

Epidemio-Clinical, Therapeutic and Evolutive Aspects of Pulmonary Embolism in Young Subject in the Cardiology Department in Point “G” Hospital University Center Bamako

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Abstract

Objective: The purpose of this work was to determine the epidemiological, clinical and evolutionary aspects of the pulmonary embolism of the young person in the cardiology department of the University Hospital Center (CHU) Point G in Bamako-Mali. **Methodology:** This was an analytical study from January 01, 2018 to December 31, 2018 in the CHU Point G cardiology department, including all patients hospitalized during this period. **Results:** Of 1379 hospitalized patients, 19 patients were concerned by pulmonary embolism of the young person. The prevalence of pulmonary embolism of the young person was 1.37%. The most affected age group was 21 - 30 (47.4%) of patients. The predominance was female (89.47%) with a gender ratio of 0.11 in favour of women. The average age in the series was 29.79 years with extremes of 16 years and 40 years. Factors predisposing to pulmonary embolism were dominated by peri partum, cardiomyopathy and obesity with 47.3%, 31.57% and 21.1%, respectively. The dominant signs were chest pain and dyspnea in 94.7% and 89.5% of cases respectively. Pulmonary embolism was unlikely in 60.52% according to the Geneva and Wells score simplified. At the thoracic angioscanner, the embolism was bilateral in 52.6% of cases and distal in 36.8% of patients; in 10 patients who performed cardiac ultrasound, pulmonary arterial hypertension (70%), dilation of the right ventricle (20%) and left ventricular dilation (40%). Hyper leucocytosis (47.4%), anemia and low prothrombin rate (TP) (22.2%) were the most found biological abnormalities.

More than 2/3 (68.5%) our patients had an intermediate mortality risk according to the PESI (Pulmonary Embolism Severity Index) score. The average hospital stay was 10 days. Hospital mortality was 10.5%. **Conclusion:** The pulmonary embolism of the young person is a frequent, serious and multifactorial pathology and the female sex is most affected especially during peripartum periods, hence the need for preventive measures. Clinical signs are not specific and based on the assessment of clinical probability. Pulmonary angioscanner remains the confirmation review in our context.

Keywords

Pulmonary Embolism, Young Subject 15 - 40 Years, Cardiology, Point G Hospital

1. Introduction

Pulmonary embolism, defined by the obliteration of the pulmonary artery or one of its branches by a circulating foreign body, remains a serious, frequent and difficult to diagnose pathology. In France, it affects 17% to 42.6% of hospitalized patients and appears in 8% to 52% of post-mortem examinations [1] [2] [3]. In Africa, classically rare pulmonary embolism [4] [5] [6] [7] constitutes 0.1% of nosological groups in specialized cardiological settings in Nigeria and 3.8% of cardiovascular manifestations during HIV infection in Burkina Faso [8] [9]. Its prognosis is horrible because it is responsible in France for 1000 to 20,000 annual deaths and is the third leading cause of death in the USA [10] [11] [12]. In Mali in 2011 the hospital prevalence of pulmonary embolism was 1.7% [13]. This work aimed to determine the hospital prevalence of pulmonary embolism in young subjects and to identify the epidemiological, clinical and evolutionary aspects in the cardiology department of the Point G University Hospital.

2. Materials et Méthodes

This was a prospective and analytical study carried out in the cardiology department of the CHU Point G from January 01, 2018 to December 31, 2018 and concerned all patients hospitalized during the study period.

The inclusion criteria were young patients aged 15 to 40 years, both sexes hospitalized in the so-called ward for pulmonary embolism confirmed by pulmonary angioscanner during the study period.

The exclusion criteria were:

Young patients hospitalized on suspicion of pulmonary embolism but not performing pulmonary angioscanner.

Confirmed pulmonary embolism in patients over 40 years of age.

Data collection:

Patients were recruited from the hospitalization file. The parameters studied in this file were sociodemographic data, clinical discovery circumstances, NFS

results, D-dimers, fasting blood sugar, creatininemia, blood ionogram and pulmonary angioscanner. Word and Excel 2013 software was used for data entry and SPSS 16.0 and Epi Info 3.3.2 software for analysis. The static test used was the ki2 with a 5% meaning threshold.

3. Results

During the study period, out of 1379 patients admitted, 19 patients were for pulmonary embolism in young subjects, ie a hospital prevalence of 1.37%. The predominance was female (89.50%) (**Table 1**) with a sex ratio of 0.11 in favor of women. The most affected age group was 21 - 30 years, or 47.4% (**Table 1**). The average age was 29.79 years with extremes of 16 and 40. The predisposing factors for pulmonary embolism were dominated by peri partum, cardiomyopathies and obesity with 47.3%, 31.57% and 21.1%, respectively (**Table 2**). The reasons for consultation were chest pain and dyspnea in 94.7% and 89.5% respectively. An oxygen desaturation of less than 90% was observed in 41.1% of patients. Blood pressure was normal in the majority of cases (94.8%). Thrombophlebitis was observed in 36.8% and signs of right ventricular failure in 26.3% of patients. Pulmonary embolism was unlikely in the majority, 60.52% according to the Geneva and Wells simplified score. D-dimers in all patients were positive (100%), troponin elevated in 5.26% of cases. On the electrocardiogram, the rhythm was most often sinus (94.7%) and tachycardia in 84.2%; right atrial hypertrophy (47.4%) and S1Q3 appearance in 42.1% of cases On chest angiography embolism was bilateral in 52.6% of cases (**Table 3**) and distal in 36.8% of patients. In 10 patients who performed the cardiac ultrasound, pulmonary arterial hypertension (70%), dilation of the right ventricle (20%), dilation of the left ventricle (40%), segmental akinesia (20%) and LVEF were noted. lowered in 30% of cases. %. Hyper leukocytosis (47.4%), anemia and low PT (22.2%) were the most common laboratory abnormalities. More than 2/3 (68.5%) of our patients had an intermediate risk of mortality according to the PESI score. All patients in the sample will receive anticoagulant therapy combined with oxygen therapy, diuretics and ACE inhibitors in complicated forms. Due to lack of local availability, no patient will benefit from fibrinolytic treatment and also in the absence of a cardiovascular surgery unit in Bamako no case of embolectomy has been performed. The outcome was favorable without complications in 78.9% of patients. The average hospital stay was 10 days. Hospital mortality was 10.5%.

