

## Research Article

## OPEN ACCESS

### Venous thromboembolic disease in Burkina Faso: results of the prospective registry REMAVET (registry of Venous Thromboembolic)

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**Keywords:** Venous thromboembolic disease, etiologic factors, Burkina Faso

## ABSTRACT

### Introduction-Objectives

*The objective of this work was to determine the epidemiological and clinical profile of patients and the causative factors of deep venous thromboembolic (DVT) diseases in Burkina Faso, using data from a prospective registry called REMAVET (registry of Thromboembolic Disease).*

### Materials and methods

*REMAVET is a prospective registry collecting data on thromboembolic diseases since January 2014. We included all patients hospitalized for venous thromboembolic diseases in the cardiology department of University Hospital, from January 1, 2014 to May 31, 2015. Diagnoses were confirmed by venous Doppler ultrasound, pulmonary angiography or lung scintigraphy.*

### Results

*We collected one hundred ninety-four (194) patients over a period of 17 months. Hospital prevalence in 2014 was 20.26%. The overall mean age was 49 (range 17 to 92 years). The sex ratio was 0.76. Sixty-nine percent (69%) of patients were admitted from the emergency department. Pulmonary embolism accounted for 50.5%, thrombophlebitis for 38.14% and the association pulmonary embolism-thrombophlebitis for 11.34%. The most frequently reported risk factors were physical inactivity (38.5%), obesity (33%), non-O blood type (21.1%) and pregnancy and postpartum (20.6%). In 11.85% no risk factor was identified. The average hospital stay was 12 days (range 1-4 days). The patient mortality was 10%.*

### Conclusion

*Thromboembolic diseases are increasing severe affection in Sub-Saharan Africa with multiple etiological factors.*

## INTRODUCTION

Venous Thromboembolic disease was rare in Sub-Saharan Africa in the past to the point of speaking about « a clinical curiosity in Sub-Saharan Africa », but currently is more and more frequent [1, 2, 3].

It includes two manifestations of the same disease: the Deep vein thrombosis (DVT) and its severe complication, the pulmonary emboli which can lead to an immediate death.

The annual incidence of thromboembolic disease in France is 120 per 100,000 residents. The incidence of DVT is 60 to 100 per 100,000 persons worldwide and 60 to 111 per 100,000 residents in France. Pulmonary Emboli occur in 23 to 107 per 100,000 residents in France [4]. There are limited epidemiologic data in Africa, and the majority of authors estimate the hospital incidence to be 1.2% to 3.1% [5, 6, 7, 8]. In 2014, thromboembolic diseases were the second cause of hospital admissions for cardiovascular diseases, after heart failure in the cardiology service in Burkina Faso. This led to the registry REMAVET created to establish the clinical, epidemiologic and the aetiologies of venous thromboembolic disease in our context.

**Table1:** Risk factors of thromboembolic disease

Risk factor of thromboembolic disease	Pourcentage
Sedentarity	38.5
Obesity	33
Non O blood type	21
Pregnancy and post partum	20.6
Age above 65	20.1
Smoking	12
Prolonged bed	11.3
Estro-progestatives	6.7
Long trip	5
Erysipele	4.6
Uterine fibroma	4.12
Cancer	3
orthopedic surgery and immobilization from casting	2.5
post abdominal surgery	2
hearth failure	1
hemopathy	1

## METHODS AND MATERIALS

REMAVET is a prospective registry collecting data on thromboembolic diseases since January 2014. We included all patients hospitalized for venous thromboembolic diseases in the cardiology department of University Hospital Yalgado Ouedraogo, from January 1, 2014 to May 31, 2015. All patients underwent a venous Doppler ultrasound and/or a pulmonary angiography or a lung scintigraphy.

We studied the inpatients prevalence of thromboembolic diseases in the cardiology department during the same period, establish the clinical and epidemiologic profiles as well as their services of origin. We also searched for the aetiologies as well as the length of hospital stay and the inpatient mortality.

We analysed the data with the logical SPSS.

## RESULTS

One hundred ninety four (194) patients were registered within seventeen months.

The inpatient prevalence was 20.26% in 2014.

Pulmonary embolus was more frequent with 50.5% of cases, followed by deep vein thrombosis of lower extremities in 38.14%. A combined pulmonary embolus and a deep vein thrombosis of lower extremities was found in 11.34%. Females represented 56.7% of the population and the sex ratio was 0.76. The sex ratio was 0.73% in pulmonary emboli, 0.85% in deep vein thrombosis and 0.69 in cases of combined pulmonary emboli and deep vein thrombosis. Ages ranged from 17 to 92 years with a mean age of 49 years. The mean age was also 49years in pulmonary emboli, 50 years in thrombophlebitis, and 44 years in combined pulmonary emboli-thrombophlebitis.

The age group 60 and older was the most frequently affected followed by 30-39 years old with respectively 27.3 and 24.7% of cases. In the age group 60 and older, Women were the most frequently affected, while men were predominantly affected in the age group 30-39 years.

In 70% of cases, patients came from the University hospital, 20% from peripheral medical centers and 10% from private medical centers.

Among patients coming from other department of the university hospital, the vast majority were from the medical emergency services (69%), followed by cardiac ambulatory consults (38%), then by the Ob-Gyn service (13%)

The comorbidities were anaemia in 38% of cases, essential hypertension in 31%, renal failure in 7.7% and diabetes in 6.7%.

