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Epidemioclinical, etiological and evolutionary aspects of neoplastic pleurisy in the pneumo-phtisiology department of the University Hospital Sylvanus Olympio of Lomé (TOGO)

Abstract

Introduction: Cancers are increasingly incriminated in the occurrence of pleurisy in sub-Saharan Africa. Our work aimed to describe the epidemioclinical, etiological and evolutionary aspects of neoplastic pleurisy (NP).

Methodology: A documentary review of NP cases supported from January 1st, 2007 to December 31st, 2016, in the pneumo-phtisiology department of Sylvanus Olympio University Hospital in Lomé, was made. Cases of histologically confirmed NP or occurring in a known cancer context with no other identified etiology were retained.

Results: We identified 117 cases. The predominance was female with a sex ratio (M/F) of 0.38. The average age of cases was 56±14 years. The symptoms were dyspnea (78.6%) and chest pain (58.1%). Weight loss was found in 41.9% of cases. The pleurisy was predominantly unilateral (94.9%) and of medium abundance (52.1%). Pleural fluid was sero-hematic or even hematic in 58% of cases. Adenocarcinoma was the most diagnosed histological type (62.8%). The primary tumor was found in 60.7% of cases. It was neo-bronchopulmonary in men (15.6%) or breast cancer in women (56.5%). The treatment consisted of iterative pleural punctures (70.9%) and medical pleurodesis (25.6%). The hospital death rate was 33.3% with a median survival of 84 days.

Conclusion: The PN are the prerogative of the subject in his fifties. Mostly secondary to breast cancer, PN are grafted with heavy mortality.

Keywords: neoplastic pleurisy, epidemiology, clinical, etiology, evolution

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Introduction

Neoplastic pleurisy (NP) is defined by the presence of tumor cells in the pleural fluid or pleural tissue.[1] They are due either to a primary lesion of the pleura (mesothelioma) or to a secondary location of a bronchopulmonary or extrathoracic tumor. In sub-Saharan Africa, with better explorations (pleural biopsy) in the case of exudative pleurisy and histopathological examination of pleural fragments, we have been witnessing an increase in the proportion of cancer etiologies in recent years.

Several African series have shown a high frequency of NPs of the order of 14 to 18%.[2–4] The limitation of resources, both human and material, makes it difficult to manage neoplastic pleurisy in developing countries. Our work aimed to describe the epidemiological, clinical, etiological and evolutionary aspects of NP in the pulmonology department of the University Hospital Center (UHC) Sylvanus Olympio in Lom.

Materials and methods

This was a retrospective study that covered the decade from January 1st, 2007 to December 31st, 2016. A documentary review of medical records of NP cases, taken care of during the defined period, was done. Included in the study were all cases of NP confirmed by cytohistopathological examination of the fluid and / or pleural tissue on the one hand, and on the other hand cases of labeled pleurisy of neoplastic origin, after exclusion of other etiologies. Because of the presence of a confirmed known cancer. When a pleurodesis was performed, the results were defined, according to the recommendations of the American thorax society, as follows:[5]

i. The response is complete when the chest radiograph check returns normal or subnormal without fluid recurrence throughout the life of the patient.

ii. The partial response corresponds to the persistence of a small amount of fluid in the pleural cavity (less than 50% of the initial quantity) that does not require a subsequent puncture during the entire lifetime of the patient.

iii. Failure is defined by the radiographic persistence of a pleural effusion associated or not with clinical symptoms requiring evacuating pleural puncture.

The data was analyzed using the EPI INFO software version 3.5.2. The comparison of categorical data was made using the Chi-square test with a significance level of 0.05. The Kaplan-Meier method was used for calculating survival by taking as time (expressed in days), the time between the date of diagnosis of pleurisy and the status (deceased or alive) at the time of end of the study. The factors influencing survival were analyzed using a proportional risk model based on the Cox model.

Results

Epidemiological aspects

The size of our sample was 117 cases. The average age of cases was 56±14 years with extremes of 21 and 90 years. The most represented age group was 40 to 50 years old with a proportion of 28.2%. The predominance was female with a sex ratio of 0.38. The unconventional sector was the most represented (45.3%) (Table 1). High blood pressure (21.4%) and smoking intoxication (5.1%) were the most common antecedents. Fifty-four (46.1%) patients had pre-existing cancer at the time of diagnosis of pleurisy.

