Cardiology and Cardiovascular Research
2024; Vol. 8, No. 2, pp. 73-77
https://doi.org/10.11648/j.ccr.20240802.14

Research Article

Epidemio-Clinical and Paraclinical Aspects of Venous Thromboembolic Diseases in a Cardiology Department in Mali

Toure Mamadou[1, 2, 3, *], Thiam Coumba Adiaratou[1, 2], Fofana Daouda[1], Sankare Hamma[1], Dagnogo Mariam[1], Traore Ousmane[1], Yalcoue Djamila[1], Guire Sadik Mahamat[1], Sidibe Samba[1], Diall Mahan Ameri[1], Sow Mady[1], Cisse Almadane[1], Keita Asmaou[1], Daffe Sanoussy[1], Konate Massama[3], Coulibaly Souleymane[3, 4], Menta Ichaka[2, 3]

[1]Cardiology Department, CHU-Mother Child, Bamako, Mali

[2]Cardiology Department, CHU-Gabriel Touré, Bamako, Mali

[3]Faculty of Medicine, University of Sciences, Techniques and Technologies of Bamako, Bamako, Mali

[4]Ardiology Department, CHU-Point G, Bamako, Mail

Abstract

Introduction: Venous thromboembolic diseases (VTED) include deep vein thrombosis of the lower limbs and pulmonary embolism (PE), which is its severe form due to its high mortality. The objective of our study was to determine the epidemio-clinical and paraclinical aspects of patients hospitalized for venous thromboembolic diseases. *Patients and method*: Cross-sectional study with prospective recruitment from patient records hospitalized for (VTED) from January to December 2023 in the cardiology department of the Mother-Child University Hospital in Bamako, Luxembourg. *Results*: We collected 55 out of 580 patient records hospitalized for (VTED), a hospital frequency of 9.48%. PE accounted for 58.20% of cases, 10.90% for deep vein thrombosis (DVT), and 30.90% for their association. The mean age of patients was 55.56 years ± 15.52 years. The majority of patients, 90%, were under 66 years of age. The predominance was female, 56%. In lower extremity DVT, calf pain and Homans' sign were present in 56% and 24% of patients. In pulmonary embolism, dyspnea and chest pain were present in 85.50% and 65.50% of patients. Etiological factors were dominated by neoplasia in 10.90%, contraception 5.45% and orthopedic surgery in 5.45% of cases. Cardiovascular risk factors were a sedentary lifestyle (50.90%), obesity (34.45%), high blood pressure (36.36%) and diabetes (21.81%). Laboratory abnormalities were elevation of troponin (46.87%), BNP (40.62%), D-Dimer (62.50%) and anemia (9.09%). Electrocardiographic abnormalities were tachycardia in 65.4% and S1Q3 in 21.81% of patients. Echocardiography showed dilation of the right cavities (47.27%), systolic pulmonary arterial hypertension (38.18%) and thrombus in the right cavitary (5.45%). On thoracic CT angiography, PE was proximal (36.40%), bilateral (61.80%) and massive (29.10%). On venous Doppler ultrasound, TVP was proximal in 65.21%. *Conclusion*: VETD was more common in women and younger subjects.

Keywords

Thromboembolic Diseases, Epidemiology, Clinical, Paraclinical, Mali

[*]Corresponding author: drmatour@yahoo.fr (Toure Mamadou)

Received: 6 May 2024; **Accepted:** 21 May 2024; **Published:** 30 May 2024

1. Introduction

Venous thromboembolic disease (VTED) includes deep vein thrombosis of the lower extremity and pulmonary embolism [1, 2]. Venous thromboembolic disease is a serious disease with significant morbidity and mortality. In 2004, 370,000 deaths were attributed to VTE in 6 European countries [3]. In sub-Saharan Africa, they are underdiagnosed because of clinical polymorphism, hence the initiative of this work, which is set as an objective.

