

Venous thromboprophylaxis risk assessment amongst gynaecological patients in a tertiary health institution, south west Nigeria

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Abstract

Venous Thromboembolism (VTE), is a major health concern that has continued to pose a challenge to clinicians. It is a major cause of morbidity and mortality in our environment. In recent years there has been renewed attention on the need for thromboprophylaxis to prevent VTE and its consequences. This is a prospective study carried out on the gynaecological in patients of Bowen University Teaching Hospital, Ogbomoso. This study involved the use of a questionnaire with the details of the Caprini score in assessing patients. Our study revealed that 83 (58.5%) patients had low risk for VTE while 55 (38.7%) had moderate risk for VTE. Only 4 (2.8%) of participants had a high risk for VTE and none of the gynaecological patients could be classified as very low risk according to the Caprini index. There is a need to train and retrain health care givers on the importance of thromboprophylaxis. This training should include the development of local protocols similar to international guidelines meeting the local needs, this will go a long way to ensure it is user friendly to healthcare workers.

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Introduction

Venous Thromboembolism (VTE), is a major health concern that has continued to pose a challenge to clinicians. It is a major cause of morbidity and mortality in our environment.^{1,2}

In recent years there has been renewed attention on the need for thromboprophylaxis to prevent VTE and its consequences.

VTE encompasses deep venous thrombosis (DVT) and pulmonary embolism (PE). Many patients are usually without symptoms hence it can be regarded as a silent killer.^{3,4}

The goal of thromboprophylaxis is to prevent the morbidity and mortality associated with VTE. This is done using either pharmacological agents or mechanical devices. The common pharmacological agents include unfractionated heparin, Low Molecular Weight Heparin (LMWH) and warfarin, while the mechanical means include Graduated Compression Stockings (GCS), Intermittent Pneumatic Compression (IPC) and venous foot pump.⁵ Research work done in the past have proven that hospital acquired VTE can be prevented by effective thromboprophylaxis practices.⁶

Consequently, a prompt and a proactive approach is regarded as cheap and life saving.

In carrying out this proactive approach, patients can be identified by common risk factors for VTE which include: age greater 40 years, immobility, obesity, prolonged medical or post-surgical conditions either in the past or present, malignancy, trauma, indwelling intravenous devices and paresis to mention a few. All these factors confer the patients with varying degree of risk to VTE.⁷ In this study we highlighted the various risk factors based on the Caprini scoring index to ascertain the VTE risk assessment score in the gynaecological patients admitted on in our hospital.

Objectives

To access the individual risk factors associated with the development of VTE among gynaecological in-patients managed at Bowen University Teaching Hospital, Ogbomoso. To calculate the Caprini score and assess VTE risk among gynaecological patients in Bowen University Teaching Hospital, Ogbomoso.

Materials and Methods

This prospective study was carried out on the gynaecological in patients of Bowen University Teaching Hospital, Ogbomoso between January and June 2019.

A nonprobability sampling technique was used with a purposive approach towards identifying gynaecological patients since they are the category of research interest.

Sample size was calculated using a previous study in Africa which showed the prevalence of VTE to be between 2.4% to 9.6%.⁸

Hence, sample size calculation:

$$n = (1.96)^2 p(1-q)/(0.05)^2$$

$$\text{Minimum sample size calculation} = (1.96)^2 \times 0.096(1-0.096)/(0.05)^2$$

$$\text{Minimum sample size} = 133.4$$

Written informed consent was obtained from all participants in the study, the questionnaire was administered by research assistants to all consenting in-patients in the gynaecological ward of Bowen University Teaching Hospital, Ogbomoso. Participation was voluntary and patients were free to withdraw at any stage of the study. This study involved the use of a questionnaire with the details of the Caprini score in assessing patients.

Ethics approval

Ethics approval was sought and obtained before the commencement of the study from the Research and Ethics Committee of Bowen University Teaching Hospital, Ogbomoso, Oyo State.

Venous Thrombosis risk assessment

The VTE risk factor assessment tool by Caprini *et al.* was used to assess risk for VTE among respondents. The Caprini score is used to assess Surgical patients for VTE risk. Points are awarded for each risk factor present in the patient, and a total score is generated.

