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Pattern of Deep vein thrombosis in two large teaching HospitalsEmergency department (TASH and HUCSH), Ethiopia

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ABBREVIATIONS:

DVT=Deep vein thrombosis

VTE=venous thromboembolism

PTE=pulmonary thromboembolism

TASH=TikurAnbesa Specialized Hospital

HUCSH=Hawassa University Comprehensive Specialized Hospital

ICU=Intensive care unit

HIV/AIDS=Human immunodeficiency virus

ED= Emergency department

ABSTRACT

Introduction:Deep vein thrombosis is a serious cardiovascular disorder, and causes in-hospital mortality worldwide. It is a multifactorial condition resulting from a complex interaction between genetic predispositions and acquired risk factors. Therefore,the objective of this study is to identify the pattern of DVT specifically common risk factors in ED.

Methods:A hospital based cross-sectional retrospective descriptive study was conducted on DVTpatients in TikurAnbessaspecialized hospital and HawassaUniversity comprehensive specialized hospital emergency departments from May 1,2018 – May 1,2019.Data was entered in SPSS version 23and descriptive statistics was done.

Results: A total of 128 patients were enrolled in the study. Female patients were more than the half in Sex ratio was M:F (1.25:1) with mean age of 38 years. The common risk factors were active malignancy 36 (28.1%) and equally maternal conditions 36(28.1%), patients having family history of VTE 15(11.7%), having history of VTE(11.7%) heart failure 18 (14.1%) andHIV11 (8.6%). The most affected limbs of the patients were left lower limb which is 84(65.6%) followed by right lower limb 39(30.5%).Patients had left upper limbs DVT were 4(3.1%) and only one patient (0.8%) both lower limbs DVT .

Conclusion:The commonest risk factors are active malignancy, maternal conditions (postpartum,pregnancy abortion), and immobility conditions. Although most patients' have these risk factors, family history of VTE, having history of VTE , heart failure, HIV were identified risk factors in this study and PTE complication is less than expected which can be underdiagnosed.LMWH which is the safest and effective for treatment of VTE was used in small number of patients.

Key words:deep vein thrombosis, pulmonary thromboembolism

CHAPTER ONE: INTRODUCTION

Background

Deep vein thrombosis (DVT) is venous thromboembolism(VTE) which represents a disease spectrum ranging from a minimally symptomatic isolated calf vein thrombosis to a limb-threatening ilio-femoral venous obstruction [30].

DVT of the lower extremities is subdivided into two categories:

1.Distal vein thrombosis, in which thrombi remain confined to the deep calf veins.

2.Proximal vein thrombosis, in which thrombosis involves the popliteal, femoral,or iliac veins.

Deep vein thrombosis is a serious cardiovascular disorderand it is among a leading causes of in hospital mortality worldwide.It is a multifactorial conditions resulting from a complex interaction between genetic predisposition and acquired risk factors, leading to thrombosis and subsequently embolism;Itcan also develop without any of these risk factors.The clinical course of deep vein thrombosis might be complicated by pulmonary embolism, which is among top medical emergency, recurrent episodes of deep vein thrombosis and the development of serious post-thrombotic sequelae such as venous ulceration, debilitating pain and intractable edema.The risk of thrombosis is increased after surgery, in the postpartum period, in women taking oral contraception, in active cancer patients, and in conditions leading to prolonged immobilization.[11, 1,16].

Within the past 10 years data has evolved to show that 70% of DVT in hospital occur in medical patients and that 10% of hospital deaths are due to PE.This was surprising since most of the studies on the advantage of VTE prophylaxis done in the 1970s and 80s focused on the orthopaedic population,where it was known that patients had very high rates of complicating DVT, if not given anticoagulant prophylaxis [12].

Statement of the problem

Venous thromboembolism is among the three leading causes of cardiovascular disease worldwide. In developed countries, venous thromboembolism is already a serious public health problem and ranks among the main causes of mortality. Mortality from this disease is also increasing in none developed countries [11].

The risk of DVT is increased after patient having different risk factors .DVT affects 0.1% of persons per year. It is predominantly a disease of elderly and has slight male preponderance. A clinical review study conducted in Africa population, the documented rate was48 DVT per 100,000 births per year[2].

An understanding of the risk factors for venous thrombosis is necessary in order to maximize the prevention of this disease in high risk individuals and groups of patients. Despite its high burden, there has been no enough previous study summarizing the epidemiology and prevalence of DVT in Africa populations [16,20].

