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Original article

Survival of patients with pulmonary hypertension at Yalgado Ouédraogo University Hospital, Ouagadougou, Burkina Faso

Survie des patients atteints d'hypertension pulmonaire au centre hospitalier universitaire Yalgado Ouédraogo, Ouagadougou, Burkina Faso

R Koalga*[1], N Douné[2], VN Yaméogo[2], S Maïga[1], B Koumbem[1], J Ouédraogo[1], K Boncoungou[1], G Ouédraogo[1], G Badoum[1], M Ouédraogo[1]

Résumé

Introduction : l'hypertension pulmonaire (HTP) est une complication grave des maladies cardiovasculaires et respiratoires. Le pronostic associé à cette pathologie reste sombre malgré l'essor de nouvelles molécules thérapeutiques [8] Le but de cette étude a été d'évaluer la survie liée à cette affection chez les patients suivis dans les services de cardiologie et de pneumologie du centre hospitalier universitaire Yalgado Ouédraogo (CHUYO).

Méthodologie : une cohorte prospective, du 1er septembre 2018 au 31 août 2019 qui a inclu 114 patients. L'HTP a été définie à l'échocardiographie doppler par une pression artérielle pulmonaire systolique (PAPS)>35mm Hg.

Résultats : Notre population d'étude était à prédominance masculine avec un sex-ratio de 1,15. La moyenne d'âge était de 55,35 ± 18,54 ans. L'HTA était l''antécédant cardiovasculaire le plus fréquent (31,57%) ; la tuberculose et la BPCO retrouvées respectivement chez 7,89% et 6,14% comme antécédent respiratoire. L'infection à VIH y était associée dans 3,5 % des cas. L'état général de nos patients était évalué stade 3 du performans status OMS et la dyspnée était le premier motif de consultation (90,35% des cas). Aucun patient n'a bénéficié d'un traitement par les nouvelles molécules utilisées dans le traitement des HTP. Le taux de survie de notre étude était de 83,33% au premier mois et de 75,32% après 6 mois de suivi. L'HTP du groupe 4 était associé de façon significative au décès avec p=0.04. D'autres facteurs tels que l'état général stade 3 et 4 du performans status OMS, la dyspnée stade 3 et 4 MRCm étaient associés de façon non significative au décès.

Conclusion : notre étude montre une importante mortalité liée à l'hypertension pulmonaire dans notre contexte. Un dépistage et une prise en charge précoce s'avèrent donc nécessaires.

Mots-clés : hypertension pulmonaire, survie, Burkina Faso.

Abstract

Introduction: Pulmonary hypertension (PH) is a serious complication of cardiovascular and respiratory disease. The prognosis associated with this pathology

remains poor despite the development of new therapeutic molecules [8] The aim of this study was to evaluate the survival related to this condition in patients followed in the cardiology and pulmonology departments of the Yalgado Ouédraogo University Hospital Center (CHUYO).

Methodology: A prospective cohort, from September 1, 2018 to August 31, 2019 that included 114 patients. PH was defined on Doppler echocardiography as systolic pulmonary artery pressure (PAPS)>35mm Hg.

Results: Our study population was predominantly male with a sex ratio of 1.15. The mean age was 55.35 ± 18.54 years. Hypertension was the most common cardiovascular history (31.57%); tuberculosis and COPD were found in 7.89% and 6.14% respectively as a respiratory history. HIV infection was associated with HIV infection in 3.5% of cases. The general condition of our patients was assessed at stage 3 of the WHO status and dyspnea was the first reason for consultation (90.35% of cases). No patients were treated with the new molecules used in the treatment of PH. The survival rate of our study was 83.33% at the first month and 75.32% after 6 months of follow-up. Group 4 PH was significantly associated with death with p=0.04. Other factors such as stage 3 and 4 general condition of the WHO status, stage 3 dyspnea and 4 mCRD were non-significantly associated with death.

Conclusion: Our study shows a significant mortality related to pulmonary hypertension in our context. Early detection and treatment are therefore necessary.

Keywords: pulmonary hypertension, survival, Burkina Faso.