Patient related factors that increase risk include Age > 60 years, past history of VTE, Immobility before surgery Cancer, pregnancy and inherited thrombophilia. Procedure related factors include, duration of procedure, degree of immobility and tissue damage. These factors are gotten from the questionnaire and patient records.¹

A total score of 0-2 is classified as very low risk for VTE, 3-4 and 5-8 as moderate and high risk respectively, while a score of > 8 is classified as very high risk for VTE.¹

Results

A total of one hundred and forty two (142) women were involved in this study, with age ranging from 15 to 65 years. Table 1, shows the age distribution and some biometric variable of the patients involved in the study like age, weight, and height. The weight and height are of particularly importance in determining the body mass index which is also another important factor in accessing the risk of VTE.

Tables 2 to 6 shows the frequency of the various risk factors for venous thromboembolism. These risk factors includes- age, planned minor surgery, major surgery, varicose veins, history of inflammatory bowel disease, swollen legs, obesity, history of congestive cardiac failure in less than one month, history of sepsis in less than one month, serious lung disease in less than on month, abnormal pulmonary function, medical patient on bed rest, use of leg cast or brace, blood transfusion in less than one month, use of oral contraception, history of repeated miscarriages, history of medical disorders like stroke, previous malignancy or chemotherapy treatment, and previous or family history of coagulation disorders. Some of the above risk factors have been stratified based on the severity of it perceived risk of contribution to venous thromboembolism.

Table 7 is a summary of the risk assessment of the participants in the study. Our study revealed that 83 (58.5%) patients had low risk for VTE while 55 (38.7%) had moderate risk for venous thromboembolism. Only 4 (2.8%) of participants had a high risk for VTE and none of the gynaecological patients could be classified as very low risk according to the Caprini index.

Table 1. Age and biometric parameters.

Variable	Frequency	Percentage	
Age (years)	15-35	31	21.8
	26-35	77	54.2
	36-45	26	18.3
	46-55	3	2.1
	56-65	5	3.5
Weight (Kg)	35-45	2	1.4
	46-55	15	10.6
	56-65	49	34.5
	66-75	25	17.6
	76-85	37	26.1
	86-95	9	6.3
	96-105	4	2.8
Height (m)	106-115	1	.7
	140-150	2	1.4
	151-160	87	61.3
	161-170	47	33.1
	171-180	6	4.2
	Total	142	100.0

Table 2. Venous thromboembolism risk factor indices.

Variable	Frequency	Percentage	
Age 40-59 years	Yes	7	4.9
	No	135	95.1
Minor surgery planned	Yes	6	4.2
	No	136	95.8
History of major surgery	Yes	25	17.6
	No	117	82.4
Varicose veins	Yes	0	0
	No	142	100
History of inflammatory bowel disease	Yes	10	7.0
	No	132	93.0
Swollen legs (current)	Yes	66	46.5
	No	76	53.5
Obesity, Body Mass Index (BMI)>30	Yes	3	2.1
	No	139	97.9
Congestive heart failure (<1 month)	Yes	0	0
	No	142	100
Sepsis (<1 month)	Yes	0	0
	No	142	100
Serious lung disease including Pneumonia (<1 month)	Yes	1	0.7
	No	141	99.3
Abnormal pulmonary function	Yes	8	5.6
	No	134	94.4
Medical patient currently at bed rest	Yes	1	0.7
	No	141	99.3
Leg plaster cast or brace	Yes	0	0
	No	142	100
Other risk factor	Yes	0	0
	No	142	100
Blood transfusion (<1 month)	Yes	0	0
	No	142	100

For each risk factor mentioned above the patient scores 1.

Discussion

VTE is a major cause of morbidity and mortality, hence the need for thromboprophylaxis by either the use of pharmacological agents or mechanical devices. However, for optimal patient care there is the need to follow the international guidelines in the management of VTE, this has been largely lacking in the management of patients due to lack of use by many care givers.⁸

The majority (97.2%) of the patients had either low or moderate risk for VTE. High risk for VTE was found in 2.8% of the patients. The implication of this is that none of gynaecological patients admitted in the period under review had a very low risk for venous thromboembolism (Table 7), these emphasizes the need for gynaecologist to be proactive in the risk assessment of VTE in order to avert its adverse consequences.

The above finding shows the potential magnitude of problem associated with venous thromboembolism. A retrospective study on post mortem patients also shows that VTE can be said to be a significant cause of patient morbidity and mortality.²

Studies in predominantly black populations in the UK have shown that younger blacks present with VTE than whites and they have more proximal events compared to whites.^{11,12} The implication of this further justifies the importance for routine risk assessment for thromboprophylaxis amongst patients.

