

Anatomopathological Aspects Of Pleuropulmonary Cancers At The Pasteur Centre In The City Of Yaoundé, Cameroon

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Abstract

Background:

Pleuro-pulmonary cancer is one of the most frequent cancers and the most frequent cause of mortality by cancer in the world. A limited number of studies have been done in our context on this pathology.

Objectives:

We carried out this study with the aim of establishing the anatomopathological characteristics of pleuropulmonary cancers at the Pasteur Centre in Yaoundé, Cameroon.

Materials and Methods:

A ten-year retrospective study was done and we collected all records of anatomic pathologies and some of the analysis was done using immunohistochemistry.

Results

We analyzed 254 cases of pleuropulmonary cancers among which; 126 cases were pulmonary bronchus cancers and 128 cases was pleura cancer.

The average age for pulmonary bronchus cancer was 55 with a sex ratio of 1/3 in favor of male sex and the most common histological type was squamous cell carcinoma (37%).

Pleural cancers were dominated by secondary tumors (90%). The average age was 56.3.

Adenocarcinoma was the most frequent histological type and the most predominant in females. The diagnostic method used in 2.7% of cases was Immunohistochemistry.

Conclusion

Pleura-pulmonary cancer is dominated by primitive tumors; squamous cells carcinoma was the most frequent pulmonary bronchus cancer, while secondary tumors remain the most frequent pleura cancer. Immunohistochemistry was the diagnostic method used.

Keywords—*Pleuro-pulmonary cancer , Anatomopathological aspects, pleuropulmonary cancers, pulmonary bronchus cancers, squamous cell carcinoma, Adenocarcinoma, immunohistochemistry*

I. INTRODUCTION

Lung cancer has a reasonably negative connotation. Indeed, despite therapeutic progress, it remains encumbered of a consistent mortality with an incidence of a million of new cases a year and a million of deaths per year. This cancer, with all the histopathological stages combined, is the leading cause of death from neoplasia, with a five year survival of 14% [1].

In Africa, some studies dwelled on the epidemiological and clinical aspects of broncho-pulmonary cancers. In Tunisia, an epidemiological study evaluated the bronchia cancers mortality due to tobacco consumption and according to cancer records files in Northern Tunisia, the mortality rate is 92% for men and 37% for women [2].

Passive or active smoking is the main risk factor of broncho-pulmonary cancer, other factors especially exposure to atmospheric carcinogens are suspected. More recent data's

point to the influence of genetic factors in the occurrence of more broncho-pulmonary cancers [3].

Considering these new factors that influence broncho-pulmonary cancers, we conducted a research whose goal is to highlight the anatomopathological particularities of pleuropulmonary cancers at the Pasteur Centre in Yaoundé, Cameroon.

II. METHODOLOGY

We conducted a retrospective and descriptive study over a period of 10 years from January 2004 to December 2013. The study took place at the Pasteur Centre in Cameroon. Based on files, we identified all cases diagnosed as pleuropulmonary cancers during this period. Macromolecular parts were chosen, slided and colored with eosin haematin. The colored slides have been examined over to confirm the results. Some doubtful results benefited from the immunohistochemical analysis. It is a biological technique that combines physiology, immunology and biochemistry. It is based on the antigen-antibody binding reaction. It is a method that visualizes the localization of a specific antigen or cellular components in separated or grouped tissues.

Normally, a primary antibody binds to a specific antigen. The antigen-antibody complex is formed by incubation. A secondary antibody is coupled to an enzyme with a chromogenic substrate.

III. RESULTS

During the research period, we identified 254 cases thus 135 men and 119 women with a gender ratio of 1.13 in favor of men.

The most represented age range was 50 to 60 years (28%) with extremes from 19 to 89.

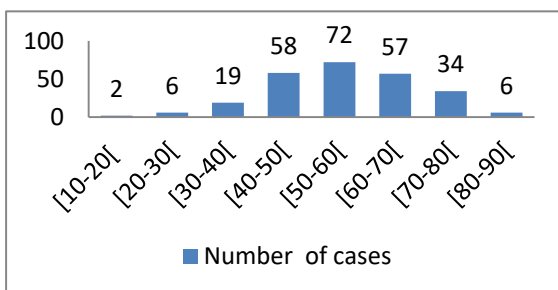


Figure 1: Pleuropulmonary cancers age range variation

In our series, pleural biopsies were the highest with 50.4% of sample. Broncho-pulmonary samples represented 48.8% of cases. We have noticed a slight predominance of primary tumors 53.5% as compared to secondary tumors 46.45%

Table 1: Frequency distribution of the different sample types.

