East African Medical Journal Vol. 92 No. 12 December 2015
AWARENESS OF VENOUS THROMBOEMBOLISM AMONG DOCTORS IN A NIGERIAN TERTIARY CENTRE
K. I. Korubo, MBBS, FMCPath, Department of Haematology and Blood Transfusion, University of Port Harcourt Teaching Hospital, Nigeria, O. N. Ekeke, MBBS FWACS, FICS, Urology Division, Department of Surgery, University of Port Harcourt Teaching Hospital, Nigeria and H. E. Omunakwe, MBBCh, DOccMed, FMCPath, Haematology Unit, Department of Pathology, Braithwaite Memorial Specialist Hospital, Nigeria

Request for reprints to: K. I. Korubo, Department of Haematology and Blood Transfusion, University of Port Harcourt Teaching Hospital, PMB 6173, Email: dadakorubo@yahoo.com

AWARENESS OF VENOUS THROMBOEMBOLISM AMONG DOCTORS IN A NIGERIAN TERTIARY CENTRE

K. I. KORUBO, O. N. EKEKE and H. E. OMUNAKWE

ABSTRACT

***Background*: Venous thromboembolic (VTE) is a preventable leading cause of morbidity and mortality worldwide and is a cause of sudden death. Awareness of VTE among doctors will reduce the incidence of unexpected deaths in hospitalised patients.**
***Objective*: To assess doctors' awareness of venous thromboembolism in our centre.**
***Design*: Cross sectional questionnaire based study.**
***Setting*: University of Port Harcourt Teaching Hospital, Nigeria.**
***Subjects*: One hundred and twenty four doctors attending a hospital grand-rounds session were recruited.**
***Results*: The response rate was 82.7% (124 of 150 questionnaires). Almost half (n=57, 46%) correctly identified VTE, but two (1.6%) did not know what VTE was and 27 (21.8%) stated it to be normal haemostasis. Commonly identified risk factors included: increased body mass index 113 (91.1%), diabetes mellitus 105 (84.7%), pregnancy 105 (84.7%), age 104 (83.9%), and immobility 104 (83.9%). Although clinical features were identified, VTE was acknowledged to be asymptomatic by 62 (50%) responders. About 68 (54.8%) did not know of a VTE risk stratification model and only one (0.8%) had used a model in practice. Responders commonly prescribed anticoagulants for prophylaxis. Although most had come across VTE in practice, 15 (12.1%) had not seen a case of VTE.**
***Conclusion*: The knowledge of VTE was average. There was a gap between knowledge and practice for this preventable disorder. Patients in our centre were not routinely risk stratified for VTE. Updating of medical knowledge is encouraged.**

INTRODUCTION

Venous thromboembolism (VTE) is characterised by the formation of clot in a vein. The incidence varies in different parts of the world. It has an estimated prevalence of 2.9% in our environment and the incidence is thought to be low compared to the rest of the world which may be attributed to genetics and environmental factors; however this low incidence may also be due to under reporting of VTE, poor diagnostic techniques and low prevalence of inherited thrombophilias in the African population.

In Africa in recent times, there has been a gradual change of lifestyle to a more westernised and sedentary one. The world health organization (WHO) reports a global rise in mortality from non-communicable diseases (NCD) and up to 80% of deaths from NCD occurs in developing countries. There is increasing prevalence of obesity and metabolic disorders such as diabetes mellitus which are all predisposing risk factors for the development of VTE; there is also better availability of diagnostic facilities for detecting VTE and therefore the prevalence of VTE is on the increase.

