ADDIS ABEBA UNVESITY COLLEGE OF HEALTH SCIENCE EMEREGNCY MEDICINE DEPARTEMENT.

THE PREVALENCE AND PREDICTIVE FACTORS OF RECURRENT DEEP VENOUS THROMBOSIS IN ADDIS ABABA UNIVERSITY BLACK LION HOSPITAL EMERGENCY DEPARTEMNT FROM APRIL 1, 2017-APRIL 1,2020G.C.

BY: - ZEMEDKUN MOTERA (EMCCR$_3$)

A RESEARCH THESIS TO BE SUBMITTED TO ADDIS ABABA UNIVERSITY DEPARTMENT OF EMERGENCY MEDICINE AND CRITICAL CARE, FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE CERTIFECATE SPECAILATY IN EMERGENCY MEDICINE AND CRITICAL CARE MEDICINE.

ADDIS ABEBA UNIVERSITY
OCTOBER 2020.

Declaration by supervisor

I confirm that work in this thesis was done by the candidate under my/our supervision

Approved by:

_____	_____
Advisor	Signature
_____	_____
Advisor	Signature
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Examiner	Signature

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ACKROYNM AND ABBERVATION

FDVT	First deep venous thrombosis
RDVT	Recurrent deep venous thrombosis
VTE	Venous Theromboembolism
OR	Odds ratio
CI	Confidence interval
PE	Pulmonary Embolism
HRT	Hormone replacement therapy
TASH	Tekur Anbessa hospital
OCP	Oral contraceptive
IV	Intravenous
ED	Emergency department
HIV	Human immune virus
PHD	Philosophy of doctorate
SD	Standard deviation
P	Proportion

The prevalence & predicators factors of recurrent deep venous thrombosis in Addis Ababa university Emergency department

Abstract

BACKGROUND: About 2-5% of people experience deep-vein thrombosis (DVT) during their lives. Death, disease recurrence, post-thrombotic syndrome, and excessive bleeding due to coagulant medications are among the most important DVT complications. Recent research found a high incidence of DVT recurrence after the first attack. Disease recurrence has a multifactorial pathogenesis and its probability is related with the number and severity of risk factors. The present study aimed to investigate DVT recurrence and the associated risk factors.

Method This retrospective cross-sectional study evaluated all DVT patients hospitalized in Tekur Anbessa hospital emergency department during April 2009 to April 2012. The risk factors were obtained from patients' records including smoking, intravenous drug abuse, coagulopathy disorder having a history of surgery, history of cardiac disease, cancer, immobilization and trauma. A standardized structured questioner composed of closed-ended questions was used to collect the data and it was adopted from a study Marianne Tang Severinsen on their PhD thesis. The questionnaire is compose of closed ended question, mostly composed of tables and some yes and no question.

Results A total number of 532 DVT patients were hospitalized in Taker Anbesa Hospital Emergency department during the study period. It was only possible to extract the data from 130 patient records. A history of recurrent DVT was reported in 30 individuals (23%). The comparison between the risk factors in patients with a first time DVT and those experiencing a recurrent DVT revealed significant differences solely in the prevalence of blood disorders. Applying stepwise regression indicated coagulopathy (OR: 5.389; 95% CI: 0.004-0.761; $P < 0.048$) with DVT recurrence

Conclusion Based on our findings, DVT patients with blood disorder have high risk of recurrence, so that it should be recommended to have through investigation and management of coagulopathy disorders.

1. INRODUCTIOIN

1.1 BACKGROUND

Venous thromboembolism (VTE) is the third common vascular disease after coronary artery disease and stroke. Which is experienced by 2-5% of people during their lifetime. The condition occurs in two forms deep-vein thrombosis (DVT) and pulmonary embolism(PE).(1-4) The annual rate of DVT in urban areas is reported to be 0.5-1.6 in every 1000 people which is probably much higher in reality due to asymptomatic forms of the disease.(5, 6)

About 2-5% of people experience deep-vein thrombosis (DVT) during their lives. Death, disease recurrence, post-thrombotic syndrome, and excessive bleeding due to Anticoagulant medications are among the most common DVT complications.