There is a relative paucity of information about DVT in most African populations, especially in Ethiopia there is only one published research 20 years back.

Significance of the study

This study will identify the patters of DVT, specifically common risk factors and it also provides baseline information for further studies on venous thromboembolism. By assessing the common risk factors for acute deep vein thrombosis and its complications this research can give recommendation for health sector stockholders to meet the health care needs and cost-effective interventions and prevention of DVT.

CHAPTER TWO: LITERATURE REVIEW

The prevalence of DVT in ICU was reported8 % in one study, by Goitom in one Eritrean hospitalICU in 2009[28].The prevalence of DVT in patients after surgery in Africa varies between 2.4% and 9.6% according to the studies foundand its incidence varies between 448 per 100 000 births per year and 380 per 100 000 births per year in pregnant and postpartum women.Tuberculosis was associated with the prevalence of DVT of 61.5% in a single study [16].

A descriptive, cross-sectional analytical study done in Zambia showed the prevalence of DVT of the lower limbs was 11.1% while the proximal lower limbs was 9.1%.Eighty two percent of all patients with DVT had proximal lower limb DVT. Similarly cross- sectional descriptive retrospective study at the Douala General hospital,Cameroon stated that DVT was seen in 4.4 cases per 1000 admission in the internal medicine unit [9,14].

DVT affects 0.1 of persons per year and it is predominantly a disease of the elderly and a slight male preponderance. Pregnant women have a much higher risk of VTE than non-pregnant women of similar age and the risk has been shown to be higher after caesarian section than vaginal delivery. In a study conducted in African populations, the documented rate was 48 DVT per 100,000 births per year [2].

Risk factors for this pathogenesis (thrombosis) can be genetic or acquired. Acquired risk factors play an important part, whether circumstantial (immobilization, surgery, pregnancy), iatrogenic (oral contraception),or diseased-related (cancer, cardiovascular systems)[11].

Arisk factors for thrombosis can be identified in over 80% of patients with venous thrombosis. Furthermore, there are often more than one factors in a given patients .Fifty percent of thrombotic events in patients with inherited thrombophilia are associated with the additional presence of an acquired risk factors(surgery, prolonged bed rest, pregnancy). Some patients have more than one form of inherited or acquired risk factors and appear to be at even greater risk for thrombosis [22,29].

The major risk factors for thrombosis are endogenous patient characteristics such as obesity and genetic factors, and the triggering factors such as surgery, immobility or pregnancy.Some of the risk factors are modifiable, while others, like advancing age and genetic predispositions, are not [20].

A five–year prospective study was conducted in Ethiopia to obtain information on the demographic characteristics, risk factors and complication of DVT. There were 44 females and 22 males, age between 13 and 80 years and 77%were below 41 years old. From the above 66 total patient only 3 patients diagnosed with upper limb DVT.In 26 females (40%) pregnancy related conditions (childbirth, abortion, caesarian section) were the risk factors for their DVT. Otherrisk was immobility 18% for all cases[38].

Age: A three–year cross sectional and case control study carried out in Senegal in 2014 involving 105 cases and 200 controls. The mean age for cases was 42 years, ranging from 17 to 78 year .The mean age of the control population was 38 years, ranging from 18 to 65 years. DTV is especially prevalent in those aged >60 years, patients with active cancer and surgical populations[21,11,19].

Pregnancy and postpartum state: 70% of all DVT occurs in postpartum. Risk increases with trimester (but overall risk remains low throughout pregnancy). The prevalence of DVT in Africa varies between 2.4% and 9.6% in patient after surgery, and between 380 and 448 per 100 000 births per year in pregnant and postpartum women [16,31].

A cross sectional descriptive retrospective study was conducted in 2018 at the Doguala general hospital (DGH), Cameroon on total of 78 case files. From these 78 patients, only 4 (5.2%) cases were identified associated with obstetric conditions i.e. pregnancy 1(1.3), peripartum2(2.6), Abortion 1(1.3). From these 78 patients, 9 cases(11.5%) had history of previous VTE. This study also identified the most common clinical presentation in the DVT cases as a swollen inferior limb in 42(89.4%) cases, pain 37(78.7%), Homan'ssign 24(51.1%) and calf stiffness 21(44.7%) [14].