Table 1 Sociodemographic characteristics of patients

Variables	Number (N)	Pourcentage (%)
Sex		
Female	85	72.6
Male	32	27.4
Age group (years)		
<30	1	0.8
30-40	10	8.6
40-50	33	28.2
50-60	23	19.7
60-70	29	24.8
70-80	15	12.8
80- 90	5	4.3
>90	1	0.8
Professional Categories		
Conventional Area*	30	25.6
Unconventional sector**	53	45.3
Housewife	25	21.4
Peasant	9	7.7
Origin		
Lomé	98	83.8
Other cities	19	16.2

*Public/private sector workers

**Self employed

Clinical aspects

The average consultation time was 64±58 days with extremes of 5 and 240 days. The functional respiratory signs were dyspnea (78.6%), cough (58.1%), chest pain (58.1%) and hemoptysis (4.3%). As a general sign, weight loss (41.9%), asthenia (39.3%), anorexia (25.6%), fever (8.5%) and clinical anemia (7.7%) were noticed.

On chest x-ray, pleurisy was unilateral (94.9%); they were of great abundance in 61 (52.1%) cases, of average abundance in 52 (44.5%) cases. The pleural fluid was yellow citrine in 42% of cases, sero-hematic or even hematic in 58%.

Cytology noted the presence of malignant cells in 4/10 pleural fluid samples. Pleural biopsy, performed in 98 patients, was contributory in 71.5% (Table 2). The histological type found was adenocarcinoma (63%), undifferentiated carcinoma (22%), squamous cell carcinoma (10%) and small cell carcinoma (5%).

Table 2 Profitability of pleural exploration examinations according to the antecedent of cancer

	Antecedent of cancer		Total
	Yes	No	
Pleural biopsy	35	63	98
Contributory	9	61	70
Non contributory	26	2	28
Cytodiagnosis of LP*	6	4	10
Contributory	1	3	4
Non contributory	5	1	6

*Pleural fluid

Etiological aspects

The primary cancer was found in 60.7% of cases. Breast cancer (56.5%) and lung cancer (15.6%) were the first etiologies of NP respectively in women and men (Table 3).

Table 3 Localization of primary tumors by sex

Primitive tumor	Men		Women		Total	
	N	%	N	%	N	%
Thyroid	1	3.1	0	0	1	0.9
Lungs	5	15.6	2	2.3	7	6
Breast	0	0	48	56.5	48	41
Ovaries	-	-	3	3.5	3	2.6
Prostate	3	9.4	-	-	3	2.6
Liver	3	9.4	1	1.2	4	3.4
Kidney	0	0	1	1.2	1	0.9
Malignant hemopathy	2	6.2	1	01,2	3	2.6
Bone	0	0	1	1.2	1	0.9
Unknown	18	56.3	28	32.9	46	39.3
Total	32	100	85	100	117	100

Therapeutic and evolutionary aspects

The treatment instituted was iterative evacuating pleural punctures (71.0%), simple pleural drainage (03.4%) and talc medical pleurodesis (25.6%). Medical pleurodesis resulted in a complete response in 50% of cases, a partial response in 27% of cases and a failure in 23% of cases. The in-hospital death rate was 33.3% with a median survival of 87 days (2.8 months). The male sex (p=0.009) and the presence of an anorexic state (p=0.01) were the factors that significantly influenced patient survival (Table 4).

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Table 4 Factors associated with overall survival of neoplastic pleurisy cases

	N	Death	Median	Odds Ratio	IC 95% OR	p-value	Log rank
Sex							
Female	85	48	87	1			
Male	32	21	56	2.013	1.188-3.412	0.00937	0.00806
Age (years)							
<56	58	33	87	1			
≥56	59	36	68	1.497	0.924- 2.423	0.101	0.099
Comorbidity							
No	29	20	97	1			
Yes	88	49	84	0.943	0.557-1.597	0.827	0.8274
Emaciation							
No	38	23	81	1			
Yes	49	30	63	1.148	0.663-1.987	0.623	0.6227
Anorexia							
No	57	38	65	1			
Yes	30	15	157	0.442	0.227-0.860	0.0163	0.0136
Asthenia							
No	41	24	86	1			
Yes	46	29	66	1.329	0.769-2.298	0.308	0.3063