2. Patients and Method

This is a cross-sectional study with prospective recruitment over a period of one year, from January to December 2023, carried out in the cardiology department of the Mother-Child University Hospital in Bamako, Luxembourg. All patients of both sexes and of all ages hospitalized in the VTE department confirmed by CT angiography of the pulmonary arteries and/or venous Doppler ultrasound of the lower extremities were included. Information was collected for each patient on a card. The diagnosis of VTE was based on clinical evidence, Wells Clinical Probability (DVT) and Revised Geneva (EP) Clinical Probability Scores, and data from venous lower extremity Doppler ultrasound and CT angiography of the pulmonary arteries. Sociodemographic characteristics of patients, etiological factors of VTE (cancer, recent surgery, especially orthopedic surgery, contraception, prolonged bed rest, postpartum), cardiovascular risk factors (hypertension, diabetes, smoking, dyslipidemia, obesity, sedentary lifestyle, heredity) were sought. Data were entered on Word 2016 and Excel 2007 and analyzed on SPSS version 22. Confidentiality was respected and data processing was anonymous.

3. Results

We collected 55 out of 580 patient records hospitalized for VTE, i.e. a hospital frequency of 9.48%. PE accounted for 58.20% of cases, 10.90% for DVT, and 30.90% for their association (Figure 1). The mean age of patients was 55.56 years ± 15.52 years. The majority of patients, 90%, were under 66 years of age. The predominance was female, 56%. In lower extremity DVT, calf pain and Homans' sign were present in 56% and 24% of patients. In pulmonary embolism, dyspnea and chest pain were present in 85.50% and 65.50% of patients. Etiological factors were dominated by neoplasia in 10.90%, contraception 5.45% and orthopedic surgery in 5.45% of cases. Cardiovascular risk factors were physical inactivity (50.90%), obesity (34.45%), hypertension (36.36%) and diabetes (21.81%) (Table 1). Laboratory abnormalities were elevation of troponin (46.87%), BNP (40.62%), D-Dimer (62.50%) and anemia (9.09%). Electrocardiographic abnormalities were tachycardia in 65.4% and S1Q3 in 21.81% of patients. Echocardiography showed dilation of the right cavities (47.27%), systolic pulmonary arterial hypertension (38.18%) and thrombus in the right Right cavitary (5.45%). On thoracic CT angiography, PE was proximal (36.40%), bilateral (61.80%) and massive (29.10%). On venous Doppler ultrasound, DVT was proximal in 65.21% (Table 2).

Table 1. *CV risk factors and etiological Factors.*

CV risk factor and Etiological Factors	Number	%
High blood pressure	20	36,36
Diabetes	12	21,81
Dyslipidemia	4	7,27
TOBACCO	7	12,72
Obesity	19	34,45
Sedentary lifestyle	28	50,90
History of DVT	2	3,63
History of PE	4	7,27
CANCER	6	10,90
Pregnancy or postpartum	2	3,63
Contraception	3	5,45
Orthopedic surgery	3	5,45

CV risk factor and Etiological Factors	Number	%

Table II: Paraclinical data

Table 2. *CV risk factor and Etiological Factors of VTE.*

Para-clinical data		Number	%
Biology n = 32	D-Dimer	20	62,50
	Troponins	15	46,87
	NPP	13	40,62
ECG n=55	Tachycardia	36	65,45
	S1Q3	12	21,81
	BBD	3	5,45
	FA	1	1,81
	Negative T Waves V1-V4	4	7,27
Cardiac Doppler Echo n= 55	Right-hand cavity expansion	26	47,27
	PAH	21	38,18
	Intracavitary thrombus	3	5,45
	VCI Expansion	6	10,90
Venous Doppler ultrasound n=23	Proximal DVT	15	65,21
	Distal DVT	8	34,78
CT angiography of pulmonary arteries n= 30	Proximal PE	17	56,66
	Distal PE	19	43,33
	Unilateral PE	11	36,66
	Bilateral PE	19	63,33
	Massive PE	8	26,66