Prior VTE:Highest risk of recurrence is for unprovoked VTE in men, particularly if d-dimer remains elevated. In an outpatient prospective cohort study, the risk of recurrence after an acute episode of venous thrombosis was 18, 25, and 30 percent at two, five and eight years, respectively. In a community epidemiologic study, a previous history of VTE conferred a relative risk(RR) of 7.9 for VTE recurrence [33, 34].

Malignancy:A cross – sectional study was done in TASH four years ago on 62 patients diagnose with DVT. It identified the common associated risk factors as active malignancy 30(48.4%), medical illness 13(21%), pregnancy and post-delivery 7(11.3), combination of risk factors 6(9.6) and in 6(9.6) the risk factor not identified [12].

Immobility:Acute limb immobility of two contiguous joints confers the highest risk .it was from the top three risk factors of DVT in Gebremedihin's study. The most common VTE risk factors reported in patients in surgical and medical wards during hospital stay were complete immobilization (46.5 vs. 36.1%), admission to ICU (29.4 vs 62.3%)). In 2016, a descriptive cross sectional analytical studydone in Zambia to determine the prevalence and associated factors of DVT showed that the total days of immobility was 24.0(12.8) on 33 DVT patients, which was 21.8(11.9) on 263 non DVT patients (p= 0.33) [3,9,12].

Recent surgery or major trauma: Risk increased with endotracheal intubation or epidural anesthesia and continues at least 4 weeks after exposure. In 2016, a retrospective study was done in Pakistan on 1142 paraplegic patients (SCI). From these 31 (2.7%) were diagnosed to have DVT [15].

The prevalence of DVT associated with surgical procedures that last more than 4 hours can be as high as 80%; it is also high in patients undergoing surgery for malignant disease[8].

A study to determine the prevalence of DVT and its complication was done from September 2011 –June 2013 on 125 patients with lower limb trauma in Dhiraj general hospital Piparia in India rural area.From these patients 6 were DVT positive(4.8%). Another cross-sectional study was done in 2015 in China on a total of 995 SCI patientswho underwent interbody fusion to obtain the prevalence of DVT and analyze related risk factors. The detection rate of lower limb DVT by ultrasonography was 22.4% [4,25].

HIV/ADIS:Across sectional study in which 286 adult HIV positive patients on ART were recruited from the infectious disease institute and HIV clinic at Mulango hospital, Uganda was conducted from May 2014 –January 2015. The prevalence of lower limb DVT was 9.1 %[23].

The above cross sectional study in Zambia,over half of the patients in the study were HIV infected,but HIV was not significantly associated with DVT[9].

DVT is related primarily to severity of systolic dysfunction.Heart failure appears to be a hypercoagulable state that can result in intracardiac thrombus and DVT.The major risk factors for intracardiac thrombi and DVT are reduced left ventricle function and atrial fibrillation [36].

TABLE -1	*Wells' Score for Deep Vein Thrombosis*
Clinical Feature	*Point*
Active cancer (treatment within 6 months, or palliation)	1
Paralysis, paresis, or immobilization of lower extremity	1
Bedridden for >3 d because of surgery (within 12 wk)	1
Localized tenderness along distribution of deep veins	1
Collateral superficial veins	1
Entire leg swollen	1
Unilateral calf swelling of >3 cm (below tibial tuberosity)	1
Unilateral pitting edema	1
Prior history of DVT orPE†	1
Alternative diagnosis as likely as or more likely than deep venous Thrombosis	-2

Risk score interpretation (probability of deep venous thrombosis) in original Wells DVT model: ≥3 points:
High risk (75%); 1 or 2 points: moderate risk (17%); <1 point: low risk (3%).

†Only awarded in the modified (dichotomized) Wells DVT model: ≤1 point DVT unlikely >1 point DVT likely.

Source:Adapted from Geersing GJ, Zuithoff NP, Kearon C, et al. Exclusion of deep vein thrombosis using the Wells rule in clinically important subgroups: individual patient data meta-analysis. BMJ. 2014 348:g1340 (1-1

OBJECTIVES

General objective**:**

To determine the pattern of deep venous thrombosis in ED

Specific Objectives:

1. To determine the major risk factors of DVT in ED
2. To determine major clinical features of DVT in ED
3. To determine DVT patients' length of ED stay and disposition.