Introduction

Pulmonary hypertension (PH) is defined as mean pulmonary artery pressure (mPAP) ≥ 25 mm Hg at cardiac catheterization [1]. It is increasingly a global health problem. It is a common complication of cardiovascular and respiratory diseases [2]. The prognosis associated with this pathology remains poor despite the development of new therapeutic molecules [3]. The various studies do not characterize the prognosis of this disease. Also, most West African countries, including Burkina Faso, do not have large-scale data on the pathology, although it is increasingly observed, especially in hospitals [4]. The course cannot be dissociated from the treatment and depends mainly on the etiology. Before the era of modern treatments (epoprostenol, lung transplantation), the median survival from diagnosis was only about 2 1/2 years [5,6]. Because the contextual factor influences the course of the disease, we propose to conduct a cohort study in the cardiology and pulmonology departments of the country's main reference center (CHUYO) to assess PH-related survival in hospitals in Burkina Faso.

Methodology

This was a prospective cohort that took place over a 12-month period, from September 1, 2018 to August 31, 2019. Patients were recruited during their hospitalization in the cardiology or pulmonology department. Patients collected are those who have performed during hospitalization or less than 48 hours before admission a Doppler-coupled ETT with PAPS ≥ 35 mm Hg. Patients were seen again when they were discharged from hospital (exeat, discharge against medical advice or death) and were given a clinical and ultrasound follow-up appointment at 6 months and 12 months after registration. A step-by-step analysis was then carried out using the statistical software Epi Info in its version 7.2. The Chi2 test or the exact Fisher test were used for the comparison of categorical variables when necessary with a 95% confidence interval. A significant test was considered if p is less than 0.05.

Results

Socio-demographic characteristics

We included 114 cases of PH. Males accounted for

53.51% of cases, a sex ratio of 1.15. The average age in our series was 55.35 ±18.54 years with a median of 56 years and extremes of 18 and 89 years. In our cohort, 74 patients (64.91%) lived in urban areas and 40 patients (35.08%) in rural areas. Housewives accounted for 32.46 per cent, followed by farmers (15.78 per cent) and pensioners (12.28 per cent).

Clinical and paraclinical data

High blood pressure (hypertension) was found in 31.57% of patients. A history of infection (tuberculosis) and chronic obstructive pulmonary disease (COPD) were recorded in 7.89% and 6.14% of patients, respectively. HIV infection was observed in 3.5% of patients.

An idea of active smoking, whether or not it was weaned, was found in 22.81% of patients. The assessment of the general condition of our patients according to the WHO Performance Status score noted stage 3 in 75 patients, i.e. approximately 66%. Dyspnea was found in 103 patients in our series (90.35%) with 93 patients in stages 3 and 4 of the modified CKD classification. Of these patients, 46 had significant desaturation (SaPO2 ≤ 90%) requiring short-term oxygen therapy. In addition to the increase in PAPS, cardiac ultrasound showed dilation of the right heart chambers in 87 patients and left heart chambers in 57 patients. The mean PAPS in our series was 61.32 ± 18.67 mm Hg with extremes of 36 mm Hg and 180 mm Hg.

Types of Pulmonary Hypertension

Group 2 hypertension was found in 54 patients. The classification of the different types of pulmonary hypertension encountered in our series is shown in Figure 1.

Therapeutic data

None of the patients in our series benefited from the new therapeutics (endothelin 5 receptor agonists, prostacyclin agonists, etc.) available for the management of pulmonary hypertension.

Anticoagulants and diuretics were used in 86 and 76 patients, respectively. Specific treatments for the underlying condition were used. The different treatments used in our cohort are shown in Table I.

Scalable data

The mean length of hospital stay was 16.5 ± 15.20 days with extremes of two and 102 days. An improvement in clinical status was observed during inpatient management in 84 patients (77.78%), but complications leading to death were recorded in 19 patients (16.67%) during hospitalization.

Patients enrolled in our cohort who did not die during hospitalization (95 patients) were followed for 6 months. Of these patients, 19 deaths were recorded, or 20%.