Thrombotic disorders are a leading cause of morbidity and mortality worldwide and hospitalised patients are especially at risk of developing VTE. It commonly occurs in the lower limbs (DVT) but may also occur in the upper extremities or in the pulmonary vasculature where it is referred to as pulmonary embolism (PE). DVT is more common than PE and may be asymptomatic. It is clinically less severe than PE but requires prompt diagnosis and therapy to prevent propagation of clot which leads to PE. About 25% of DVT occur in the calf veins which can extend to involve the proximal veins (including the femoral, Popliteal and iliac veins). Proximal DVT if left untreated can dislodge and embolise to the lungs in about 50% cases, leading to PE. The risk factors for development of VTE include obesity, increasing age, major surgery, immobility, pregnancy, HIV infection and sickle cell anaemia. Typically, DVT

patients present with unilateral leg swelling and pain. Patients with PE usually present with severe respiratory distress, pleuritic chest pain, cough and PE is a cause of sudden death or death within the first few hours of presentation to the hospital. About 25% of cases with PE will present with sudden death as the first symptom.

Although VTE is a leading cause of unexpected death in hospitalised patients , it is preventable. In developing countries with high prevalence and death from infectious diseases, compounded with poor access to proper health care, not much attention is paid to VTE; moreover there is low use of prophylaxis. A few studies on VTE in Nigeria have been published (1, 2, 5, 8, 15), however there is paucity of literature on doctors' knowledge and practice of VTE. It is essential that doctors are knowledgeable of VTE and thromboprophylaxis. We carried out this study to assess the doctors' awareness of VTE in our centre.

MATERIALS AND METHODS

This was a cross-sectional questionnaire based study. A self administered structured questionnaire was distributed among doctors who attended a clinical-pathological conference of the hospital. The information obtained from the questionnaire included the demographics of responders, risk factors for VTE, risk stratification, use of anticoagulants and thromboprophylaxis, number of patients seen with VTE and a short case summary for which responders were asked for their possible actions for thromboprophylaxis. Results were analyzed with SPSS® version 20.0 computer software (SPSS Inc, Chicago IL, USA) and presented in charts, figures and tables.

Approval was obtained from the institution's Ethical Committee.

RESULTS

Of the 150 questionnaires distributed there were 124 responders, giving a response rate of 82.7%. The responders included 18 (14.5%) from department of anaesthesia, 13 (10.5%) from family medicine, 17 (13.7%) from internal medicine, 12 (9.7%) from obstetrics and gynaecology, 22 (17.7%) from paediatrics, 7 (5.6%) from pathology and 35 (28.2%) from surgery department and their designations ranged from registrar to consultant. Table 1 gives a summary of the details of the responders.

Table 1
Demographics of Respondents

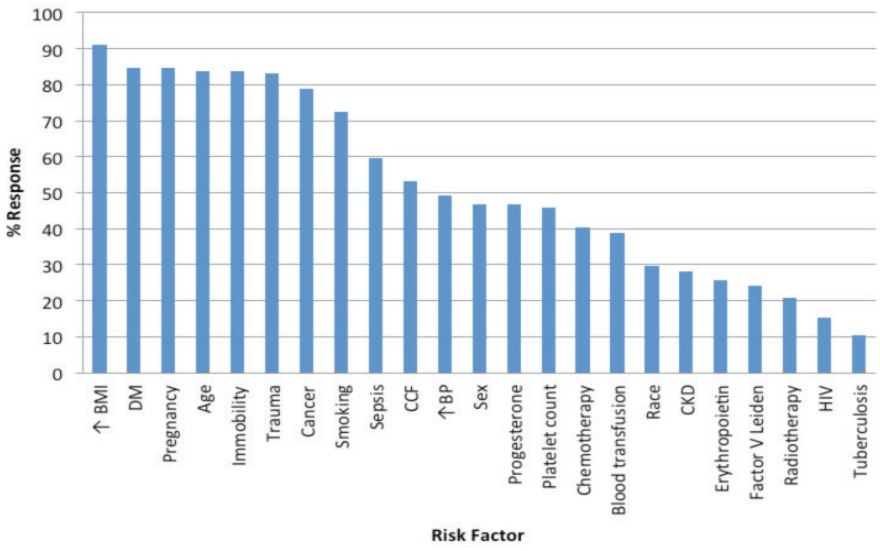
Total Participants by Designation	Department	Number of Respondents N (%)	Designation	Practice Years	Average number Practice years	Total Average Practice Years
Consultants = 24 (19.4%)	Anaesthesia	18 (14.5%)	Consultant	1	26	5.2
SR* = 39 (31.5%)			SR	5	7.8	
Reg† = 58 (46.8%)			Reg	12	2.4	
HO# = 3 (2.4%)	Pathology	7 (5.6%)	Consultant	0		6.6
			SR	3	9	
			Reg	4	4.8	
	Ear, Nose, Throat (ENT)	4 (3.2%)	Consultant	0		5.1
			SR	1	12	
			Reg	3	3.3	
	Family Medicine	13 (10.5%)	Consultant	0		4.9
			SR	8	8.5	
			Reg	5	6.2	
	Medicine	17 (13.7%)	Consultant	2	25	10.1
			SR	4	8.5	
			Reg	9	6.3	
			HO	2	1	