Discussion

Neoplastic pleurisy seems to be the prerogative of the elderly in his fifties in our context.[6] The observed female predominance could be justified by the high proportion of gynecologic breast cancers.[7]

The notion of smoking intoxication was noted in 5.1% of patients, far from what was reported by Smaoui et al.[8] who found a smoking habit of 53.7%. Tobacco is recognized as the main risk factor for cancers, particularly broncho-pulmonary, the main etiology of pleurisy according to some authors.[9,10]

The average consultation time in our series was long (64 days) and did not differ from that of Bambara et al.[11] who found a delay of 76 days. This delay would be related to the progressive installation mode of pleurisy. The low socioeconomic level, the use of unconventional care first could explain this delay of consultation.

In our survey, functional signs were dominated by dyspnea, chest pain, and cough. According to Le Guen,[12] apart from etiology, these symptoms increase the quality of life of patients. The majority of pleurisies were located unilateral right (55.6%) and high abundance (52.1%). The inflammation induced by the neoplastic cells could be at the origin of this important production of pleural fluid. This also explains the frequency of recurrence of neoplastic pleurisy.[1] The pleural fluid was yellow citrine in 42% of cases. In other surveys, the pleural fluid of neoplastic origin is mostly sero-hematic[13,14] or frankly hematic.[2] In all cases, regardless of the macroscopic appearance of the fluid, the diagnostic procedure must be rigorous in order to confirm or refute a neoplastic etiology. Histological confirmation was provided by pleural biopsy in 71.5% of cases. The medical literature reports a changeable diagnostic return of blind pleural biopsy from 53.7% to 90%.[15,16] According to Adjoh et al.,[17] the cost-effectiveness of pleural biopsy could be increased if it was done at two different sites at the same time. In developed countries, the proportion of idiopathic pleurisy has been considerably reduced by the introduction of new techniques for pleural exploration (thoracoscopic biopsy).

The predominant histological type was adenocarcinoma, and breast cancer was the most common etiology in women. Indeed, breast cancer is the leading cause of gynecologic breast cancer in African women with frequent pleural secondary localization.[7,18,19] On the other hand, in men, broncho-pulmonary cancer was the first offending cause.

The primary tumor was indeterminate in 39.3%. This result was close to that of Bambara et al.[2] which reported a rate of 38.7%. The absence of immunohisto chemistry does not facilitate the histopathological analysis of pleural biopsy specimens for etiological orientation.

All patients received iterative evacuation pleural punctures, which is the first line of action for signs of respiratory discomfort. Medical pleurodesis by talc was performed in 24.6% of patients. In some surveys, talc pleurodesis has been performed in all patients.[20,21] The lack of health coverage for some of our patients to cope with the costs of talcage may explain this low proportion in our study. A complete response to medical pleurodesis was obtained in half of our patients. This result was lower than that of Dang et al.[20] which reported a complete response of 88.9%. The failure rate of medical pleurodesis was 23% in our series. Trapped lungs, lack of pleural dryness prior

to talc pleurodesis, altered general state and lack of distribution of talc over the entire surface of the pleura increase the risk of failure of pleurodesis.[22] The cost-effectiveness of thoracoscopic surgical pleurodesis might be much better.[23]

The high rate (33.3%) of patients who died in hospital could be related to delayed use of appropriate care and significant alteration of the patient's clinical condition at admission. The median survival in our study was 2.8 months. It is close to that found by Bambara et al.[11] (3 months), but inferior to data from Western literature where progress has been made in the therapeutic management of cancers.[24,25] Factors that negatively affected mortality were sex (p=0.00937) and presence of anorexic state (p=0.0163). For Zamboni et al.,[25] the histological type remains significantly related to the risk of death. As for the study of Bambara et al.,[11] the presence of comorbidities and other polyserites would be significantly associated with survival.

The difficulty of medical care of the cancer pathology in our context, the insufficiency of doctor oncologists and the absence of a framework of multidisciplinary consultation would explain this short survival of the patients.

Conclusion

NP is a pathology of the subject of fifty and mostly metastatic. Breast cancer and lung cancer are the first providers of NP respectively in women and in men. Medical pleurodesis proved effective in half of the cases. In our context, the evolution of NP was unfavorable with a death rate of 33.3% during hospitalization.

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None.

Conflicts of interest

The authors declare no conflicts of interest.

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