CHAPTER THREE: METHODOLOGY

Study area and period:

The study was conducted in Tikur Anibessa specialized hospital (TASH) and Hawassa University Comprehensive and Specialized Hospital (HUCSH) in emergency department from May 1, 2018- May 1,2019. TASH is the biggest specialized hospital in the country and receives many patients from the city of Addis Ababa and all over the country. It started emergency medicine specialty program 8 years back which was the first program in the country. HUCSH is the other large tertiary hospital, located in the southern part of EthiopiainHawassa city 273kms far away from Addis Ababa.

Study design:

Institution based cross-sectional retrospective simple descriptive study.

Population:

Source population

The source population is all patients attending the adult Emergency Department of TASH and HUCSH during the study period.

Study population

All patients who were confirmed to have DVT by Doppler sonography during the specified study period in TASH and HUCSH EDs

Inclusion and exclusion criteria:

Inclusion criteria

All patients diagnosed as acute DVT by Doppler ultrasonography in ED during the study period were included

Exclusion criteria

DVT patients who had no Doppler sonography result in their chart

Sampling Technique and sample size:

Sampling technique

Convenient sampling technique was used.

Sample size

Allpatients(128) diagnosed to have deep venous thrombosis withdoppler sonography during the study period in the two teaching hospitals (TASH andHUCSH) ED.

Method of data collection:

All DVT patients' charts in the study period were searched by the diagnosis form the recording system in the TASH and HUCSH emergency departments. The patients' name and medical record numbers were listed and used to search the charts from the two ED chart room.The charts were assessed in detailto have data from medical history, physical examination,laboratory results, imaging studies and treatment courses as presented in the questionnaires. The data were collected from these charts mainly by the principal investigator and one emergency nurse who was trained on how to collect data. All PTE patients ECG and *Wells' Score* for deep Vein thrombosis were assessedbythe principal investigator. The data quality control measures were undertaken; includes pre-testing of data collection tools, and checking completeness and internal consistencies of data

Statisticalmethod:

Collected data were analyzed by SPSS version 23 and descriptive analysis was used.

Measurement variables:

Dependent Variables

Clinical presentations of DVT, length of stay at ED, and disposition time

Independent variables

Risk factors (age, pregnancy, postpartum state, major surgery or trauma, prior DVT, malignancy, immobility, HIV, HF)

Ethical considerations:

Permission to carry out this study was obtained from the institutional Review Board (IRB) of Addis Ababa University Collegeof health science, school of medicine, department of emergency medicine .The data collection from charts of the deep vein thrombosis patent was after having permission from ED departments of TASH and HUCSH.

Operational definition:

Immobility: bedridden and unable to move for 3 or more days.

DVT: A disease spectrum ranging from a minimally symptomatic isolated calf vein thrombosis to a limb threating iliofemoral venous obstruction.

Dissemination of the result:

The paper will be submitted to Addis Ababa University, factuality of medicine,department of emergency medicine and critical care.

CHAPTER FOUR: RESULTS

Total charts from the record diagnosed as DVT were 158 (96 from TASH and 62 from HUCSH). From these,14 charts were not available, 12 were not having a diagnosis of DVT,and in 4 chartsdopplerultrasound results were not attached.

Finally 128 patientswere enrolled in the study. From these,more than half, 71(55.5%), were female patients and male patients were 57(45.5%) with sex ratio of M: F (1.25:1).

From the total of 128 patients, 42 (32.8%) were in the age group of 31 to 45years, 31(24.2%) in 46 to 60, and 30(23.4%) in 18 to 30 while 25(19.5%) were 60 years.

