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Venous Thromboembolism in Hospitalization in the Cardiology Department of University Hospital Gabriel Toure

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Abstract

Venous thromboembolism (VTE) is serious and life threatening, it requires immediate emergency and multidisciplinary care.

***Objective:** The aim of this study was to describe the epidemiological, clinical and clinical characteristics in patients hospitalized for thromboembolism in the cardiology department of University Hospital Gabriel TOURE.*

***Methodology:** It was a retrospective and descriptive study from January 2011 to December 2014 and involved all patients hospitalized during the study period.*

***Results:** The study included 70 patients out of 1738 hospitalized patients; with a prevalence of 4, 02%. The average age was 46.46 years, with extreme ages of 17 and 90 years. The sex ratio was 0.46. The main risk factors found were oral contraception (17.14%), HIV (15.71%), overweight (11.43%) and smoking with 8.57% of active smokers and 5.71% of weaned smokers. 70% (n = 49) of patients had venous thrombosis of the lower limbs, 18.57% (n = 13) had a pulmonary embolism, 11.43% (n = 8) had both venous thrombosis and pulmonary embolism. At the Doppler of the lower limbs, venous thrombosis involved the left lower limb in 57.89% and the right lower limb in 40.35%. According to the chest angio-CT, 28.57% of obstructions were located in the left branch of the pulmonary artery, 9.52% in the right branch and 61.90% of obstructions were bilateral. Four (4) deaths were recorded, all in a context of massive pulmonary embolism. The fatality rate was 5.71%.*

***Conclusion:** Venous thromboembolism is a frequent cause of hospitalization. With an easy diagnosis, it can be severe with a prognosis often reserved despite good care.*

Keywords: *Venous thromboembolism, Cardiology, Gabriel TOURE Hospital.*

Introduction

Venous thromboembolic disease (VTD)with its two clinical aspects (deep venous thrombosis and pulmonary embolism) is a common condition. Yearly incidence of deep-vein thrombosis (DVT) was estimated to be equal for both sexes with 1,6/1000 inhabitants [1] and 48/100000, whereas incidence of pulmonary embolism with or without deep vein thrombosis was 23 per 100 000. [1, 2].

The VTD is responsible in France for 10000-20000 deaths per year and constitutes the third cause of death in the United States of America [3.4].

Studies on venous thrombosis of lower limbs in sub-Saharan Africa have found prevalencesof 3.1% in Ivory Coast [5], 1.17% of cardiovascular pathologies in Senegal [6,7], 0.1% of pathologies in a specialized Cardiac environment in Nigeria [8] and 3.8% of cardiovascular events in HIV-patients in Burkina Faso [9].

In Mali, the prevalence of thrombophlebitis of lower limbs was estimated at 0.52% in 2005 [10] and 1.88% in 2009 [11].

A study carried out in 2006 in Bamako revealed that pulmonary embolism represented 1.7% of all hospitalizations in the two cardiology services of the G-Point hospital [12].

Beyond these publications, few studies to our knowledge have addressed the couple deep venous thrombosis (DVT) and pulmonary embolism (PE) in our country. Hence the interest of this study in hospital setting to describe the characteristics Epidemio-clinical and paraclinical in patients hospitalized for VTD in the Department of Cardiology in University hospital Gabriel Touré.

Method

This study was retrospective and descriptive covering a period of four (4) years from January 01, 2011 to December 31, 2014.

It was realized in the University hospital Gabriel Touré in the Department of Cardiology in Bamako hospitalized patients. The sample involved all hospitalized patients during the study period, presenting a thrombophlebitis of members confirmed by venous Doppler ultrasound of the limbs or a pulmonary embolism confirmed by thoracic Angio-tomodensitometry. Data were collected first using a formulary and then inserted in an Excel file. Analysis was performed with IBM SPSS software.