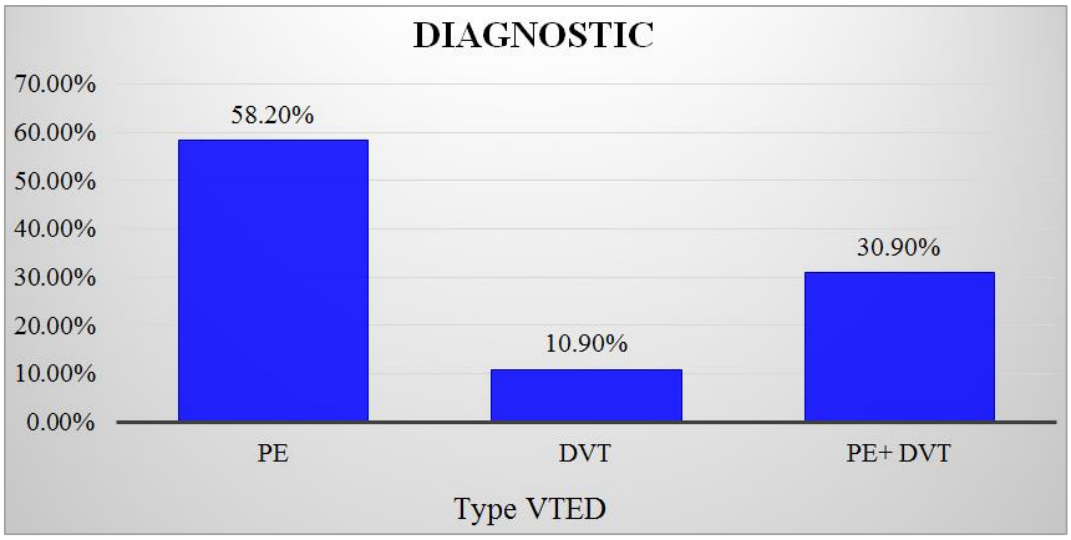

Figure 1. *Type VTED.*

4. Discussion

The hospital frequency of VTED in the study was 9.48%, close to Damorou's 9.1% [4], higher than Owono's 1.6% [5], Igun's 3.80% [6], and Coulibaly's 4.95% [7], but lower than Thiam's 26% [8]. The distribution of VTED was 58.20% isolated pulmonary embolism, 10.90% isolated deep vein thrombosis and their association of 30.90%, the same observation made by Coulibaly [7] and Thiam [8] in disagreement with Mbaye [9], Nourelhouda and Simeni [10, 11] who found the predominance of DVT with 66.7% and 49.5% respectively. The mean age of our patients was 52.9 ±16.4 years with extremes of 29 and 80 years in agreement with the literature [7, 8, 9].

The predominance was female, superimposed on the rest of the literature [4, 7, 8, 9, 12,]. The cardiovascular risk factors found were a sedentary lifestyle (50.90%), obesity (50.90%), high blood pressure (36.36%) and diabetes (21.81%) in agreement with Owono and Ondze-Kafata [13], while Diall found in his series arterial hypertension and heart disease [14]. For Diedhiou [15], it was mainly heart failure. The classic etiological factors of VTED were cancer (10.90%), orthopedic surgery (5.45%) and contraception (5,45%). In his series Camara [12], found 5.6% cancer and 24.1% recent surgery. For Coulibaly [7], cancer was 16.10% and recent surgery 11.50%. Functional signs in pulmonary embolism were dominated by dyspnea (85.50%) and chest pain (65.50%) in agreement with Damorou [4]. which found 98% and 78.4% respectively. For lower extremity DVT, the clinic was dominated by calf pain (56%) and a positive Homans sign (24%), in agreement with Diedhiou [15]. In our study, the biological abnormalities were elevation of troponin (46.87%), BNP (40.62%), D-Dimer (62.50%) and anemia (9.09%). Coulibaly [7] in his series found an elevation of D-Dimer (100%) of patients and anemia (34.34%). This difference can be explained by the non-systematization of the determination of D-Dimer in our study. Tachycardia (65.45%) and an S1Q3 appearance (21.81%) were the most common electrocardiographic abnormalities in agreement with Camara [12]. On transthoracic echocardiogram and in agreement with Damorou [4], Coulibaly [7], right cavitary dilation (47.27%) and PAH (38.18%) were the frequent abnormalities. Venous Doppler ultrasound of the lower limbs found DVT of the lower limbs in 41.81% of cases and it was proximal in the majority of cases (65.21%). In the Camara [12] series of lower extremity DVT was proximal in 56.50% of cases. On CT angiography of the pulmonary arteries, PE was bilateral in 63.33% of cases and proximal in 56.66%s close to MBaye [9] data which found bilateral PE in 74% and proximal in 50% of cases. On the other hand, for Camara [12], the PE was proximal and distal with 50% each. The embolism was massive in 26.66% of our patients lower than the 33.3% of Camara [12].