A regression of the initial symptomatology (exertional dyspnea, cough, etc.) was observed in 54.73% of patients. The observed clinical course is shown in Table II.

The Kaplan-Meier curve (Figure 2) represents the distribution of survival times in our cohort. The overall mortality rate was therefore 40.35% at M12 compared to 33.33% at M6.

The survival rate at the end of our study was 75.32% at 6 months follow-up and 53.3% at 12 months.

Univariate Analysis of Factors Associated with Death

The analysis of mortality according to socio-demographic factors did not show a significant difference according to the factors studied, with the exception of pulmonary embolism, which was significantly associated in our study with in-hospital death with p=0.04. Stage 3 and 4 general condition of the WHO status and dyspnea stage 3 and 4 mCRD were non-significantly associated with death.

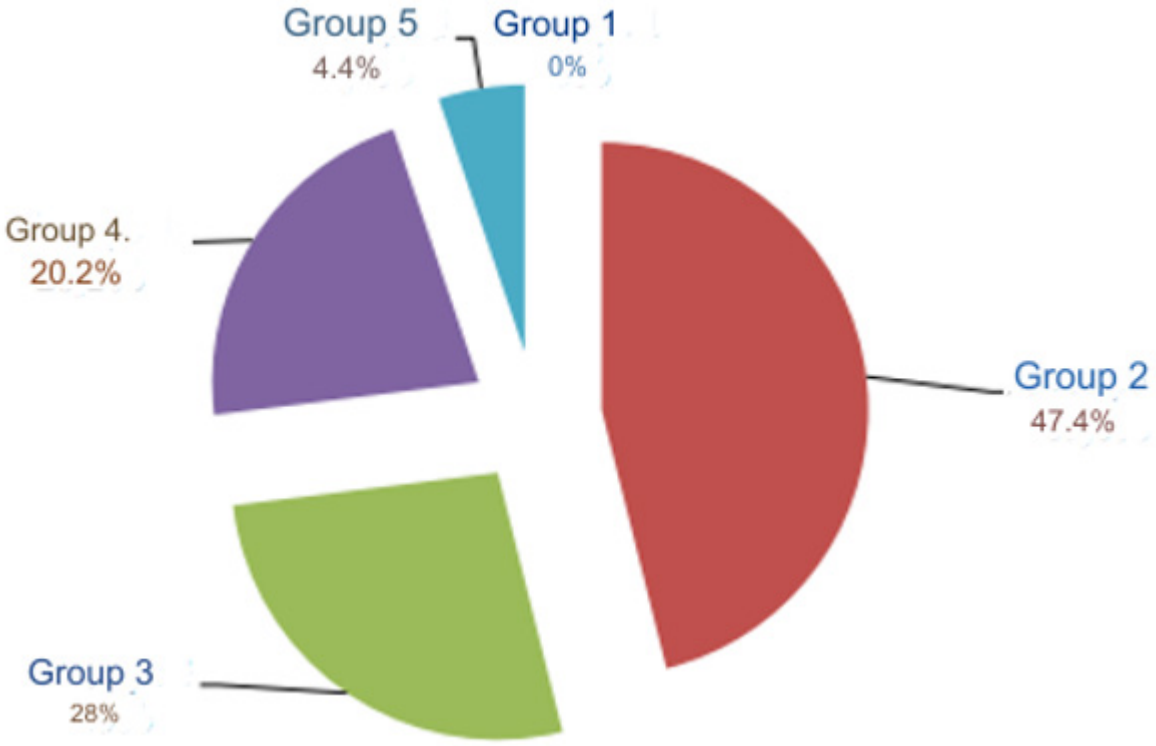

Figure 1: Types of Pulmonary Hypertension by New Classification

Table I: Treatments Used in Patient Management

Treatments	Effective (n)	Percentages % (n/114)
Basic treatment		
Anticoagulants	86	75.44
Diuretics	76	66.67
Oxygen therapy emergency	46	40.35
Digitalics	6	5.26
OLD*	3	2.63
Etiological treatment		
Antibiotics	48	42.10
Antihypertensive	36	31.57
Enzyme inhibitors conversion	15	13.15
Corticoteroids	13	11.40
Anti tuberculosis	11	9.64
Antiarrhythmics	8	7.01
Bronchodilators	6	5.26