Sample type	Frequency	Rate
Cytopuncture	2	0,8%
Pleural biopsy	128	50,4%
Bronchial biopsy	124	48,8%
Operative parts	0	0
total	254	100

Table 2; Frequency distribution of the different tumors types

	Primitive cancers	Secondary cancers	Total
Enrolment	136	118	254
percentage	54.3%	45.7%	100

Adenocarcinoma was the most frequently represented histological type with 32.3%, followed by undifferentiated carcinoma 21.6% and epidermoid carcinoma 20.8%.

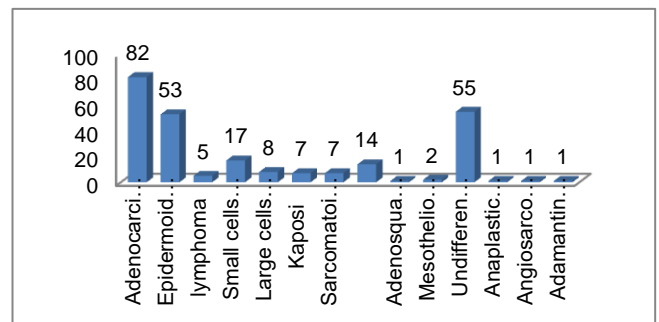


Figure 2: Histological types of pleuropulmonary cancers

Concerning bronchopulmonary cancers, we had an enrolment of 126 cases with a clear predominance of male and a sex ratio of 1.7.

The most represented histological type of broncho pulmonary cancers was epidermoid carcinoma (37%) followed by adenocarcinoma (26%).

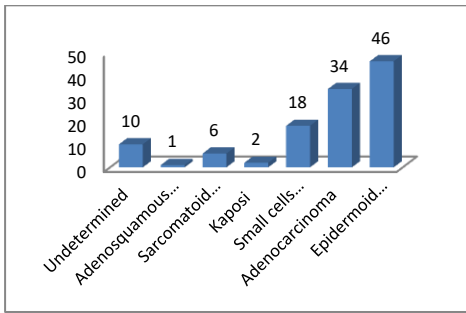


Figure 3: Division of histological types of bronchopulmonary cancers

The epidermoid carcinoma was prevalent between 60 to 70 years old patient (31.9%) and adenocarcinoma between 40 to 50 years old patients (37.2%).

Age	Epidermoid Carcinoma	Adenocarcinoma	Small cell Carcinome a	Big cell Carcinome a	Carcino sarcoma	kaposi	Caradeno squameux
10-20	0	1	0	1	0	0	0
20-30	1	1	1	0	0	0	0
30-40	4	0	0	2	2	2	0
40-50	12	12	2	1	0	0	0
50-60	12	9	8	1	1	1	0
60-70	15	5	3	2	4	0	1
70-80	3	4	3	0	0	0	0
80-90	0	1	0	1	0	0	0
total	47	33	17	8	8	3	1

Table 3: Variations of broncho-pulmonary cancers according to age range

The epidermoid carcinoma was mostly noticed among male patients of bronchopulmonary cancers (68.1%). We did not observe any great difference as far as adenocarcinoma was concerned.

Sex	Epidermoide Carcinoma	Adeno carcinoma	Small cell Carcinoma	Big cell Carcinoma	Carcino sarcoma	kaposi	Adeno squameuse carcinoma	Indetermine Carcinoma
Male	32	17	10	4	4	3	1	6
Female	15	16	7	4	3	0	0	4
total	47	33	17	8	7	3	1	10

Table 4: Variations of carcinoma according to sex

Concerning the pleural cancers, the majority of the tumors were secondary (90.6%) and 9.4% were primary tumors.