5. Conclusion

Venous thromboembolic diseases are relatively common but underdiagnosed. The predominance was female and affected more subjects under 65 years of age. The classic functional signs were found, namely dyspnea, chest pain and calf pain. The contributing factors were a sedentary lifestyle, obesity and a history of cancer. Proximal and bilateral pulmonary embolism were the most common CT abnormalities and deep vein thrombosis of the lower limbs was proximal in more than half of the cases to venous Doppler of the lower limbs.

6. Limitations of the Study

Single-center study, sample size limit, non-randomization.

Abbreviations

VTED	Venous Thromboembolic Disease
PE	Pulmonary Embolism
DVT	Deep Vein Thrombosis
PAH	Pulmonary Arterial Hypertension
BNP	Brun Natriuretic Peptide
MI	Lower Extremities
BBD	Right Branch Block
IVC	Inferior Vena Cava

Conflicts of Interest

The authors declare no conflicts of interest.

References

[1] Godier A., Lakhdari M., Samama C. M. – Maladie thromboembolique veineuse en réanimation. [Venous thromboembolic disease in intensive care]. Conférence d'actualisation. 53e congrès national d'anesthésie réanimation SFAR 2001.

[2] Emmerich J. – Fréquence et facteurs de risque de la maladie veineuse thromboembolique [Frequency and risk factors for throm-boembolic venous disease]. La Revue du Praticien 2003; 53, 1: 14-19.

[3] Cohen AT, Agnelli G, Anderson FA, et al. Venous thrombo-embo lism (VTE) in Europe. The number of VTE events and associated morbidity and mortality. Thromb Haemost 2007; 98: 756-64.

[4] Findibe Damorou, Soodougoua Baragou, Machihuede Pio, Yaovi M Afassinou, N'kenon W N'da, Soulemane Pessinaba, Tchaa Tchérou, Halé Attiogbé, Koffi Ehlan, Edem Goeh-Akue, et Komlavi Yayehd. Morbidité et mortalité hospitalière des maladies cardiovasculaires en milieu tropical: exemple d'un centre hospitalier à Lomé (Togo). [Hospital morbidity and mortality of cardiovascular diseases in tropical environments: example of a hospital in Lomé(Togo)]. Pan Afr Med J 2014; 17: 62. Publication en ligne 2014 janv. 26. French. https://doi.org/10.11604/pamj.2014.17.62.2237

[5] Owono Etoundi P, Esi éne A, Bengono Bengono R, Amengle L, Afane Ela A, Ze Minkande J. La Maladie Thromboembolique Veineuse. Aspects Épid émiologiques et Facteurs de Risque dans un H ôpital Camerounais. [Venous thromboembolic disease. Epidemiological Aspects and Risk Factors in a Cameroonian Hospital] Health Sci. Dis 2015; 16 (4): 1-4.

[6] Igun G. A 10-year review of venous thrombo-embolism in surgical patients seen in Jos, Nigeria. Niger Prostgrad Med J 2001; 8(2): 69-73.