OLD* = Long-Term Oxygen Therapy

Table II: Clinical course of patients during follow-up

Patients	Effective	Percentage % (n/95)
Lost	18	18.94
Clinical improvement	52	54.73
Clinical worsening	6	6.31
Deceased	19	20
Total	95	100

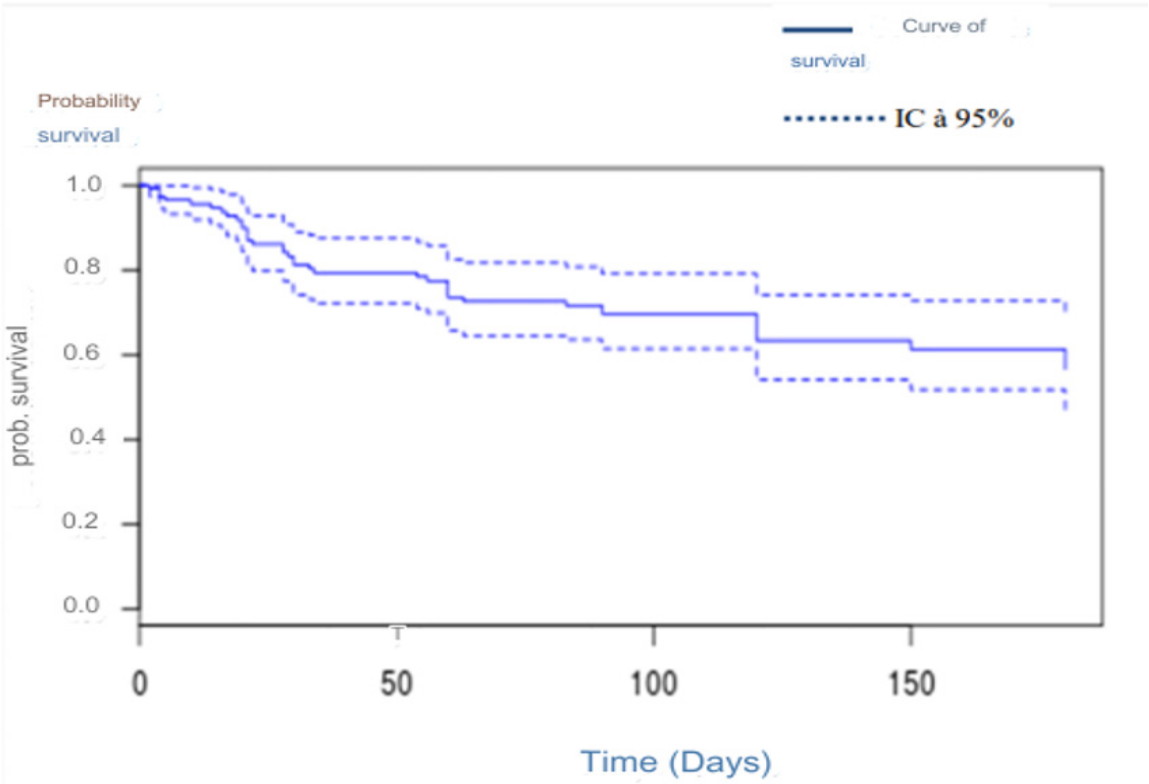

Figure 2: Cohort Survival Curve

Discussion

Socio-demographic characteristics

Pulmonary hypertension is a disease whose incidence and prevalence are difficult to assess. International epidemiological surveys all show that the true prevalence of pulmonary arterial hypertension is likely underestimated and that many cases are still ignored [7,8,9,10]. Our results (13.05%) are higher than those of Gabbay et al in Australia who had found a prevalence of PH (defined in this study as systolic pulmonary artery pressure > 40 mm Hg) in a population of 4579 patients of 10.5% [11]. The average age in our series was 55 ± 18 years old with a sex ratio of 1.15. These results differ from those of the American registry, which found an average age of 49 years and a predominance of women. The literature also gives a female face to pulmonary hypertension [12,13]. The majority of our patients lived in urban areas (64.91%). This fact could be explained by the accessibility of diagnostic means, in particular ETT, but also by the lifestyle in urban areas favourable to cardiovascular and respiratory diseases. The preponderance of housewives and farmers observed in our series is only a reflection of the socio-economic realities of Burkina Faso [14,15].

