Pulmonary Embolism: Therapeutics and Evolutionary Aspects at Kati University Hospital

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ABSTRACT

Aim: Pulmonary embolism (PE) is defined as a sudden total or partial obliteration of the trunk of the pulmonary artery or one of its branches. It is a frequent and serious emergency. We carried out this work with the aim of analyzing the therapeutic and evolutionary aspects of pulmonary embolism in the cardiology department of the University Hospital of Kati.

Methods: A descriptive retrospective study was carried out from January 2019 to December 2020. The inclusion criteria were patients hospitalized for pulmonary embolism based on clinical and CT angiography criteria. The variables studied were: age, sex, clinical and paraclinical signs (pulmonary CT scan), treatment and evolution.

Results: A total of 32 patients were examined out of 189 patients hospitalized in the department, either a prevalence of 17%, the female sex predominated (53.1%), either a sex ratio of 0.88. The 41 to 60 age group was the most represented, at 40.6%. Dyspnea with 96.9% and tachycardia with 68.8%, were the clinical signs most found on physical examination. Bilateral occlusion (62.5%) followed by unilateral occlusion (25%) were the most observed CT abnormalities. The main drugs used were: low molecular weight heparin in 96.9% of cases, sintrom in 50% of cases and previscan in 46.9% of cases. The outcome was favorable in the majority of patients, either 71.9%, however some complications were observed: pneumonia in 9.4% of cases, heart failure 6.3% of cases with a total mortality of 9.4%.

Conclusion: Pulmonary embolism is a serious and frequent pathology, the female sex and young people are the most affected in our environment. Early and adequate management is necessary to obtain a favorable outcome.

Key words: Pulmonary Embolism, Therapeutic, Evolution, CHU Kati

INTRODUCTION

Pulmonary embolism (PE) is defined as a sudden total or partial obliteration of the trunk of the pulmonary artery or one of its branches by a circulating foreign body, most often a fibrino-cruoric clot. It is a frequent and serious emergency. The prevalence is 50 000 to 100 000 cases/year in France and is the cause of 10 000 annual deaths, with 10% deaths during the first hour. In 60 to 70% of cases, the diagnosis is not made, exposing the risk of a fatal recurrence (mortality 30%), on the other hand

mortality is less than 10% with adequate diagnosis and treatment. The frequency of excess diagnostic errors is not negligible, leading to the risk of iatrogenic accidents (bleeding complications from anticoagulants, especially serious in the elderly) [1]. In Africa, its prevalence is 3.1% according to the study carried out by Pessinaba in Togo [2] and 3.8% in Burkina Faso [3]. In Mali in a study carried out at the CHU Gabriel Touré in Bamako by Menta [4] in 2018, found a frequency of 1.21%. Konaté in his study found a frequency of 2.97% [5]. The incidence of pulmonary embolism has not decreased over the past 30 years despite advances in prophylaxis, diagnosis and treatment [6]. It still remains a major challenge in medicine today, despite progress in terms of prevention, diagnosis and treatment. Anticoagulant treatments at a curative dose, for a sufficient duration constitute the cornerstone of therapeutic management. Fibrinolytic treatments are usually only offered for severe PE. The arrival of direct oral anticoagulants which have demonstrated efficacy and safety of use at least equivalent to those of anti-vitamin K treatments could facilitate the outpatient management of this pathology. Pulmonary embolism remains a matter of daily concern for the services dealing with this pathology. The lack of data available on pulmonary embolism at Kati University Hospital motivated us to carry out this work in order to analyze the therapeutic and evolutionary aspects of hospitalized patients.

MATERIALS AND METHODS

A descriptive retrospective study was carried out from January 2019 to December 2020 in the cardiology department of the Kati University Hospital.

Inclusion criteria: Any patient hospitalized in the cardiology department of Kati University Hospital for pulmonary embolism based on clinical and scannographic criteria. The variables studied were: socio-demographic characteristics (age, sex), clinical and paraclinical signs (pulmonary CT angiography), treatment and progress.

Non-inclusion criteria: Were not included in our study, all the patients who did not meet the inclusion criteria. Data were collected using survey forms based on medical records.
We performed data entry and analysis using SPSS version 26 software. Word processing using Microsoft Word 2013 software.

Ethical aspects: All patients gave their verbal consent. They were informed about the study procedures as well as the anonymous form of data processing.

RESULTS

A total of 32 patients were examined out of 189 patients hospitalized in the department, either a prevalence of 17%, the female sex predominated (53.1%) or a sex ratio of 0.88. The 41 to 60 age group was the most represented at 40.6%, followed by patients over 60 years old with 34.4% (Table 1).

Table 1: Distribution by Age Group and Sex

Age group	Male		Feminine		Total	
	No	%	No	%	No	%
20 - 40 years	2	6.3	6	18.7	8	25

41-60 years	6	18.7	7	21.9	13	**40.6**
> 60 years	7	**21.9**	4	12.5	11	**34.4**
Total	**15**	**46.9**	**17**	**53.1**	**32**	**100**

Source: Medical record

Dyspnea with 96.9%, tachycardia with 68.8%, followed by hepatomegaly and hepato-jugular reflux with 28.1% each, were the clinical signs most found on physical examination (Table 2).

