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Original Research Article

Pulmonary Embolism in Senegal: Epidemiology, Diagnosis and Management Challenges

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Abstract: ***Introduction*:** Pulmonary embolism (PE) is a life-threatening condition that represents a major challenge in the management of patients in intensive care. Despite recent advances in prophylactic, diagnostic and therapeutic modalities, PE remains an important cause of morbidity and mortality. Hence the interest of this retrospective study on the management of pulmonary embolism of patients hospitalized in the resuscitation unit of the Peace Hospital of Ziguinchor. ***Methodology*:** We conducted a retrospective, descriptive and analytical study covering a period of 32 months from September 2020 to May 2023. The data included variables such as age, gender, clinical symptoms, results of paraclinical tests and treatments administered. ***Results***: The sex ratio was 1.72 with a majority age group of 40-59 years. The average age was 58.93 years for a median age at 58 years. Prolonged immobilization greater than 3 days was the risk factor most found in our patients 33.3% followed by hypertension in 13.3%. Respiratory distress is the main reason for hospitalization in 66.7%. The intermediate clinical probability was most found in our population with 90%. In 53.3% of our patients, the lung damage was unilateral against bilateral for 23.3% at CT-scan. Admission shock was found in 6.7%. In 43.3%, amines were used including noradrenaline at 26.7% and dobutamine at 20%. LMWH were the anticoagulants used in all patients followed by VKA (Acenocoumarol) with 40%. Only 6.7% of our patients were thrombolysed. Mortality was 63.3%. The prognosis according to the PESI score is 53.3% for class 5 and the progressive modalities were poor in 70% of cases. ***Conclusion***: The factors of poor prognosis found are disorders of consciousness, respiratory failure and PESI class 5. This study highlights the urgency of strengthening initiatives for the prevention, diagnosis and treatment of PE. It is vital to work to improve access to thrombolysis in order to reduce mortality and improve quality of life for patients with venous thromboembolic disease (VTE).

Keywords: Pulmonary embolism, risk factors, IHAP, mortality, thrombolysis.

INTRODUCTION

In Senegal, as in many countries, PE poses significant public health challenges. Despite medical advances, early diagnosis and optimal management of this condition remain hampered by various factors such as lack of access to advanced diagnostic equipment, limited resources and gaps in continuing medical education. Moreover, the cultural and socio-economic specificities of the Senegalese context can influence the prevalence of risk factors and mortality rates associated with this disease.

The main objective of this study is to analyze the different aspects of PE within the resuscitation department of Peace Hospital. This includes an assessment of the epidemiological, clinical, paraclinical, therapeutic and evolutionary characteristics of the condition. In addition, this research aims to compare local data with those of other regions or countries, to

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identify specific challenges to the management of pulmonary embolism in Senegal and to propose recommendations to improve prevention, the diagnosis and treatment of this pathology in the country.

MATERIALS AND METHODS

The study was conducted in the intensive care unit of Peace Hospital, located in Ziguinchor. This hospital is one of the main health facilities in Senegal, offering a full range of medical services to a diverse population. The resuscitation unit is equipped to treat the most critical medical cases, including patients with acute respiratory conditions such as PE. Data were collected from patient medical records, clinical interviews and paraclinical examinations. The main diagnostic tools used to confirm PE were D-dimer assay, echocardiography and CT-scan. Statistical analyses were carried out using the Excel software, with particular attention to the correlation between different risk factors, clinical presentation and therapeutic management.

RESULTS

Epidemiological and Clinical Aspects

During our study, we collected thirty patients. The median age was 58 and the average age was 58.93 years. In our sample of patients, PE mainly affects the male population with a sex ratio of 1.72. A predominance is noted in the age group between 40 and 59 years. Prolonged immobilization stood out as the main risk factor in our patients in 33.3%. The most observed symptoms in patients with PE were dyspnea followed by basithoracic pain in respectively 86.7% and 33.3%.