Results

Out of a total of 1738 hospitalized patients, 70 were included in this study, a VTD prevalence of 4.02%. The incidence of the disease was 17 cases per year.

The female sex and age group 35-45 years were predominant with respectively 68, 60%(sex-ratio Male:Female of 0,46) and 27,10%. Mean age was 46.46 ± 21.66years, ranging from 17 to 90.

In the series, housewives were the most represented with 41.40%. Oral contraception and HIV-infection were the most represented risk factors with respectively 17.14 and 15.71% (Table I).

Table 1. *risk factors distribution in the sample of 70 hospitalized patients for venous thromboembolic disease.*

Risk factors	Number (%)
Active smoker	06 (08.57)
smoker	04 (05.71)
Active alcohol consumption	03 (04.28)
alcohol consummer	01 (01.43)
Extended bed rest	05 (07.14)
Oral contraceptivum use	12 (17.14)
History of thrombosis	04 (05.71)
Heart failure	05 (07.14)
Overweight	08 (11.43)
Immobilization through cast	01 (01.43)
HIV-Infection	11 (15.71)
Others	06 (08.57)

Most patients (52.90% of all cases) were hospitalized in the first week following onset of symptoms, or (Diagram 1). Clinical entities of VTD were isolated venous thrombosis (70%), Pulmonary embolism (PE) without prior diagnosis of venous thrombosis (18.57%) and PE following venous thrombosis (11.43%) (Diagram 2). Mains reasons for hospital visit were lower limb edema in 52.86% and dyspnea in 15.71% of all cases (Diagram 3).

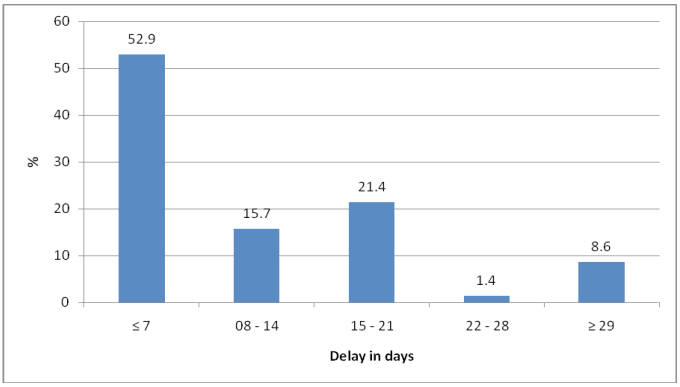
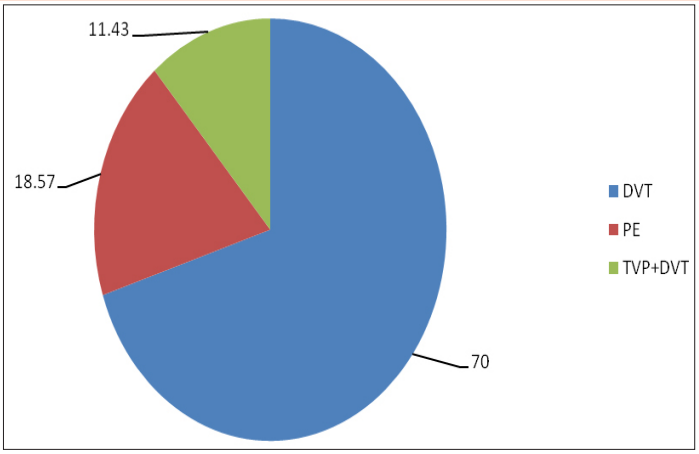


Fig 1. *Distribution of patients according to the time between onset of symptoms and date of hospitalization*



DVT: deep vein thrombosis PE: pulmonary embolism

Fig 2. *Distribution of venous thromboembolic diseases entities in the sample of 70 hospitalized patients*

