalt 60 was used as a palliative treatment for metastatic patients.

Data analysis was performed using Stata 11.0. The distributions of continuous variables were expressed as mean, standard deviation (SD), range, median and interquartile range. Proportions were calculated for categorical variables. The survival probability was determined using Kaplan-Meier method.

Results

Between 1998 and 2007, a total of 2,355 cancers were diagnosed at the Medical Oncology Department of the Yaounde General Hospital. Of them, only 48 patients had histologically confirmed lung cancers, representing 2% of all cancer cases. The average age of lung cancer patients was 53 years with standard deviation of 13 years (**Table**). The median age was 51 years, ranging from 25 to 80 years. There were 28 male patients (58%) and 20 female patients (42%). The most common histologic type was squamous cell carcinoma (31, 65%), followed by adenocarcinoma (8, 17%), large cell carcinoma (4, 8%), small cell carcinoma (4, 8%), and fibrosarcoma (1, 2%).

In a subset of 19 patients with stage classification, we also collected epidemiologic risk factors, stage, and treatment information. They were diagnosed throughout the 10 year period, and had similar distribution of age, sex, and histology type compared to the other 29 patients (data not shown). Because of the referral pattern, patients came from not only the Central region (8, 42%), where Yaounde is located, but also other regions (11, 58%), including West, Littoral, Northwest, and Adamaoua. The median lapse time from initial symptoms to the first consultation of physicians was 5 months (interquartile range: 3-11 months), ranging from 1 to 36 months. The most common symptom was cough (14, 74%), followed by dyspnea (5, 26%), chest pain (4, 21%), hemoptysis (2, 11%) and cervical lymphs (2, 11%). Seven patients had multiple symptoms. Of the 19 patients, 7 reported to be chronic smokers, including one woman. There were 3 men reported to be alcohol drinkers.

All the 19 patients were diagnosed at advanced stage, including 2 stage IIIa, 9 stage IIIb, and 8 stage IV. All except 3 patients had regional lymph node metastasis. Fourteen patients received some treatments at the hospital. Palliative chemotherapy was for all these 14 patients, including cisplatin plus etoposide (n=4), cisplatin plus doxorubicin (n=3), cisplatin plus vindesine (n=3), cisplatin plus vinorelbine (n=1), vindesine plus doxorubicin (n=1),

cisplatin (n=1), and etoposide (n=1). The treatment plan has been implemented in full in 7 patients only. We observed three cases of progression, 6 objective responses (4 partial responses, 1 major response, and 1 complete response). 5 patients were not evaluable because they were lost to follow-up after the first or second course of chemotherapy. The duration of responses for patients with objective response ranges from 3 to 24 months. Two patients received surgery; one stage IIIb patient with carcinomatous pleurisy received pleural decortication and another patient with stage IIIa disease underwent pneumectomy. There were also 2 patients who received radiotherapy. We observed that 6 patients died with a median survival time of 26 months, but the 13 patients who were alive at last seen were only followed for a median of 1.5 months (**Figure 1**).

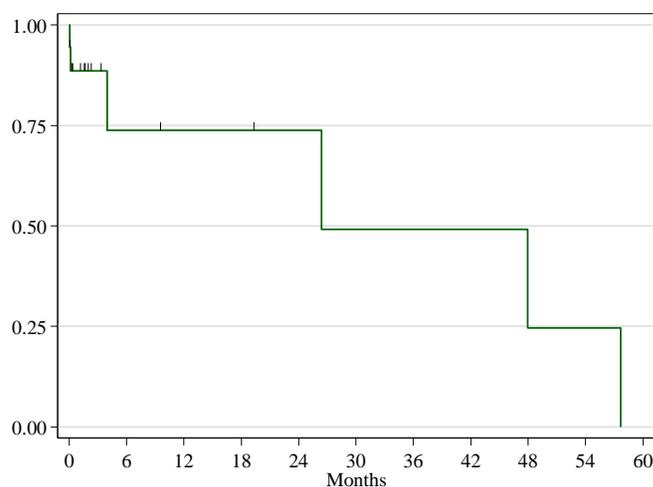


Figure 1. Kaplan-Meier Curve of Lung Cancer Survival in Cameroon.

Discussion

Over a 10-year period, we found that only 2% of all cancers at the Yaounde General Hospital were histologically confirmed lung cancers (48 patients). In contrast to Cameroon, the proportion of lung cancer among all malignancies was higher in the other two French-speaking West African countries: 8% in Senegal and 3.5% in Mali.^{5,6} It should be noted that this comparison of proportion of lung cancer cases across countries cannot fully represent incidence rate because the former does not take into account population age distribution and total cancer incidence rate. As the most advanced tertiary hospital in the country, the catchment area of Yaounde General Hospital is not well-defined, but it might serve several million residents in most of the 10 regions in the country. Unavoidably, there are issues of under reporting and under diagnosis. However, these data suggest that lung cancer remains a rare cancer in Cameroon. Reliable estimates of lung cancer burden are not available for most African countries. To our knowledge, there is no population-based study on lung cancer incidence or mortality in Cameroon.