No risk factor of thromboembolic disease was found in 11.85%. A personal history of venous thromboembolic disease was found in 5.31% and a family history in 7.73%.

The aetiologies were sedentarily in 38.5% of cases, obesity in 33% of cases, the non O blood type in 21% of cases, pregnancy and postpartum in 20.6% of cases, age above 65 in 20.1% of cases. We found less frequently smoking (12%), prolonged bedbound (11.3%), estro-progestatives (6.7%), long trip (5%), erysipèle (4.6%), uterine fibroma (4.12%), cancer (3%), orthopedic surgery and immobilization from casting (2.5%), post abdominal surgery (2%), hearth failure (1%), hemopathy (1%) ([Table 1](#)).

The mean length of hospital stay was 12 days, ranging from 1-44 days. The inpatient mortality rate was 10%.

## DISCUSSION

In the past, the thromboembolic disease was less frequent in Sub-Saharan Africa but has progressed over the last years as per sub-Saharan in-hospital studies. In fact the hospital prevalence of this disease was 20.26% in 2014 in Burkina Faso, 10.09% in 2010, doubling within 5 years.

With one hundred ninety four (194) cases registered within 17months, it exceeds Boukinda's result [\[2\]](#) in 1996 with 2cases in Congo and Bertrand's result [\[3\]](#) which concluded that thromboembolic diseases ranked tenth among cardiovascular diseases in Ivory Coast from 1988 to 1990 with 56 cases within 3 years.

Even though there is currently limited epidemiologic data on venous thromboembolic disease in Sub-Saharan Africa, this disease remains probably underestimated because of the limited availability of diagnostic materials such as Venous Doppler ultrasound of lower extremities and pulmonary arteries angioscan in countries with limited resources. We found an increased

frequency of venous thromboembolic diseases in African literature between 2000 and 2010. In fact, most authors sets its hospital prevalence between 1.2% and 3.1% [\[6, 7, 8, 9\]](#).

Pulmonary embolus is more frequent with 50.5% of cases, followed by the deep vein thrombosis of lower extremities in 38%. The combination pulmonary embolus and deep vein thrombosis of lower extremities was found in 11%. This result was frequently found in the literature [\[5, 6-8\]](#).

In our study, the patients mean age was 49years matching the Africans studies where it ranged between 40 and 52 years [\[1, 6-8\]](#). We found that the predominant age group was 60years and older, followed closely by 30-39years. In Spencer's study, the majority of patients (55%) was older than 65years. The mean age is also higher in western studies with 57+/-17 years as per the PIOPED registry II [\[11\]](#) and 60 +/- 15 years in Nkamura study [\[12\]](#).

The incidence of venous thromboembolic disease increases with age reaching 12.5 per 1000 persons older than 75 years, while the incidence is 5 per 1000 persons 60 through 75 years and 2.5 per 1000 for 40-59 years old [\[13\]](#). Nowadays it has been observed more cases of venous thromboembolic disease in younger populations of sub-Saharan Africa [\[14\]](#).

In our study, women were most affected par this disease with a gender ratio of 0.76 as in most studies [\[5, 7, 8, 15, 16\]](#).

The young age of our patients and female gender is most likely related to the some etiologic factors such as the pregnancy and peripartum periods, obesity and sedentarily. The study Depakpo found that obesity and sedentarily were the risk factors of venous thromboembolic disease in women in 31.6% and 28% respectively [\[16\]](#). Aduful in Ghana showed the risk of some "sedentary" jobs in the onset of deep vein thrombosis of young persons [\[14\]](#).

The usual risk factors such as surgery, the poor venous system, prolonged immobilization, seem to come after the risk factors such as sedentarily, obesity, pregnancy and postpartum. In our study, the peripartum period ranks four in the aetiologies. Those factors are usually found in young populations. It is important to underline

that several risk factors can be found in the same person.

The usual risk factors keep though an important place dependent on the context. In Cotonou, immobilization in medicine and surgery are the aetiologies in 31.6% [16], while in United States the postoperative period is responsible in 21.7% of venous thromboembolism [17].

The lower rate of venous thromboembolic disease in postoperative period and in orthopedic surgery seems to be related to the systematic prevention in those contexts. This prevention remains insufficient in our countries. In fact, a study of 487 inpatients treated at the hospital in Benin [18] revealed that the prevention of deep vein thrombosis was performed only in 33.7% of indicated cases and this prevention was adequate only in 6% of patients. Similar results were found in Senegal, in the study of Ba et al [19] of 520 patients of 12 hospitals, where deep vein thrombosis prevention was adequately performed only in 33% of patients in medicine and in 37% of surgical patients.

In our study, no risk factor of venous thrombo-embolic disease was identified. A

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personal history of venous thromboembolic was noted in 5.31%, and a family history in 7.73%. No thrombophilia work up was realized in our context given the unavailability. Denakpo [16] found 30% of positive protein C in the study. In Africa, there are limited data on the implication of thrombophilia in the occurrence of venous thromboembolic disease.

The Inpatient mortality was 10%. Ndiaye [6] reports mortality of 25% in pulmonary, which is usually related to massive pulmonary embolism.

## CONCLUSION

The venous thromboembolic disease is a reality in Africa where the incidence has been rising, affecting younger population and female gender. The etiologic factors are various and the prevention is possible. The intrinsic risk factors such as thrombophilia are poorly investigated in our context given their unavailability.

## CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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