	Obstetrics & Gynaecology	12 (9.7%)	Consultant	0		4.7
			SR	5	8.4	
			Reg	7	5.6	
	Paediatrics	22 (17.7%)	Consultant	3	16	9.5
			SR	10	7.5	
			Reg	9	5.1	
	Surgery	31 (25%)	Consultant	18	22.3	8.6
			SR	3	6.7	
			Reg	9	4.6	
			HO	1	1	
Total= 124 (100%)	Total = 124					

SR*- Senior Registrar; Reg†- Registrar; HO#- House Officer

About 61 (49.2%) identified VTE as an abnormal condition, 57 (46%) identified it as a clot in the veins or lungs, however 2 (1.6%) did not know what VTE is and 27 (21.8%) stated it was normal haemostasis. The risk factors for VTE that were commonly identified included increased body mass index 113 (91.1%), diabetes mellitus 105 (84.7%), pregnancy 105 (84.7%), age 104 (83.9%), immobility 104 (83.9%), and trauma 103 (83.1%). Other risk factors identified are listed in Figure 1.

Figure 1
Chart of Risk Factors

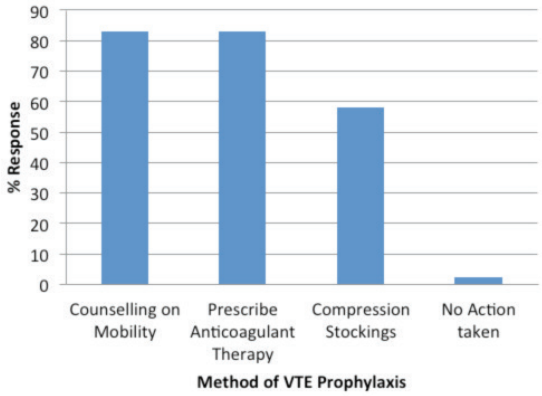


The clinical presentation of VTE included chest pain 103 (83.1%), difficulty in breathing 102 (82.3%), painful leg swelling 102 (82.3%), cough 83 (70%), skin discolouration 65 (52.4%), painful swollen arm 41 (33.1%), painless leg swelling 35 (28.2%). Of the responders, 62 (50%) acknowledged that VTE may be asymptomatic. There were 68 (54.8%) who did not know of a risk stratification model for VTE and only 1 responder (0.8%) had used a risk stratification model. Majority (n=118, 95.2%) agreed that VTE is a health concern and most (n=102, 82.3%) had seen a patient with VTE.

A little over two-thirds of the responders (n=86, 69.4%) had seen a case of VTE, of which (n=16, 18.6%) saw an average of 1-3 cases of VTE per month, 12 (14%) saw about 4-6 cases per month, 4 (4.7%) saw about >7 cases per month. There were 18 (14.5%) responders who had not seen a case of VTE while 20 (16.1%) did not give a response. The responders who had not seen a case of VTE had an average practice year of 5.4years (range 1.5 -15years) with 14 (77.8%) of them being junior residents while 4(22.2%) were senior residents. Of those who had not seen a case of VTE, 3(16.7%) described VTE as normal haemostasis.