We have to rely on data from other African countries to estimate the disease burden of lung cancer in Africa. According to WHO health report 2003 (<http://www.who.int/whr/2003/en>), there were 17,000 lung cancer deaths in Sub-Saharan Africa. Another study, which used data from Ethiopia, estimated the annual number of lung cancer death to be 44,076 in 2005.⁷

The average age at lung cancer diagnosis of our series is 53 years (median, 51 years), which is lower than 59 years old reported in Senegal⁶ but higher than 45 years observed in Mali.⁵ The median age at diagnosis of lung cancer was 70 years old in the United States.⁸ These differences may be due to variation in expected life expectancy across countries.

Cigarette smoking is the major risk factor for lung cancer and contributes the majority of international variation in lung cancer incidence. It has been estimated that 80% of lung cancer deaths among men and 75% of lung cancer deaths among women are attributable to smoking.⁹ A study in Ethiopia estimated that the risk of lung cancer attributable to smoking was 39% among men and 3% in women.⁷ In our study, 7 patients were smokers and only one was a woman, which is consistent with the study in Ethiopia.

Tobacco causes all histological subtypes of lung cancer. There is a shift in the distribution of histological subtypes of lung cancer in many parts of world. In the United States, squamous cell carcinomas were more than twice as many as adenocarcinomas in men while adenocarcinoma was slightly more common in women in 1973-1977. Adenocarcinoma has become the most common subtype in the last two decades in the US, accounting for about 30% of all lung cancers.⁸ We found 65% of lung cancers in our series in Cameroon were squamous cell carcinoma, which is consistent with that observed in Senegal,⁶ but much higher than in the United States.⁸ This variation in the composition of histological subtypes might reflect the difference in the type of cigarette smoked and exposure to other risk factors such as indoor and outdoor air pollution.

The median period from initial symptoms to seeing doctors was 5 months, similar to 4 months reported in the Senegal study.⁶ This delay could explain the preponderance of advanced stages (IIIb and IV) in our series. Indeed, the initial chest symptoms of lung cancer are often attributed to pneumonia, tuberculosis or influenza-like illness, and thus delay the correct diagnosis in Cameroon. Because of poverty in the population, routine health examination is not common.

In Cameroon, chemotherapy is the palliative treatment modality most often given to lung cancer in advanced stages. Due to high costs of treatment, patients often cannot finish the treatment plan. Despite this, we observed partial or complete responses in several patients and were able to control the disease for several months. One limitation of this study is that we have not followed patients long enough to understand long term outcome, such as 5-year survival. The median survival time of 26 months is not a reliable estimate and should be interpreted with caution. Another limitation is

missing data in retrospective chart reviews. Although most characteristics of the 19 patients with complete data are representative of the 48 patients, the 29 patients without complete data are less likely to receive treatment (This is the reason why we did not present percentage of treatment in the **Table 1**). A prospective study is warranted to assess long term survival rate and the effect of treatment in lung cancer patients in Cameroon.

Table 1. Characteristics of the 48 lung cancer patients in Yaoundé, Cameroon.

Characteristic	Statistic*
Age, years	
25-34	5 (10%)
35-44	6 (13%)
45-54	16 (33%)
55-64	9 (19%)
65+	12 (25%)
Mean \pm SD	53 \pm 13
Male	28 (58%)
Female	20 (42%)
Histological types	
Squamous cell carcinoma	31 (65%)
Adenocarcinoma	8 (17%)
Large cell carcinoma	4 (8%)
Small cell carcinoma	4 (8%)
Fibrosarcoma	1 (2%)
Region	
Central	8 (42%)
West	6 (32%)
Littoral	2 (11%)
Adamoua	2 (11%)
Northwest	1 (5%)
Months from initial symptoms to diagnosis, Median (IQR)	5 (3-11)
Symptom	
Cough	14 (74%)
Dyspnea	5 (26%)
Chest pain	4 (21%)
Hemoptysis	2 (11%)
Cervical lymphs	2 (11%)
Cigarette smokers	7 (37%)
Alcohol drinkers	3 (16%)
Lung cancer stage	
IIIa	2 (11%)
IIIb	9 (47%)
IV	8 (42%)
Treatment	
Chemotherapy	14
Surgery	2
Radiotherapy	2

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