Fig 1. Selection process of DVT patient's chart

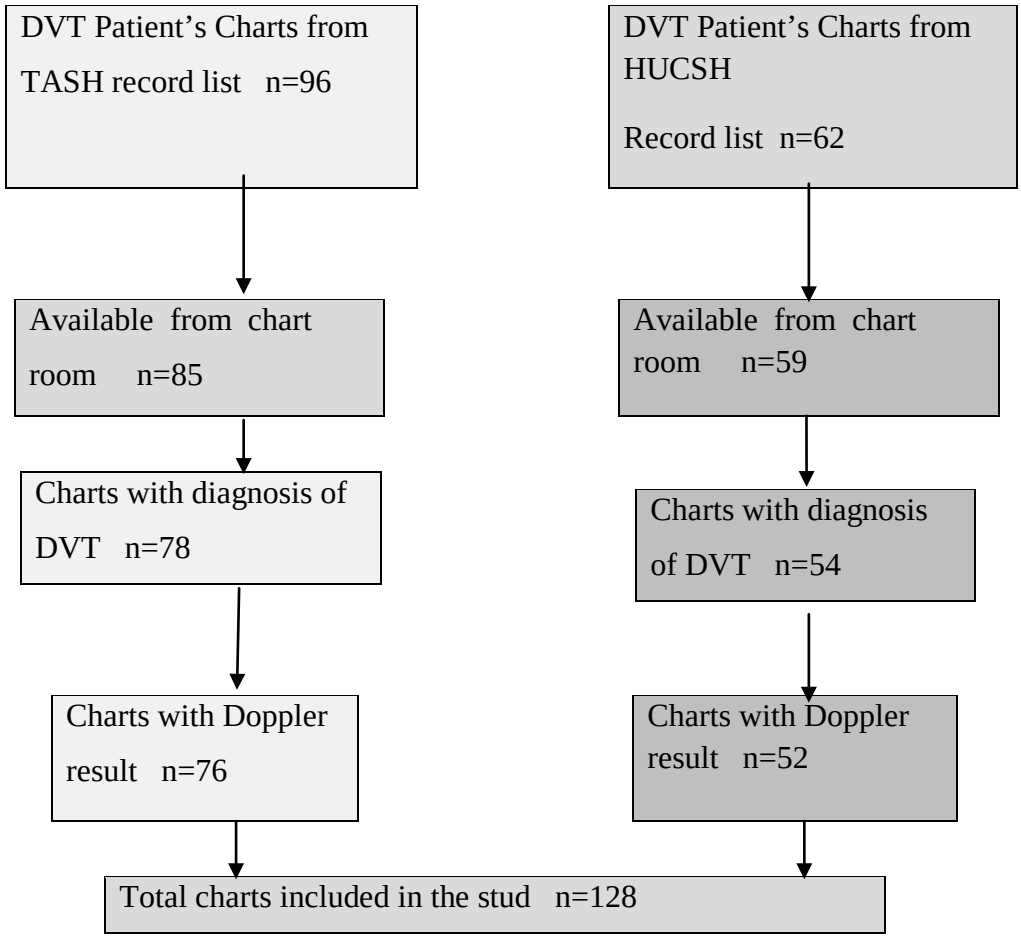
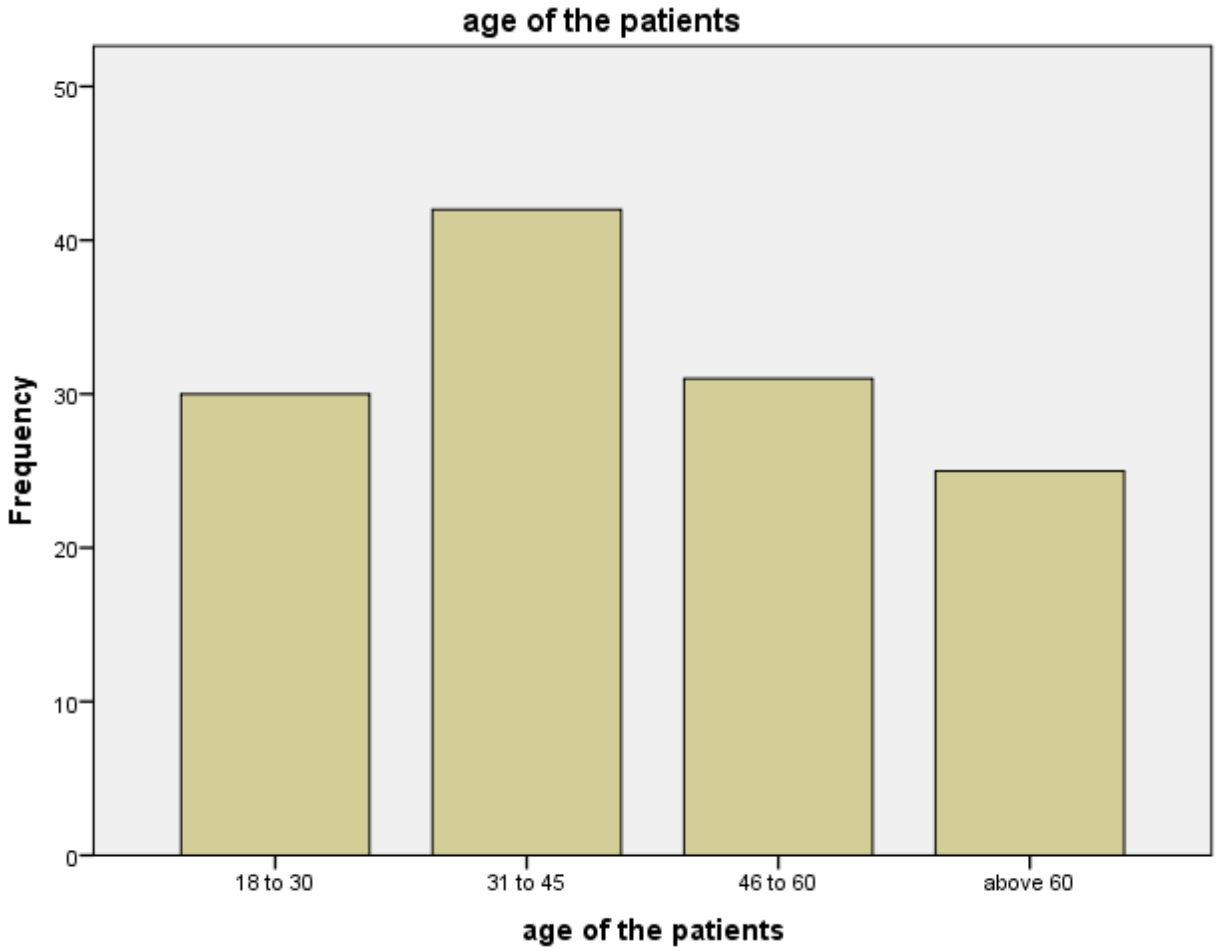


