

## Peculiarities of lung cancer seen at the Tertiary hospital of Pneumology Befelatanana, Antananarivo, Madagascar

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### ABSTRACT

**Introduction:** Bronchopulmonary cancers are a major public health problem. It is the leading cause of cancer death worldwide. Our goal is to evaluate the peculiarities of bronchopulmonary cancers seen at the tertiary hospital of Pneumology of Befelatanana.

**Material and methods:** This is a retrospective, descriptive study of bronchopulmonary cancers diagnosed at the tertiary hospital of Pneumology Befelatanana during the period from 1st January 2011 to 31<sup>st</sup> December, 2015 (5 years). We included in the study all inpatients during the study period who were diagnosed with bronchopulmonary cancer with histopathological evidence.

**Results:** During the period of our study, we found 43 patients with histologically confirmed bronchopulmonary cancer, representing 0.64% of hospitalized patients. The average age was 58 years old with an extreme ranging from 36 years old to 74 years old. We found a male predominance with a sex ratio 1.38. Tabaco smoking was found in 29 (32.55%) cases with a male predominance ie 22 (75.87%) male patients versus 7 (24.13%) female smoking patients ( P = 0.001). The histological type was dominated by adenocarcinoma, found in 19 cases (44.18%), followed by squamous cell carcinoma, found in 14 cases (32.56%). The diagnosis was made in 76.74% of cases in stage IV according to the TNM classification.

**Conclusion:** The prevalence of bronchopulmonary cancer seen at the USFR Befelatanana Pneumology is 0.64%. It is necessary to create a common database that collects data throughout Madagascar in order to know the exact prevalence of this pathology in our country.

**Key words:** Lung cancer–Antananarivo–Madagascar

### 1 INTRODUCTION

Bronchopulmonary cancers are a major health problem because of its frequency and poor prognosis. It represent the

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leading causes of cancer deaths worldwide (Quoix E et al.,2011). In 2008, more than 1.6 million people were newly diagnosed with lung cancer and 1.4 million were dying, accounting for 18% of all cancer deaths (Jemal A et al., 2011).

They are also the leading cause of cancer deaths in France (Mathers CD et al., 2002). As for Madagascar, the exact prevalence is not yet available due to the absence of a national cancer registry (Hasiniatsy NRE et al.,2017). But bronchopulmonary cancer ranks eighth among cancers in terms of frequency and represents 2.97% of new cases of cancer encountered in the oncology department of Joseph Ravoahangy Hospital Center Andrianavalona (HJRA) Antananarivo Madagascar (Ranaivomanana AHM et al.,2010. Refeno V et al.,2015)

The objective of our study is to evaluate the peculiarities of bronchopulmonary cancers seen at the Unit of Care, Training and Research (USFR) in Pneumology of Befelatanana. The USFR of Pneumology of Befelatanana is the national reference center in Pneumology in Madagascar.

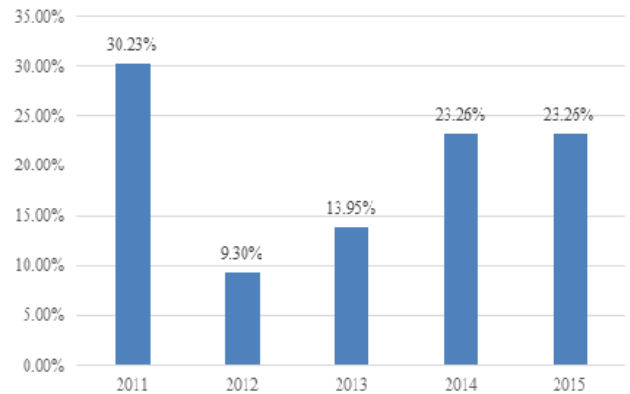
**2 MATERIALS AND METHODS**

This is a retrospective, descriptive study of bronchopulmonary cancers diagnosed at the Befelatanana Respiratory Care and Training Unit during the period from 1<sup>st</sup> January 2011 to 31<sup>st</sup> December 2015 (5 years). We included in the study all records of hospitalized patients during the study period and diagnosed with bronchopulmonary cancers with histopathological evidence. The first step in the study was the establishment of the study protocol and the data collection sheet. Then the register of the hospitalized patients were consulted. An inventory of the files with diagnosis of broncho-pulmonary cancer was performed, followed by the filling in of the collection form and the data entry on the EXCEL® 2013 software. The data was then analyzed on the EPI INFO 7 software.

**3 RESULTS**

During the period of our study, 6715 patients were hospitalized and 43 patients met the inclusion criteria, ie 0.64% of hospitalized patients with an average of 8.6 cases per year. Figure 1 shows the distribution of these bronchopulmonary cancers by year. The average age was 58 years old with an extreme ranging from 36 years old to 74 years old. We found a male predominance with 25 cases (58.13%) of males and 18 cases (41.87%) of females giving a sex ratio of 1.38. Tabaco smoking was found in 29 (67.44%) cases with a male predominance ie 22 (75.87%) smoking patients were male versus 7 (24.13%) female smoking patients, P = 0.001 (Table 1). In terms of imaging, 42 (97.67%) patients underwent chest CT, 37 (86.04%) patients underwent bronchial fibroscopy, 12 (27.9%) patients underwent trans-parietal biopsy. Pathologically, adenocarcinoma was found in 19 cases (44.18%), followed by squamous cell carcinoma, which was found in 14 cases (32.56%) (Figure 2) .76.74%

of patients were diagnosed at stage IV of the TNM classification, only 11.63% were diagnosed at stage II. No patients were observed in stage I (Table 2).