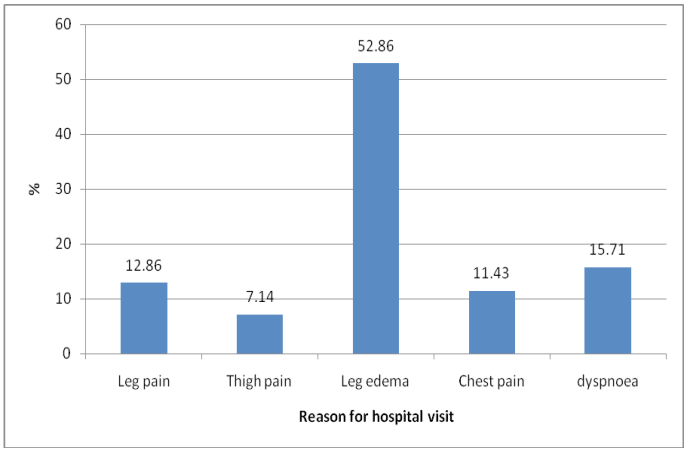


Fig 3. *Reasons for hospital visit in the sample of 70 hospitalized patients for venous thromboembolic diseases*

Clinically, lower extremity edema and thigh or leg pain were almost always present in deep vein thrombosis, with 91.84% and 79.60%, respectively (Diagram 4). The Homanssign was found in 65.31% of all cases.

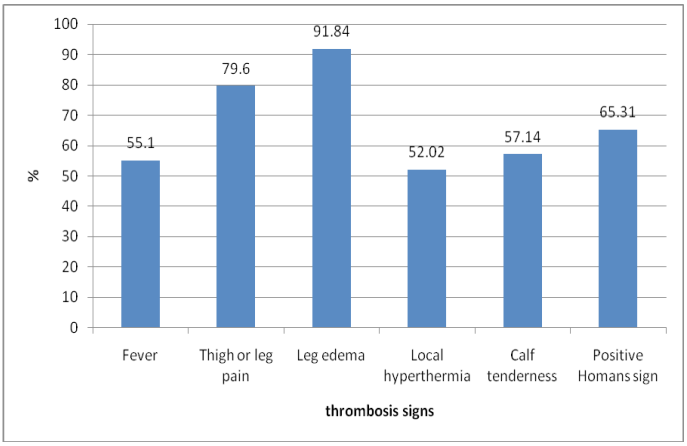
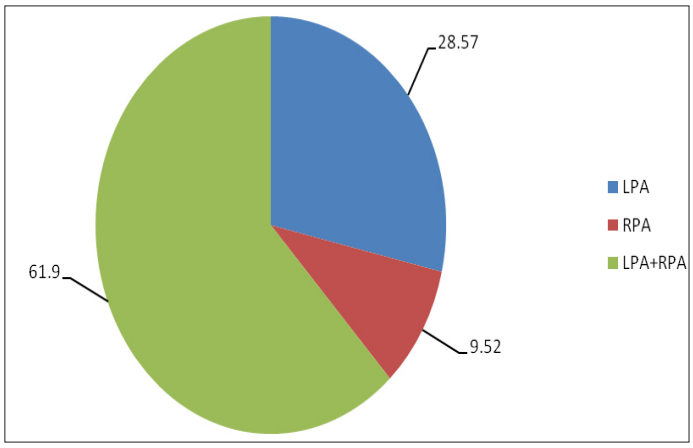


Fig 4. *Distribution of venous thrombosis signs in the sample of 70 hospitalized patients for venous thromboembolic disease*

All patients with pulmonary embolism had tachycardia, dyspnea in 95.24% and chest pain in 76.19% of all cases

The left lower limb was byDVT, with 33 cases (57.89%). On the other hand, the upper limbs are less affected, with only one case being 1.75%.

Bilateral pulmonary embolism was predominant with 61.90% followed by left pulmonary artery (28.75%)(Diagram 5).