Fig 2: Age distribution of DVT patients in TASH and HUCSH
from May 1,2018-May 1,2019



Most of the patients were categorized to yellow triage score 72(56.3%) followed by green and orange, 32(25%), 17(13.3%) respectively. Red were the least, 4(3.1%) and 3(2.3%) were not assessed at triage.

The risk assessment by Wells' Score for Deep Vein Thrombosis in this studyshowedmost of the patients, 112(87.5%), were 1 or 2 of well's score and 16(12.5%) had a well's score of ≥ 3 .
The common associated risk factors were active malignancy 36 (28.1%) and equally maternal conditions 36(28.1%) from which postpartum 16 (12.5%),pregnancy 14 (10.9%)and 6 (4.7%) were post abortal.From malignancy cervical cancer patients count 13(10.1%), hematologic

malignancy 9(7%) , breast cancer 7(5.5%), gastric cancer 3(2.3%) and prostatic cancer 4(3.1%)patients.

Immobility conditions due to different medical and surgical/trauma conditions were 34(26.6%), and 12 (9.4%) patients had recent trauma or major surgery.

Although most patients have the above risk factors, 15(11.7%) of patients hadfamily history of VTE,the same number of patients, 15(11.7%), had history of VTE and 18 (14.1%) had heart failure. 66 patients were screened forHIV and 11 (8.6%)of all DVT patients were positive.

The most recorded chief complaints of the patients were pain and swelling on the affected area 109(85.2%) followed by only swelling 14(10.9%).when the duration of these complaints assessed, 72(56.3 %) of the patients were complaining for less than 5 days, 55(43%) for 5 to 7 days and 1 (0.8) patient had a complaint of more than a week.Only 6(4.7%) patients were on anticoagulation before the presentation.

The most affected limb of the patients was the left lower limb which is 84(65.6%) followed by right lower limb 39(30.5%).Patients who had left upper limb DVT were 4(3.1%) and only one patient (0.8%) had bilateral lower limb DVT.The most common involved part of the limbs were proximal 82(64.1%) followed by both distal and proximal 39(30.5%), and the least was distal part of the limb 7(5.5%).

From the total of 128 DVTpatients involved in this study, 14(10.9%) were diagnosed PTE in emergency department by chest CT scan and they had EKG findings of ST-T wave changes 9(7%), sinus tachycardia 4(3.1%), and only one patient (0.8%) had S1Q3T3 pattern.

The baseline INR for 121 (94.5%) patient was done and morethan half of the patients, 72 (56.3%)had less than 1.5INR results.Only 8 (6.3%)patients had INR level 2 to 3 while 6(4.7%) had >3 baseline INR. Less than half [47(36.7%)] of all DVT patients achieved the therapeutic INR level at disposition time.