Origin	Primitive	Secondary
effective	12	116
pourcentage	9,4	90,6%

Table 5: Frequency distribution of pleural cancers

Following the histologic type, pleural samples were dominated by undifferentiated carcinoma (42.9%) and adenocarcinoma (38.2%). Pleural carcinoma was found in 69.4% of cases on female patients. In our series, an immunohistochemistry helped to identify the histologic type

in 2.7% of cases. We have found 7 diagnosed tumors by immunohistochemistry among which 3 breast tumors, 1 pulmonary tumor and 3 lymphomas

IV. DISCUSSION

The objective of our study was to highlight the epidemiological profile of pleuropulmonary cancers. This study revealed 57.08% of men and 46.8% of women. The results are close to those of Mbassi *et.al* [4] who also found 58% of men yet clearly below those of Alaoui 90.7% [5] and Oukabli in Morrocco 93% [6] as well as Kwaban's [7] which were 93% of male patients. These results could remind us of the emancipation of the Cameroonian woman. Nevertheless, they could have been biased by the

considerable rate of metastatic tumor of gynecological origins for women.

Concerning bronchopulmonary tumors, 63% of male patient's cases were found with a 1.7 sex ratio.

For pleural tumors, a female predominance with 55.5% of cases was noticed. These results are similar to those of Cellierin in France with 58.9% of women [8]. The great rate of pleural metastasis of gynecological cancers can justify this light female predominance.

The most represented age range was that of 50 to 60 years equivalent to 28.3%. In Cameroon Mbassi and Kwaban got similar results with 53 and 52.3 years of age range respectively. Niang in Senegal found an age range average of 59 and 65 years in France [9]. These results differed from those in the United States and in America with 70 years age average. This difference is linked to the modifications of smoking habits. North Americans, far before the French, used cigarettes with blond tobacco with a more acidic pH and they used lower tar content filters [10].

In our series, 98.5% of diagnoses were done through biopsy and we have not found any operative parts. These results are similar to Niang, who found 57.9% of biopsy and 32% of scano-guided punctures. Yet Alaoui found 46.7% of bronchial biopsies and 17.5% of operative parts in Morocco. These figures highlight the weak development of diagnostic techniques in our context.

During our study, we noticed that the tumor pathology was dominated by primitive tumors (54.3%). Our study also revealed that secondary tumors represented 46.45%. This effect was even more marked when analysis were made on pleural tumors in which 90.6% of them were secondary. These data can be explained by the delay in taking care of patients. The histological type of pleuropulmonary cancers was dominated by adenocarcinomas (32.3%). But a more detailed analysis of bronchopulmonary cancers revealed that the most frequent of all the cases was epidermoid carcinoma (37%).

In Sub-Saharan Africa, the histological types of bronchopulmonary cancer remain dominated by the epidermoid carcinoma. Mbassi found 65% of epidermoid carcinomas and Nyang 40%. For the few past years now, we noticed predominance of adenocarcinomas in developed countries. Boyle [11] In France has indeed found in 2008 37% of adenocarcinomas against 32.6% of epidermoid carcinomas. These data can be explained by the consumption of the best quality tobacco and a better control

of the exposition to risky factors (atmospheric carcinogens and pollution). The use of filter built cigarettes would facilitate a deep inhalation, taking tobacco smoke deep into the periphery, where adenocarcinoma develop.

At the level of pleura, the most found histologic type in our series was undifferentiated carcinomas (43%), followed by adenocarcinomas (38.3%). The malignant mesothelium was found in 1.6% of cases. These results differ from those of the literature which revealed a predominance of adenocarcinomas. These divergences can be explained by the low development of technical diagnosis in our context precisely, the immunohistochemistry techniques. Some less differentiated carcinomas could have been real adenocarcinomas or lymphomas after immunohistochemistry. Immunohistochemistry techniques were indeed used only in 2.7% of cases.

Concerning the variations of histologic types of bronchopulmonary cancers according to gender, there is a clear predominance of male in epidermoid carcinomas. These results are in conformity with those of a French study which found a frequency twice bigger among men than among women. This result reflects the higher frequency of male among the smoking population.

Conclusion

At the end of our study, we can conclude that pleuropulmonary cancers were dominated by primitive tumors (53.5%). Bronchopulmonary cancers occurred more frequently among men at a relatively young age with an average of 55 years and the most frequent histological type was the epidermoid carcinoma. Among pleural tumors, secondary tumors were the most frequent with a female predominance (55.5%) and that undifferentiated tumors was predominant. Immunohistochemistry remained the less-used technique in our context.

Considering these results; we recommend that the ministry of public health, sensitize the population on the risk factors and the different carcinogens involved in the genesis of pleuropulmonary cancers and the provision of technical platforms integrating the immunohistochemistry techniques and to the Faculty of Medicine, we recommend the popularization of immunohistochemistry techniques in their teachings.

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