LPA: left pulmonary artery RPA: right pulmonary artery

Fig 5. *Distribution of affected side in 21 pulmonary embolism*

The right branch block was the most electrical anomaly with 14.28%, followed by the right axial deflection with 12.86%.

Right cavitary dilation and pulmonary arterial hypertension were the most common ultrasound anomalies in the same percentage of 8.57% (Table II).

Table 2. *distribution of electrocardiographic and echocardiographic signs according to venous thromboembolic disease entity.*

	DVT	PE	DVT+PE	Total
RBBB	06 (12.24)	04 (30.77)	0 (0)	10 (14.28)
S1Q3 pattern	01 (02.04)	03 (23.08)	01 (12.50)	05 (07.14)
Right axis deviation	02 (04.08)	06 (46.15)	01 (12.50)	09 (12.86)
RVH	0 (0)	02 (15.38)	01 (12.50)	03 (04.28)
Antero-septal negative P	01 (02.04)	02 (15.38)	01 (12.50)	04 (05.71)
Paradoxical IV	0 (0)	02 (15.38)	01 (12.50)	03 (04.28)
PA trunk dilatation	0 (0)	01 (07.70)	02 (25.00)	03 (04.28)
RA+RV dilatation	01 (02.04)	02 (15.38)	03 (37.50)	06 (08.57)
RV thrombus	01 (02.04)	01 (07.70)	02 (25.00)	04 (05.71)
PAH	0 (0)	04 (30.77)	02 (25.00)	06 (08.57)

Chest radiography was performed in only 8 patients.

The rate of D dimers was positive (> 500NG/ml) in 100% of patients who performed this examination. In the series 67.14% of patients had normal blood glucose. Anemia was found in 31.43% of patients.

Most patients had a favorable evolution, or 84.28% of cases.

Four (4) patients died as a result of a massive pulmonary embolism, with an overall lethality rate of 5.71%.

Discussion

In the study conducted from January 1, 2011 to December 31, 2014 and conducted in the cardiac service of the teaching hospital of Gabriel Toure, 70 cases of VTE were selected from 1738 hospitalization records or a hospital prevalence of 4.02%.

In Nigeria according to IGUN [8] The prevalence of VTE was 3.8% in and in Burkina Faso, Niakara [9] reported the same frequency among cardiovascular events during HIV infection. In European countries, prevalence ranges from 17-42.6% [13-14].

The decline in prevalence in black compared to the European series would be explained by the existence of a racial factor: Blacks have significantly lower platelet levels, and a significantly higher platelet volume [15]. Of the 70 cases of VTE, 49 patients (70%) had isolated DVT, 13 patients (18.57%) had a PE without prior diagnosis of venous thrombosis and 8 patients (11.43%) had a complicated venous

thrombosis of pulmonary embolism. These results are higher than those of Anderson in a U.S. study [2], with 48% isolated DVT and 23% PE with or without DVT.

In our series, the sex ratio male:femalewas 0.46. This female predominance was found by Samama[16] and Traoré[17] with respectively 54% and 56%.

The age group of 35-45 years was mainly represented mading, 27.10% of the patients. The average age in our series was 46.46 years, with extremes of 17 and 90 years. This average was comparable to that observed in other studies [18-19] , and Reny[20] at the European Hospital of Georges Pompidou, found an average age of 43 years. Housewives were most represented work group with 41.40% in our study. This predominance could be explained by the fact that housewives are the most represented social layer in Mali. This result is comparable to that of Traore[17] who found 40% of housewives.

In our study, oral contraception and HIV infection were the risk factors frequently encountered, respectively 17.14% and 15.71%.

Kingue [21] estimated HIV as a contributing factor in 11.14% of Patients. Niakara [9] found HIV as cofactor in 10% of cases. 62.86% of patients had no triggering factors. The recent birth was mostly found, ie 17.14% of the cases. This could be explained in part by the female dominance. According to our anamnestic data, lower limb edema was the most observed reason for consultation, or 52.86% of cases. The literature confirms that the lower limb's edema is the sign of the DVT [13] .