In this study,61.1% patients were treatedwith both warfarin and UFH (combined), 20.6% by UFHalone, 9.5% with enoxaparin,and8.7% were given only warfarin.

Regarding length of stay, about 89(69.5%) of patients were stayed in emergency for 24 hours to one week, 32(25%) had length of stay of more than one week, and only 7(5.5%) patients stayed less than 24 hours in emergency department.

Table 2:DVT patients' disposition in TASH and HRSH EDfrom May 1,2018-May 1,2019

	TASH Emergency department		HUCSH Emergency department	
Disposition	No of patients	Percentage	No of patients	Percentage
Discharged home	22	28.9	9	17.3
Admission to ward	20	26.3	37	71.2
Admission to ICU	1	1.3	0	0
Transfer	29	38.2	5	9.6
Death	4	5.3	1	1.9
Total	76	100	52	100

CHAPTER FIVE: DISCUSSION

In this retrospective study, the pattern of DVT was assessedin two large teaching hospitals.When we see the age distribution of patients who are included in this study, 42(32.8%) were in the age group of 31 to 45, 31(24.2%) in 46 to 60, and 30(23.4%) in 18 to 30 while 25(19.5%) were 60 years with mean age of 38. This shows that DVT is prevalent in young population which is supported by a study conducted in TASH 6 years back [12].Similarly,in Gebremedhin's A. a five–year prospective study which was conducted in Ethiopia, 77% were below 41 years old [38].These recent literatures results are against the previous thought and the clinical review conducted in Nigeria 8 years back which stated that DVT is predominantly a disease of the elderly with an incidence that rises markedly with age [2].

Female patients were more than the half, 71(55.5%) and male patients were 57(45.5%) with Sex ratio was F:M (1.25:1). This result is the same finding as the two studies in Ethiopia which showed female sex predominance [12, 38]; probably it is due to the pregnancy and cervical cancer related risk factors.

In risk assessment by Wells' Score for Deep Vein Thrombosis, this study showed most of the patients, 112(87.5%) were in moderate risk score. The most identified risk factors in this study were active malignancy 36 (28.1%), equally maternal coditions 36(28.1%) and immobility due to different medical and surgical/trauma conditions 34(26.6%). These are common risk factors found to be similar with previousstudies in Ethiopia and in most literature reviews.But,a cross sectional descriptive retrospective study conducted in 2018 at the Doguala general hospital (DGH), Cameroon on total of 78 case files identified only 4 (5.2%) cases to be associated with obstetric conditions.This may be due to the small sample size and in single hospital based study[14].

Across sectional study conducted on adult medical patients admitted to the University Teaching Hospital, Lusaka, Zambia, to assess the prevalence of deep vein thrombosis and associated factors, over half of patients were HIV infected, but HIV was not significantly associated with DVT [9]. However, in our study, only 11 (8.6%) of DVT patients wereHIV positive.

The most affected limb of the patients in this study wasleft lower limb which is 84(65.6%) followed by right lower limb 39(30.5%).This result was reflected in a clinical review conducted in Nigeria which may be due to compression of the left iliac vein by the right iliac artery in pregnancy (May–Thurner syndrome) [2].

The most recorded chief complaints of the patients were pain and swelling on the affected area 109(85.2%) followed by only swelling 14(10.9%).This result is comparable with the cross sectional descriptive retrospective study conducted in 2018 at the Doguala general hospital (DGH) [14].

Patients who had left upper limb DVT were only 4(3.1%) from which 3 patients werehaving breast cancer and only one patient without identified risk factor. Similarly in Gebremedhin'sAstudy there were 3 patients with upper limb DVT from 66 patients [38].

We know the fact that at least one third of patients with DVT have concomitant PE, even when the patient lacks symptoms of PE [31]. In our study, from all 128 DVT patients only 14(10.9%) were diagnosed PTE in emergency department with EKG findings of ST-T wave changes 9(7%), sinus tachycardia 4(3.1%), and only one patient (0.8%) had S1Q3T3 pattern.

In this study patients treatment was with warfarin and UFH combined for 61.1%, UFH for 20.6%, enoxaparin for 9.5%, and warfarin for 8.7%. LMWH which is the safest and effective for treatment of VTE, even asoutpatient was used in small number of patients either due to its cost or availability which is similarly indicated in the previous study in TASH[12]. By these medications less than half, 47(36.7%),of all DVT patients achieved the therapeutic INR level at disposition time. This may be because of inappropriate combination, due to missing doses or early disposition.