Table 1. Distribution of patients according to their age and sex.

Age range	Female		Male		Total	
	Quantity	%	Quantity	%	Quantity	%
15 - 20 ans	02	10.50	00	00	02	10.50
21 - 30 ans	09	47.40	00	00	09	47.40
31 - 40 ans	06	31.60	02	10.50	08	42.10
TOTAL	17	89.50	02	10.50	19	100.0

Table 2. Distribution of patients according to their predisposing factors to EP.

Factors predisposing MTVE	Quantity	Percentage %
Peri partum	09	47.30
Cardiomyopathy	06	31.57
Obesity	04	21.10
Cancer	01	05.30
Pelvic surgery	01	05.30
Ischemic stroke	01	05.30
ATCD MTVE	01	05.30

Table 3. Distribution of patients according to the result of their thoracic angiography.

Obstruction of the AP	Quantity	Percentage
Left branch	06	31.6
Right branch	03	15.8
Bilateral	10	52.6

4. Discussion

The prevalence of pulmonary embolism in the study was 1.37% compared to 3.8% in NIGERIA [8] from the post-mortem series and as much in Burkina among cardiovascular manifestations during HIV infection [9]. This lower prevalence could be explained by the insufficient technical platform for the diagnostic approach and the nature of these studies, necropsy in Nigeria and on populations at risk in Burkina. In Europe, the prevalence of pulmonary embolism is higher varying between 17% - 42.6% [1] [2]. The decline in prevalence in black compared to European series can be explained by the platelet hypoaggregability of black and its rapid fibrinolysis [13]. The average age was 29.79 years against 64 ± 17 years in France [1]. This difference could be explained by the absence of prophylactic anticoagulation in our deprived areas and also by the young age of our patients' heart. Regarding the sex, it was predominantly female (89.47%) which is classic in the literature [14] and could be explained by the increased thromboembolic risk observed in women linked to the presence of some factors specific to them: pregnancy, childbirth, contraception ... The factors predisposing to pulmonary embolism were dominated by the peri partum and heart disease with respectively 47.30% and 31.57% comparable to that of KANE [15] which found 30.58% of heart disease. Oxygen desaturation was observed in 41.1% and signs of right ventricular failure in 26.3%, indicating the severity of pulmonary embolism in these patients and delay in diagnosis. According to the Geneva and Wells simplified score, pulmonary embolism was unlikely in the majority, 60.52% compared to 40% in the literature [16]. We have seen in our short series the classic interest of the ECG (right atrial enlargement, an SIQ3 aspect and sinus rhythm and tachycardia). In 10 patients who per-

formed the cardiac Doppler ultrasound, there was pulmonary arterial hypertension (70%), dilation of the right ventricle (20%), mainly indicative of the severity of the pulmonary embolism; dilation of the left ventricle (40%), segmental akinesia (20%) and lowered LVEF in 30% of cases, even seen in KANE [15] and synonymous with an underlying heart disease. On thoracic CT angiography the embolism was bilateral in 52.6% of cases and distal in 36.8% of patients. Hyperleukocytosis (47.4%), anemia and low PT (22.2%) were the most common laboratory abnormalities; the inadequacy of the technical platform and lack of financial means were factors limiting biological exploration, in particular: SAPL, protein C and S, thrombophilia, etc. All patients in the sample will receive anticoagulant therapy combined with oxygen therapy, diuretics and ACE inhibitors in complicated forms. Due to lack of local availability, no patient will benefit from fibrinolytic treatment and also in the absence of a cardiovascular surgery unit in Bamako no case of embolectomy has been performed. Moreover, this is an exceptional indication in thromboembolic disease and only experiences medical treatment failures. More than 2/3 (68.5%) of our patients had an intermediate risk of mortality according to the PESI score. The hospital outcome was considered favorable in 78.9% of patients with remission of functional and physical signs and absence of complications. We recorded a lethality of 10.52% greater than the 5% in the literature [17]. According to the same sources in the absence of treatment the lethality varies between 25% - 30%. The high mortality rate in the study could be explained by the delay in admission of patients, the absence of prophylactic anticoagulation in peripartum, the high population of heart failure and also the absence of fibrinolytics in the arsenal therapeutic. The average hospital stay was 10 days compared to 12 days for KANE [15].

5. Conclusion

Pulmonary embolism remains horrible due to its mortality, progressive complications and the high cost of its prevention. Reducing its morbidity mortality and mortality requires prevention and prophylactic anticoagulation in the face of certain etiological factors. Pulmonary angiography remains the confirmatory diagnosis.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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