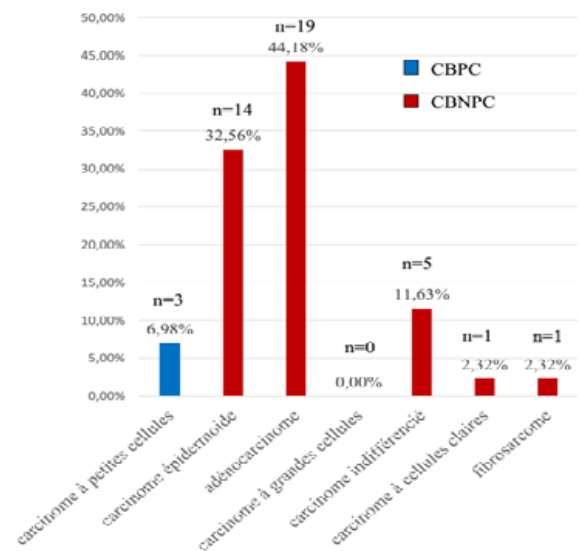
**Figure 1. Distribution of bronchopulmonary cancers confirmed histologically according to diagnosis year**

**Table 1. Gender Distribution by Smoking**

Genre	Tabagisme n (%)	
Masculin	25 (75,87)	0,001
Féminin	18 (24,13)	

**Table 2. Distribution of cancer stages at the time of diagnosis**

Stade cancer	Effectif n = 43	Pourcentage (%)
I	0	00
II	5	11,63
IIIa	3	6,98
IIIb	2	4,65
IV	33	76,74



**Figure 2. Distribution of the pathological type of lung cancer**

#### 4 DISCUSSION

During the study period, 43 cases of histologically confirmed bronchopulmonary cancer were identified in the Befelatanana Department of Pneumology, ie 0.64% of hospitalized patients. This confirmed number of cases remains low compared to the global prevalence of lung cancer around the world. But this data does not represent the prevalence of bronchopulmonary cancer in Madagascar. Compared with a study carried out in the same department, there is a decrease in the prevalence of lung cancer (Tiaray HM., 2007). This is due to the fact that some of the patients are currently being followed externally and not registered in the inpatient registers.

The average age of our patients was 58 years old with an extreme ranging from 36 years old to 74 years old. This young age is also found in Africa, as found by Ouazzani et al in Morocco, which reports a similar result to our study, the average age at diagnosis was  $59 \pm 11.8$  years with extremes ranging from 27 at 84 years old with male predominance (Ouazzani HE et al., 2010). Compared to the developed country, our patients were younger at the time of diagnosis. Mohan PD et al in the United Kingdom found an average age of 71 years with an extreme age of 31 years to 89 years with a male predominance (70.5% male and 29.5% female sex) (Mohan PD et al.,2007). This is probably related to a longer life expectancy in developed countries but also to early tabaco smoking in our country.

Regarding gender, 58.13% of cases were male and 41.87% were female with a sex ratio of 1.38. This male predominance is linked to higher smoking in men in our country. Smoking was found in 29 (67.44%) cases with male predominance, 14 (32.55%) patients were non-smoking. By contrast, in developing countries, since the end of the 1980s, there has been a very significant increase in the incidence of this cancer in women. This phenomenon is directly related to changes in lifestyle in recent years whose links with tobacco were clearly defined (Parkin DM et al.,2005). Tabaco smoking is the known and proven risk factor for bronchopulmonary cancer, which explains why the majority of cancer patients are smokers. Nevertheless, bronchopulmonary cancer in non-smokers is not uncommon. The global statistic estimates that 15% of bronchopulmonary cancers in men and more than 53% of bronchopulmonary cancers in women are not attributed to smoking (Couraud S et al.,2013). In non-smokers, the occurrence of bronchopulmonary cancers is most likely related to inhaled toxicants, occupational pollutants, household pollutants, air pollutants and personal and family history, lifestyle (Couraud S et al.,2013. Yang P.,2011)

Our patients were diagnosed at stage IV in 76.74%, 6.97% were diagnosed at stage IIIa, 4.65% at stage IIIb and 11.63% at stage II. None of our patients were observed in stage I. The diagnosis of cancer is usually late, most are diagnosed

at an advanced stage. A pulmonary nodule will take a long time to develop and most of the time develops outside the lung to become symptomatic. In general, of the 100 patients who have lung cancer, 80 will be inoperable at the time of diagnosis and only about 20 will be candidates for surgical resection (Stephen GS et al.,2007).

In our study populations, the histological type was dominated by adenocarcinoma observed in 44.18% of cases followed by squamous cell carcinoma (32.56%), undifferentiated carcinoma (11.63%) and small carcinoma. cells (6.98%).

Currently, adenocarcinoma is the most common histological type of bronchopulmonary cancer (Vincent RG et al.,1997). A study carried out in France (Toulouse) found the same proportion for the histological type of bronchopulmonary cancers, that is to say a predominance of adenocarcinomas (56.8%) and squamous cell carcinomas (21.6%) (Marianne B et al.,2006).

#### 5 CONCLUSION

The prevalence of bronchopulmonary cancer seen at the USFR Befelatanana Pneumology is 0.64%. It is necessary to create a common database that collects data in all of Madagascar in order to know the exact prevalence of this pathology in our country.

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