Paraclinical Aspects

D-dimers were dosed in 50% in our study and they were also elevated in 50%. An electrocardiogram was performed in 43.3% with the presence of signs of myocardial ischemia in 38.5%. Transthoracic echocardiography showing signs of acute pulmonary heart was performed in 26.7%.

Therapeutic Aspects

In 43.3% of our patients, amines were used, including noradrenaline (26.7%) and dobutamine (20%). Oxygenation with the mask was performed in 93.3% of patients. Mechanical ventilation was used in 34.5% of patients. Low Molecular Weight Heparins (LMWH) were the anticoagulants used in all patients followed by VKA (acenocoumarol) at 40%. Only 6.7% of our patients were thrombolysed, reflecting the difficulties of access to thrombolytics in our context.

Evolutionary and Prognostic Aspects

In our study, 53.3% of patients were classified in class 5 according to the PESI score, a score that predicts the risk of mortality at 30 days in patients with PE. Our study revealed a mortality rate of 63.3%. Patients with impaired consciousness, respiratory failure and a PESI class of 5 were particularly at risk of poor prognosis.

DISCUSSION

Epidemiological Aspects

The predominance of PE in men in our study is consistent with other studies [1]. This could be related to differences in social behaviours, lifestyle habits and gender-specific risk factors. In addition, our study found that the average age of patients with PE was about 59 years, with a predominance in individuals between 40 and 59 years of age. This trend is consistent with other studies [2] that show that the incidence of PE increases with age. Increasing awareness of age- and gender-related risk factors among health professionals and the public is essential to effective preventive measures.

Clinical and Paraclinical Aspects

The identification of prolonged immobilization as the main risk factor in our study highlights the importance of promoting mobility, particularly in high-risk patients [3]. Hypertension, also identified as a risk factor in our population, highlights the need for adequate management of comorbidities in PE patients. Symptoms, such as dyspnea and basithoracic pain, are consistent with other studies [4]. However, our study showed that dyspnea was the most common symptom, highlighting its importance as an indicator of the disease. The diagnostic tools used, including D-dimer assays, cardiac ultrasound and injected computed tomography, have been instrumental in the rapid diagnosis of pulmonary embolism [5]. These results confirm the importance of imaging techniques and biomarkers for the diagnosis of this pathology.

Therapeutic Aspects

The use of amines, mask oxygenation, mechanical ventilation and anticoagulants in our study reflects the usual management of PE [6]. However, the low thrombolysis rate in our eligible patients highlights a challenge in accessing this potentially life-saving treatment [7]. Measures must be taken to improve accessibility to thrombolytics and other advanced treatments.

Evolutionary and Prognostic Aspects

The PESI score was used to assess the prognosis of patients with PE. The high prevalence of class 5 in our study indicates a significant risk of mortality at 30 days. This suggests the need to stratify patients according to their risk at diagnosis to guide management and improve outcomes. The high mortality rate of 63.3% in our study is of concern, particularly compared to other series with lower rates. This can be partly attributed to the low thrombolysis rate, underlining the importance of early and appropriate intervention to reduce mortality. Factors of poor prognosis identified, such as impaired consciousness, respiratory failure and a PESI class of 5, should be considered when managing high-risk patients [9].

CONCLUSION

Our study highlights PE as a significant public health problem in Senegal, particularly among men and the elderly. Better awareness, targeted prevention strategies and improvements in access to treatment are essential to reducing mortality from this disease. The recommendations are intended to create a multi-dimensional approach to addressing persistent challenges in PE management in Senegal, targeting improvement at all levels of the health system. Further research is needed to refine our therapeutic strategies, including the accessibility and use of thrombolysis, to reduce mortality and improve quality of life for patients.

Study Limitations

Like any study, there are limitations. First, because the data were collected retrospectively from patients' medical records, it is possible that some information were omitted or poorly documented. Second, although Peace Hospital is a major health facility, the results obtained may not be generalizable to the entire country or other contexts. In addition, despite our efforts to complete the analysis, unmeasured or undocumented factors may have influenced the results. It is also important to note that the study only takes into account patients who have been admitted and diagnosed at Peace hospital, thus excluding undiagnosed cases or treated in other institutions.

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