Regarding the disposition, only 7(5.5%) patients stayed less than 24 hours in emergency department. 32(25%) patients had length of stay more than one week,which can have a significant impact on ED over crowdedness. But 34 patients were transferred to other hospitals which is one way of decreasing the length of stay and enable emergency department to give proper service.

From the died patients only one was considered due to respiratory failure secondary to suspected chest focus sepsis and PTE and other death was due to different causes unrelated to DVT or PTE.

LIMITATIONS:

1.Some charts were not found in the chart room

2. Because of the retrospective nature of the study it was not possible to follow and assess some DVT complications.

3. Small sample size

CHAPTER SIX: CONCLUSION

Deep vein thrombosis is currently affecting more of females and the younger population.The commonest risk factors are activemalignancy, maternalconditions(postpartum,pregnancy abortion), and immobility conditions. Although most patients have these risk factors, family history of VTE, having history of VTE, heart failure, and HIV were also identified risk factors in this study.

In this study PTE complication is less than expected which can be underdiagnosed and causes mortality for these DVT patients.

Despite most patients were disposed after 5 days, less than half of all DVT patients achieved the therapeutic INR level at disposition time.

LMWH which is the safest and effective for treatment of VTE was used in small number of patients probably either due to its cost or availability.

RECOMMENDATION

1. DVT is becoming the disease of young productive age groupand it is better to have national protocol for high risk patient VTE prophylaxis.

2.It is better to use Wells' Score in ED to diagnosis DVT because in this study all patients have above moderate risk score.

3.Researchersstrongly recommended to do further studies on VTE in Ethiopia because there is a single published study in the country.

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ANNEXES:

QUESTIONARIES

This questionnaire isdesignedto collect data from DVT patients'chart inTikurAnbesa specialized hospitals in Addis Ababa, and Hawassa University Comprehensive specialized Hospital from May 1, 2018 to May 1, 2019. During data collection the collector should have consent letter in hand from the respective department.

MRN _____

I. Socio-demographic information

1. Age in year _____

2. Sex 1 Male 2 Female

II.Risk factor assessment

1. What is the Wells' Score for Deep Vein Thrombosis_____?

2. If the patient is female which one is her current condition?

   1) Pregnant 2) postpartum 3) post-abortion 4) None of the above

3 If your answer for Q 2 is 4, is she on oral contraceptive? 1) YES 2)NO

4 .Is the patient diagnosed VTE before this time? 1) YES 2) NO

5. Is there any family history of VTE? 1) YES2) NO

6. Was the patient inimmobilityconditions (bedridden, paralyzed, ICU admission)?

   1) YES2)NO

7. Did the patient have recent surgery or major trauma?1) YES 2) NO

8. Whichcomorbid/sfrom the following is additional diagnosis for this patient?

   1) Heart failure 2)Malignancy 3)PTE 4) no comorbidity

9. If the answer for the above question is 2, specify the malignancy_____

10.What is the zero status (HIV)of the patient?

   1) Negative 2)Positive3) Not known

III. Clinical feature

1. What is the triage score of this patient? 1)Red 2) yellow-green 3) orange 4) not triaged

2. Which one of the following is /are the patient'scomplaint?

1)Pain 2) swelling3)Chest pain4) shortness of breath 5)others

3. Duration of complaints _____days

4. Was the patient on anticoagulation?1) YES 2) NO

5. Which limb is affected? 1) Lower limb (Rt /Lt) 2) Upper limb (Rt / Lt)

6. Which part of the limb isinvolved? 1) Distal 2) Proximal 3) both

8. Was the patient diagnosed PTE in the ED? 1) YES 2) NO

9. If yes, does the patient have ECG? 1) YES 2) NO

10. If YES, what is/ are the finding?1) Sinus tachycardia

2)S1Q3T3 Pattern 3) ST-T wave changes 4) Right heart strain 5) Other _____

11. If the patient has baseline coagulation profile what are the values?

PTT_____ INR_____PT_____

IV. Treatment

1.Which medication is started for the treatment?_____

2. What was the last INR level? _____

3.For how long the patient stays in ED? _____days

4. What was the patient's disposition?

1) Discharged home 2)Admission [ward /ICU] 3) transfer 4) death

Principal investigator_____sign_____date_____

Advisor name_____sign_____date_____