What most of the responders did for VTE prophylaxis was to counsel the patient on mobility (n=103, 83.1%), commence an anticoagulant (n=103, 83.1%) and the use of compression stockings (n=72, 58.1%). Only 3 (2.4%) did not take any action (Figure 2).

Figure 2
Chart of VTE Prophylaxis by Doctors



Out of the 124 responders, 22 (17.7%) had never prescribed an anticoagulant for VTE while 99 (79.8%) had prescribed an anticoagulant for patients with VTE.

Some of the doctors prescribed anticoagulants because they felt the patients had a high risk of developing VTE (n=43, 34.7%), others prescribed it because it was routine in the unit to do so (n=31, 25%), or did so because they had seen a similar case develop VTE 24 (19.4%). A few doctors (n= 17, 13.7%) prescribed AC because they knew the patient needed it and only 4 (3.2%) did not give AC if there was no clinical evidence of VTE. The risk factors that patients had which led to prescription of prophylactic anticoagulant therapy included major hip surgery, immobility, malignancy, age, obesity, polycythaemia, cancer, major trauma, hypertension, diabetes mellitus, pregnancy, sickle cell anaemia, nephrotic syndrome, cerebrovascular accident, pelvic fracture. Those who frequently prescribed AC were registrars (49; 47.6%), SRs (32; 31.1%) and consultants (20; 19.4%). Doctors from surgery department were the majority who gave AC prophlaxis (27; 26.2%). The average number of patients seen by the responders requiring VTE prophylaxis were 1-3 per month (n=51, 41.1%), 4-6 per month (n=25, 20.1%), 7-10 per month (n=6, 4.8%) and over 10 cases per month were seen by 8 (6.5%), however 15 (12.1%) had not seen a case of VTE.

DISCUSSION

VTE although preventable, is a common cause of mortality in hospitalised patients (2). This may be attributed to poor awareness and inadequate thromboprophylaxis of at risk patients by doctors. We conducted this study to assess the knowledge, attitude and practice of doctors in our centre with respect to VTE. The response showed good representation of hospital with participants from the various departments of the hospital and doctors of different cadres (from house officers to consultants). Our response rate of 82.7% was about the same as obtained in a similar study carried out in Pakistan with a response rate of 84.5%. Most of our responders were junior (46.8%) and senior registrars (31.5%) however Bhatti et al had a majority of house officers (43.2%) in their study which also included nurses (4.7%) as participants (16).

From our survey, only 46% of the responders were able to define VTE as thrombosis in veins or lungs. Majority of the participants were able to correctly identify the common risk factors and clinical presentation of VTE. It was generally agreed that VTE is a health concern. Our study showed that only 69.4% had encountered VTE in their practice, which is a far cry compared to that seen by Venkataram *et al* in India where 93% of responders had encountered VTE. However, their study focused on general surgeons in reference to postoperative VTE. While 14.5% of our participants had not seen a case of VTE, only 7% of the participants in the study by Venkataram et al had not (17). Although some of our responders had not seen a case of VTE, it may be assumed that from the high knowledge of the predisposing risk factors and clinical presentation, a potential patient with a risk for VTE will be correctly identified. However, one of the reasons why VTEs may be missed is that it is asymptomatic in 3.2 – 5.5% of cases , and only half of the responders were aware of this fact. This is a bit worrisome because patients with VTE may go undiagnosed or without adequate thromboprophylaxis if about half of the responders were not aware that VTE patients may be asymptomatic.