[7] Coulibaly S, Menta I, Diall IB, Ba HO, Diakit é M, Sidib é S, Diallo N, Kodio A, Traor é S, Kan é K, Sidib é S, Tour é K, Camara Y, Konat é M, K éta A, Thiam CA, Diallo B. Maladie thromboembolique veineuse dans un-CHU de Bamako. [Venous thromboembolic disease in a University Hospital in Bamako] Health Sci. Dis: Vol 19 (2) April – May – June 2018 Available at https://www.hsd-fmsb.org/index.php/hsd/article/view/1026

[8] Thiam A., Tindano C., Kologo J., Millogo GR., Yam éogo NV., Kagambega LJ., Samadoulougou AK., Zabsonr é P. Maladie thromboembolique veineuse au Burkina Faso. R ésultats pr éliminaires du registre prospectif REMAVET. [Preliminary results of the REMAVET prospective register]. Livre des r ésum és des 5 èmes journ ées scientifiques de la SOCARB 2015.

[9] Mbaye A., Dioum M., Nga ïl éAA., Diop A., Leye M. C. B. O., Ka M. M., Kouam é I., Ndiaye M., Ciss é AF., Dieng M., Faye MO., Dia S., Babaka K., Aw F., SA. S: La maladie thrombo-embolique veineuse: pr évalence, facteurs étiologiques et prise en charge en service de cardiologie à Dakar au S én égal. [Venous thromboembolic disease: prevalence, etiological factors and management in the cardiology department in Dakar, Senegal.] Ang éiologie 2016; 68(3): 47-53.

[10] Nourelhouda C, Abbassia D. Maladie thromboembolique veineuse dans la r égion de Sidi Bel Abbes, Alg érie: fr équence et facteurs de risque. [Venous thromboembolic disease in the Sidi Bel Abbes region, Algeria: frequency and risk factors] Pan Afr Med J 2013; 16: 45. Publication en ligne 2013 oct. 10. French. https://doi.org/10.11604/pamj.2013.16.45.2620

[11] Simeni Njonnou. S. R, Nganou Gnindjio. C. N, Ba. H, Boombhi. J, Ahmadou Musa. J, Kuate. M. L, Pefura. Y. E. W, Menanga. A. P, Kingue. S: Épid émiologie de le maladie veineuse thromboembolique à Yaound é: étude transversale en Afrique subsaharienne. [Epidemiology of thromboembolic venous disease in Yaound é: a cross-sectional study in sub-Saharan Africa] La Revue de M édecine Interne 2019; 40 (supp 1): A186.10.

[12] Camara Y, B â HO, Sangar é I, Sidib é N, Thiam ep Doumbia C, Keita ep Maiga A. et al, Maladie thromboembolique: aspects épid émio-cliniques et th érapeutiques au CHU de Kati. [Thromboembolic disease: epidemio-clinical and therapeutic aspects at the Kati University Hospital] Health Sci. Dis: Vol 22 (4) April 2022 pp 86-89 Available free at https://www.hsd-fmsb.org/index.php/hsd/article/view/3547

[13] Ondze-Kafata L. I., Kouala Landa C., Traore Kissima A., Loumouamou M., Bani M., Amounya Zobo S. et al – La thrombose veineuse des membres inf érieurs à brazzaville: à propos de 44 cas. [Venous thrombosis of the lower limbs in Brazzaville: about 44 cases] Cardiologie Tropicale 2012; 135.

[14] Diall I. B., Coulibaly S., Minta I., Ba Ho, Diakite M., Sidibe N. et al. – Etiologie, clinique et évolution de l'embolie pulmonaire. A propos de 30 cas. [Etiology, clinic and evolution of pulmonary embolism. About 30 cases] Mali M édical 2011; 26, 1: 3-6.

[15] Diedhiou D., Sarr A., Ndour-Mbaye N. M., Ka Cisse M., Diop S. N. – Phl ébite des membres inf érieurs en m édecine interne. Aspects épid émiologiques, cliniques et étiologiques. A propos de 40 cas dakarois [Phlebitis of the lower limbs in internal medicine. Epidemiological, clinical and etiological aspects. About 40 Dakar cases]. M édecine Afrique Noire 2012; 59, 3: 172-176.