Clinical and paraclinical data

High blood pressure was found in 31.57% of our patients. 56 Epidemio-clinical and evolutionary profile of pulmonary hypertension at CHU-YO In 2016, the Swedish registry also noted a predominance

of cardiovascular comorbidities in pulmonary hypertensive patients, especially after 65 years of age [7,8]. The most common history of infection, including tuberculosis, was found as a respiratory history (7.89%) in our patients. The Pan African Pulmonary Hypertension Cohort (PAPUCO) found 26% of cases of COPD and tuberculosis [2]. Of our patients, 22.81% used tobacco. The role of tobacco in the occurrence of COPD and pulmonary hypertension is well described by Weitzenblum [16]. In our results, 3.50% of patients were HIV carriers. In the literature, 0.5% of HIV-infected patients develop pulmonary hypertension [8,11,17].

The main reason for consultation was dyspnea (90.35%). Launay et al had also diagnosed the majority of their patients with NYHA stage III or IV [9].

Our observations show moderate pulmonary hypertension with a mean PAPS of 61.32 mm Hg. Rachdi et al. had a mean PAPS of 58 mm Hg in their study [18].

Types of Pulmonary Hypertension

Group 2 pulmonary hypertension represents 47.4% of our cohort, Group 3 (28%), Group 4 (20.2%), and Group 5 (4.4%). We did not find any patients in group 1. However, PAPUCO reported for Group 2 (15.8%), Group 3 (12.0%) and Group 4 (1.9%) of the South African Registry [2]. These differences in results could be explained by the choice of study populations.

Therapeutic data

Basic treatment with oxygen, diuretics and oral anticoagulation was the only treatment used in pulmonary hypertension until the early 1990s. In our cohort, 75.44% of these therapeutics were used for anticoagulants, 66.67% for diuretics and 42.98% for oxygen. The recommended consensus-specific treatments were not used in our context due to their unavailability and inaccessibility. The absence of these specific treatments is probably a derogatory factor for the prognosis of this condition.

Scalable data

The overall mortality rate of 33.33% at M6 and 40.35% at M12 observed in our series testifies to the severity of this condition. This rate is lower than that recorded by Hakem in his study but with a longer follow-up time [19]. Our results show a higher rate of death due to group 4 and group 2 pulmonary hypertension. In his study, Strange found that PAH secondary to left-heart disease (group 2) had the worst prognosis [20]. Pulmonary embolism was significantly associated with in-hospital death in our study with p=0.04. The pejorative evolution of the HTPPEC group has also been proven by Guimas in his study [21]. The Kaplan-Meier survival curve of our cohort shows a survival of about 80% of patients in the first month. These results could be explained by the fact that patients are recruited from among the hospitalized, and the greater representativeness of hypertension in group 2. Pulmonary embolism was significantly associated with in-hospital death in our study with p=0.04. The pejorative evolution of the HTPPEC group has also been proven by Guimas in his study [21].

Conclusion

Our study shows significant mortality related to pulmonary hypertension in our context. Although this condition is common, it is little known by our practitioners and has limited management in resource-limited countries. Their prognosis is poor in our cohort with a mortality rate of 16.67% during hospitalization, which increases to 33.33% after six months and 40.35% after 12 months of follow-up. Early detection and treatment are therefore necessary.

***Correspondence**

Richard Koalga .

richkoalga01@gmail.com

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1 : Department of Pneumology, Yalgado Ouédraogo University Hospital, Burkina Faso
2 : Department of Cardiology, Yalgado Ouédraogo University Hospital, Burkina Faso

Conflict interest : None

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