Our survey shows that 83.1% prescribed VTE prophylaxis. This was higher than 63.3% of responders who prescribed VTE prophylaxis in the study by Bhatti et al. Similarly, surgeons were the group that most frequently prescribed anticoagulants (16). However, since in our study only 69.4% had encountered VTE in practice, it may be inferred that prophylaxis amongst our participants was common although our participants saw fewer cases of symptomatic VTE.

Risk stratification is an important tool used in the control of morbidity and mortality that may arise

from VTE. An important finding was inadequate knowledge about risk stratification of patients at risk for VTE. More than half of the responders (54.8%) were unaware of a risk stratification model for VTE. Only one responder had previously used a risk stratification model, but could not correctly name the model. This is a huge contrast to findings by Majluf-Cruz *et al* where 58% of participants performed risk stratification of patients. Although studies have also shown poor use of risk stratification models for VTE amongst doctors (21), the poor knowledge and practice in our centre is compounded by the fact that there is presently no hospital or nationally approved guidelines on the prevention and management of VTE, however studies have also shown poor compliance in the use of hospital guidelines by doctors in VTE prophylaxis.

From this survey, majority of the responders associated VTEs with cancers and would prescribe AC. Resident doctors prescribed AC more frequently than consultants; this may be due to the fact that residents usually come in contact with a patient before consultants. Adequate thromboprophylaxis also depends on giving the right therapy or regimen to at risk patients and there are reports of inappropriate thromboprophylaxis even when prescribed (23), this may lead to occurrence of VTE outside of the hospital after the patient has been discharged. It was noted from our study that none of the new oral anticoagulants had been prescribed by responders. Reasons for this may include unfamiliarity about the mechanism of action and side effects, lack of knowledge of the drugs and unavailability of newer drugs in a developing nation.

In conclusion, the knowledge of VTE was average. There seems to be a gap between doctors' knowledge and practice in our centre. This is important because if VTE in hospitalised patients is preventable, then doctors should have a good understanding of the disorder and put to practice preventive measures for VTE. Hospital/national guidelines for risk stratification are lacking. Patients in our centre are not routinely risk stratified for VTE. It would be ideal to conduct further studies to evaluate adequacy of thromboprophylaxis regimens given by doctors in our centre. Retraining of doctors and continuous medical education is advised on proper identification of at risk patients, importance of risk stratification, and thromboprophylaxis methods and regimens.