In addition, it was also the predominant clinical manifestation of DVT, followed by thigh or leg pain, respectively 91.84% and 79.60% of cases. Diallo [10] had found that the dominant signs of thrombophlebitis of the lower limbs were local inflammation and painful impotence of the limbs with frequencies of 40 and 36% respectively. In our serie, tachycardia, dyspnea, and chest pain were quasi-constant in the PE with 100%, 95.24%, and 76.19%, respectively.

We infer that these signs should lead us to more attention in the search for a PE in patients.

In our series, no patient had a bilateral venous echo-Doppler venous thrombosis; 57.89% of the location of the thrombosis was at the lower left limb, this is the most frequent location, followed by the lower right limb with a rate of 40.35%.

Benjelloun [22] , in the study of the epidemiology of VTE at teaching hospital of Hassan II of Fez (Morocco) had found that the most frequent localization of thrombosis is at the lower left limb with 60% of cases, followed by the lower right limb with 20.2% of cases.

So there is similarity in results between our study and that made in Morocco. In our series, only one patient had a phlebitis of the upper limbs(1.75% of the cases), secondary to a scoliotic thoracic deformation . Ferrario [23] in the "Journal of Throat, Otology and Rhinology" in 1997 had described the DVT as due to the usual vascular disorder at the lower limbs; It rarely appears at the upper extremity or neck.

According to the thoracic CT, our study showed that of the patients with pulmonary embolism, 61.90% of the cases had a bilateral pulmonary embolism, 28.57% of the obstructions were located at the left branch of the pulmonary artery and 9.52% at the level of The right branch. This left predominance of pulmonary embolism was found by Raveloson[24] [13] in the teaching hospital of Antananarivo, Madagascar, in the hospital of 4.64% of the left proximal branch, and 2.32% of the cases at the right proximal branch.

We have seen in our series the classical interest of ECG (right ventricular hypertrophy, right branch block, S1Q3 aspect). At Cardiac Doppler Echo, right cavitary dilation and pulmonary arterial hypertension were the most common ultrasound anomalies, with the same percentage of 8.57%. Diall [12] in a study conducted on the PE in 2006 at the Point-G hospital had found a right cavitary dilatation in 40.80% of cases. The radiographic signs were dominated by the ascent of the Hémicoupole diaphragmatic (37.50%) as pointed out by Diall [12], which found this radiological anomaly in 63.3% of the cases. In our study, 100% of patients who made a dose of D dimers had a rate greater than 500ng/ml.

Stein [25] had revealed that the rate of D dimers should lead us to reverse a diagnosis of VTE and to stop the investigation of low-risk patients. In addition Vincens [26] in 2007 had noted that a concomitant prescription of the reactive protein C (PCR) assay coupled with that of the rate of D dimers had an interest in the diagnostic approach of VTE.

Hospital evolution was found to be favorable in 84.28% of patients. We recorded a lethality of 5.71%, which corresponds to the 5% of the literature [14, 21,

27]. According to the same sources in the absence of treatment the lethality varies between 25 and 30%.

Conclusion

The present work determines epidemiological, clinical and paraclinical aspects of venous thromboembolic disease (VTD)in the cardiology department of teaching hospital of Gabriel Toure.

According to this study, VTD affects women and subjects much more between 35 and 45years. They are significantly discovered by lower limb edema, leg pain, thigh pain for deep venous thrombosis of the lower limbs. In the case of pulmonary embolism, his manifestations are mainly dominated by tachycardia, chest pain, and dyspnea.

The combination of several risk factors remains a hypothesis that still requires a great deal of study to determine the frequency and relative risk of the VTD of each of these factorial associations.

In the Malian context, thromboembolic disease is a frequent cause of hospitalization and is easy to diagnose. It can be serious with a prognosis often reserved despite a good support.

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