Table 2: Distribution According to Clinical Signs on Physical Examination

Clinical Signs	Frequency	%
Tachycardia	22	**68.8**
Galop	2	6.3
Pulmonary Condensation	5	15.7
Pleurisy	4	12.6
Hepatomegaly	9	**28.1**
Hepato-jugular reflux	9	**28.1**
Homans Sign	2	6.3
Dyspnea	31	**96.9**

Source: Medical record

Bilateral occlusion (62.5%) followed by unilateral occlusion (25%) were the most observed CT abnormalities (Table 3).

Table 3: Breakdown According to the Result of the Pulmonary CT Angiography

Pulmonary CT angiography	Frequency	%
Bilateral Occlusion	20	**62.5**
Unilateral Occlusion	8	**25**
Atelectasis	11	34.4
Pleurisy	7	21.9

Source: Medical record

The main drugs used were low molecular weight heparin in 96.9% of cases, sintrom in 50% of cases and previscan in 46.9% of cases (Table 4).

Table 4: Distribution According to the Treatment Used

Type of Treatment	Frequency	%
Sintrom	16	**50**
Préviscan	15	**46.9**
HBPM	31	**96.9**
Xarelto	1	3.1
Antibiotherapy	3	9.4
Furosémide	2	6.3
Captopril	1	3.1
Bisoprolol	1	3.1
Losartan	1	3.1

Source: Medical record

The outcome was favorable in the majority of patients, with 71.9%, however some complications were observed: pneumonia in 9.4% of cases, heart failure 6.3% of cases with a total case mortality of 9.4% (Table 5).

Table 5: Distribution According to Patient Evolution

Patient Evolution	Frequency	%
Cardiogenic shock	1	3.1
Pneumopathy	3	**9.4**
Favorable	23	**71.9**
Heart Failure	2	**6.3**
Death	**3**	**9.4**

Source: Medical record

DISCUSSION

A total of 32 patients were examined out of 189 patients hospitalized in the department, either a prevalence of 17%, the female sex predominated (53.1%) or a sex ratio of 0.88. The 41 to 60 age group was the most represented at 40.6%, followed by patients over 60 years old with 34.4%. The predominance of the female sex in our study could be explained by the fact that they are in the majority in the population and are more exposed to risk factors such as sedentary lifestyle, obesity, taking contraceptive hormones. The study carried out by Diall in the cardiology department of the University

Hospital of Point G found a lower prevalence than ours, either 1.7%, the female sex was predominantly 53.3%, or a sex ratio of 1.4 in favor of women, young people were the affected: the age groups 31-40 years and 51-60 years were the most represented, either 46.6% [7]. Konaté study carried out in the medical service of the hospital in Mali found a prevalence of 2.97%, the female sex was in the majority, or a sex ratio of 0.38, the age groups 23-55 and 71-87 were the most represented with 25.9% each [5]. The clinical signs most often found on physical examination were: dyspnea, or 96.9%, tachycardia 68.8%, followed by hepatomegaly and hepato-jugular reflux, or 28.1% each. Dyspnea on exertion (83.3%), chest pain (70.4%) and cough (31.5%) were the main symptoms encountered in the study by Konaté [5]. Bilateral occlusion (62.5%) followed by unilateral occlusion (25%) were the most observed CT abnormalities. Sidibé in his study, 40% of the obstructions were located in the right branch of the pulmonary artery, 5% in the left branch and 55% of the obstructions were bilateral, and the location of the embolus was distal in 30 % of cases and proximal in 22.5% [8]. In a study from Cameroon, PE was bilateral in 38.8% and proximal in 72.8% [9]. The bilateral location of the embolus was the most found in these studies. The majority of our patients were treated with low molecular weight heparin, or 96.9%, followed by anti-vitamin K: sintrom in 50% of cases and previscan in 46.9%. A direct oral anticoagulant, rivaroxaban was prescribed in 3.1% of cases. A similar result was observed in Konaté: low molecular weight heparin, with a relay by anti-vitamin K were used in 88.9% of patients and rivaroxaban in 11.1% of cases [5]. In Cameroon, low molecular weight heparin, with an anti-vitamin K relay, was prescribed in 89.3% and DOA (rivaroxaban) in 10.7% of cases [9]. The outcome was favorable in the majority of patients, or 71.9%, however certain complications were observed: pneumonia in 9.4% of cases, heart failure 6.3% of cases with a total mortality of 9.4%. A similar mortality (6 to 12%) has been observed in some developed countries [10]. A mortality greater than ours was found by Menta, with 19% [4], in Sidibé the mortality was 12.5% [8], Konaté found a mortality of 16.7% [5]. This high mortality rate could be explained on the one hand by the delay in admission and the high cost of treatment.

CONCLUSION

Pulmonary embolism is a serious and frequent pathology, the female sex and young people are the most affected in our environment, dyspnea and tachycardia are the most common clinical signs, bilateral occlusion is the angio scannographic anomaly most observed, the majority of patients benefited from anticoagulation. Early and adequate management is necessary to obtain a favorable outcome.

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