REFERENCES

1. Kesieme E, Kesieme C, Jebbin N, Irekpita E, and Dongo A. Deep vein thrombosis: a clinical review. *J Blood Med.* 2011; **2**: 59–69.
2. Sotunmbi PT, Idowu AT, Akang EE, Aken'Ova YA. Prevalence of venous thromboembolism at post-mortem in an African population: a cause for concern. *African Journal of Medicine and Medical Sciences* 2006;**35**:345-348.
3. Pepe G, Rickards O, Vanegas OC, *et al.* Prevalence of factor V Leiden mutation in non-European populations. *Thromb Haemost.* 1997;**77**:329-331.
4. Cushman M. Epidemiology and Risk Factors for Venous Thrombosis. *Semin Hematol.* 2007; **44**: 62–69.
5. Adeyemo TA, Adediran A, Akinbami AA, Akanmu AS. Prevalence of activated protein C resistance (Factor V Leiden) in Lagos, Nigeria. *Nigerian Journal of Clinical Practice.* 2012;**15**: 136-141
6. World Health Organization. The top 10 causes of death. Fact sheet N°310 http://www.who.int/mediacentre/factsheets/fs310/en/index1.html
7. World Health Organization. Noncommunicable diseases: Fact Sheet N°355 http://www.who.int/mediacentre/factsheets/fs355/en/
8. Kotila TR, Fasola FA, Busari EO. A revisit of venous thromboembolism. *Afr J Med Med Sci.* 2013;**42**:177-181.
9. Ahmed SG, Tahir A, Hassan AW, Kyari O, Ibrahim UA. Clinical Risk factors for deep vein thrombosis in Maiduguri, Nigeria. *Highland Medical Research Journal* Vol.1(4) 2003: 9-16
10. Bělohlávek J, Dytrych V, Linhart A. Pulmonary embolism, part I: Epidemiology, risk factors and risk stratification, pathophysiology, clinical presentation, diagnosis and nonthrombotic pulmonary embolism. *Exp Clin Cardiol.* 2013; **18**: 129–138.
11. Center for Disease Control (CDC). Deep Vein Thrombosis and Pulmonary Embolism. http://www.cdc.gov/ncbddd/blooddisorders/documents/bbv_pnv_c0_1159_thrombosis_r1mtr.pdf
12. Torrey A. Laack TA, Goyal DG. Pulmonary embolism: an unsuspected killer. *Emerg Med Clin N Am* 2004; **22**: 961–983
13. Puryear N, Durham NC. Preventing VTE in surgical patients: Supplement to an Educational Program Incorporating Crew Resource Management for Quality Improvement. Dialogues in clinical practice. http://www.med-iq.com/_files/noncme/vte_insurg.pdf Accessed on 28th January, 2015
14. Duncan A. The case for venous thromboembolism prophylaxis in Africa. *East African Medical Journal* 2009;**86** (Supplement).
15. Akinmoladun VI, Arotiba JT, Fasola OA, Alonge TO, Oginni FO, Obuekwe ON. The use of thromboembolic prophylaxis by surgeons: A multicentre Nigerian study. *Niger Postgrad Med J.* 2007;**14**:330-335.
16. Bhatti MA, Ahsin S, Salim B, Mansoor J. Knowedge, attitude and practices of healthcare providers towards deep vein thrombosis prophylaxis in five teaching hospitals of Rawalpindi. *J. Ayub Med Coll Abbottabad* 2012;**24**:136-139
17. Venkataram A, Santhosh S, Dinakar D, Siddappa S, Babu R, Shivaswamy S. Postoperative Venous Thromboembolism Prophylaxis by General Surgeons in a Developing Country: A Survey. *Thrombosis* Volume 2013, Article ID 873750, 5 pages
18. Dentali F, Ageno W, Pierfranceschi MG, Imberti D, Malato A, Nitti C, *et al.* Prognostic relevance of an asymptomatic venous thromboembolism in patients with cancer. *J Thromb Haemost* 2011; **9**: 1081–1083
19. Oger E, Bressollette L, Nonent M, Lacut K, Guias B, Couturaud F, et al. High prevalence of asymptomatic deep vein thrombosis on admission in a medical unit

among elderly patients. *Thromb Haemost*. 2002;**88**:592-597.

20. de Franciscis S, Agus GB, Bisacci R, Botta G, Gasbarro V, Domanin M, et al. Guidelines for venous thromboembolism and clinical practice in Italy: a nationwide survey. *Ann Vasc Surg*. 2008;**22**:319-327.
21. Majluf-Cruz A, Castro Martinez G, Herrera Cornejo MA, Liceaga-Cravioto G, Espinosa-Larrañaga F, Garcia-Chavez J. Awareness regarding venous thromboembolism among internal medicine practitioners in Mexico: a national cross-sectional study. *Internal Medicine Journal*. Volume 42, Issue 12, 1335-1341
22. Yu HT, Dylan ML, Lin J, Dubois RW. Hospitals' compliance with prophylaxis guidelines for venous thromboembolism. *Am J Health Syst Pharm*. 2007;**64**:69-76.
23. Amin A, Stemkowski S, Lin J, Yang G. Thromboprophylaxis rates in US medical centers: success or failure? *J Thromb Haemost*. 2007;**5**:1610-1616.
24. Wiseman DN, Harrison J. A retrospective review of the use of thromboprophylaxis in patients who subsequently developed a venous thromboembolism after discharge from hospital. *N Z Med J*. 2010;**123**:37-49.