Knowledge about VTE varies from one physician to the other, likewise from one health facility to another.^{13,14} It is important to note that when these risk assessments were made the patients did not benefit from these pharmacological agents or mechanical devices but were only encouraged to ambulate early especially in post-operative patients. The reasons for this vary from lack of physician prescription probably due to paucity of information on

Table 3. Venous thromboembolism risk factor indices.

Variable	Frequency	Percentage
Oral contraceptives or hormone replacement therapy	Yes	13
	Yes	129
Pregnancy or postpartum (<1 month)	Yes	11
	No	131
History of unexplained stillborn infant, recurrent spontaneous abortion (≥ 3), premature birth with toxemia or growth restricted infant	Yes	115
	No	27
Total	142	100.0

For each risk factor mentioned above the patient scores 1.

Table 4. Venous thromboembolism risk factor indices.

Variable	Frequency	Percentage
Age 61 - 74 years	Yes	6
	No	136
Major surgery (>60 minutes)	Yes	3
	No	139
Arthroscopic surgery (>60 minutes)	Yes	23
	No	119
Laparoscopic (>60 minutes)	Yes	0
	No	142
Previous malignancy	Yes	0
	No	142
Morbid obesity (BMI > 40)	Yes	1
	No	141

For each risk factor mentioned above the patient scores 2.

VTE risk assessment or financial constraint on the part of patients to procure these medications when prescribed. A similar observation was made in a previous study.^{13,14}

Unlike previous research work our study focused on the use of

Table 5. Venous thromboembolism risk factor indices.

Variable	Frequency	Percentage
Age 75 years or more	Yes	1
	No	140
Major surgery lasting 2-3 hours	Yes	1
	No	141
BMI > 50	Yes	2
	No	140
History of SVT, DVT/PE	Yes	0
	No	142
Family history of DVT/PE	No	142
	Yes	0
Present cancer or chemotherapy	No	142
Positive factor V Leiden	Yes	2
	No	140
Positive prothrombin 20210A	No	142
	Yes	0
Elevated serum homocysteine	No	142
	Yes	0
Positive lupus anticoagulant	No	142
	Yes	0
Elevated anticardiolipin antibodies	No	142
	Yes	0
Heparin induced thrombocytopenia	No	142
	Yes	0
Other thrombophilia	No	142
	Yes	0
Type	No	142
	Yes	0

For each risk factor mentioned above the patient scores 3.

Table 6. Venous thromboembolism risk factor indices.

Variable	Frequency	Percentage
Elective major lower extremity arthroplasty	No	142
	Yes	0
Hip, pelvis or leg fracture (<1 month)	No	142
	Yes	0
Stroke (<1 month)	No	142
	Yes	0
Multiple trauma (<1 month)	No	142
	Yes	0
Acute spinal cord injury (Paralysis) (<1 month)	No	142
	Yes	0
Major surgery lasting over 3 hours	No	142
	Yes	0

For each risk factor mentioned above the patient scores 5.

Table 7. Total risk score classification.

Variable	Frequency	Percentage
Total risk score		
Very low risk (0-2)	0	0.0
Low risk (3-4)	83	58.5
Moderate risk (5-8)	55	38.7
High risk (>8)	4	2.8

only one tool: the Caprini scoring index in VTE risk assessment.¹⁵ Nevertheless, in the previous research work the various scoring indices were found to be similar in prognosticating the risk for VTE risk assessment.¹⁵ However, our research work revealed only a minority (2.8%) of our patients had high risk for VTE, however, a similar research in the past revealed that majority of the obstetrics and gynaecology patient had a high risk for developing VTE.

It is imperative to state that most of the clinical features of VTE are nonspecific.^{16,17} These clinical features depends on the location of the affected vessel and the extent of occlusion of the vessel. Both DVT and PE may be asymptomatic, and up to 50% of DVT patients have been reported to be asymptomatic; consequently, a high index of suspicion is always expected on the part of the clinician.

Hence, there is a need to train and retrain health care givers on the importance of thromboprophylaxis. This training should include the development of local protocols similar to current international guidelines but with peculiarities of our local needs and society.¹ Achieving this will improve its use by healthcare workers thereby ensuring a robust and better approach to quality healthcare delivery, health promotion and preventing the sequelae that may be associated with VTE if left untreated or not identified early.

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