Recent research found a high incidence of DVT recurrence after the first attack. Disease recurrence has multifactorial Pathogenesis and its probability is related with the number and severity of risk factors.

Since, the annual rate of DVT in urban areas is reported to be 0.5-1.6 in every 1000 people which is probably much higher in reality due to asymptomatic forms of the disease. (5, 6)The risk for DVT increases with age, i.e. while only 5 out of every 100,000 children suffer the problem, the rate Increases to 400 out of every 100,000 in people over 80.(7)

Typically, DVT starts with an acute pain, redness and swelling from the calf to the thigh. A clear swelling in the rear thigh with tenderness along the deep venous system is observed in examination. However, in most cases the condition is asymptomatic and silent and heals spontaneously and without treatment. (8)

DVT risk factors include aging over 40, obesity, immobilization especially after long journeys, history of hypercoagulation, genetic factors leading to Thrombophilia, certain blood diseases, cancer, heart failure, bone fractures, smoking and recent surgeries. In women, however, oral contraceptive pills (OCPs) and hormone replacement therapy (HRT) are also among the main risk factors.

In addition, idiopathic Form of the disease is not uncommon. (9) Death, disease recurrence, post-thrombotic syndrome, and severe bleedings are the most important side effects of anticoagulation medicines used for DVT. (10, 11)

A mortality rate of 6% has been reported in the first six months after the disease onset.(12) Recent studies found a high incidence of recurrent DVT with half of DVT incidences in the U.S.(13-18) A relapse after a five year disease free interval is observed in 20-30% of the patients.(19, 20) While some studies reported the annual incidence rate of the first recurrent attack to be 3-5%, which is generally most probable to happen during the First two years after the discontinuation of anticoagulation treatment, others claimed a higher rate Of 5-10%.(19, 21, 22)

The incidence of disease recurrence, as a condition with a multifactorial pathogenesis, is related with the number and severity of the risk factors. In a study conducted in Norway, cancer, previous proximal DVT and previous VTE were suggested to be major Factors causing RDVT. In addition, although the condition is more prevalent among men, many studied did not indicate sex as a risk factor for DVT recurrence. (19)

The present study aimed at studying the prevalence & predicative factors of recurrent DVT in Tekur Anbessa hospital emergency department from April1, 2017-April 30,2020G.C.

1.2 Statement of the problem

Venous thromboembolism (VTE) is the third common vascular disease after coronary artery disease and stroke which experienced by 2-5% of people during their lifetime. The condition occurs in two forms of deep-vein thrombosis (DVT) and pulmonary embolism (PE). (1-4)

The prevalence of recurrent DVT is increasing worldwide .not only worldwide nowadays there is increasing visit of patients to hospitals with a complains of recurrent DVT, this urges the clinicians to understand factors associated with DVT recurrences. Despite the increment prevalence of recurrent VTE, there are no as such organized studies that explicit the reason why most of our patients develop RDVT .So it is very crucial to study the predictive factors that predispose patients for the occurrence of RDVT. This will aid the clinicians as well the community to know and prevent those risk factors that predispose to RDVT.

This research briefly tries to list down risk factors , clinical features and predictive factors of recurrent DVT .so the findings of the current study will maximize patient care and health education. It will also aid health authorities in formulation of health policies concerning prevention of VTE.

1.3Significance of the study

The identification of predicators of recurrent DVT help to prioritize risk factors that will lead to recurrent venous thrombosis, this will aid patients with DVT to avoid risks that will led to fatal complications of venous thrombosis. This study provides data for clinicians to predict the occurrence of recurrent DVT and to know common predictive factors that predispose to recurrent DVT .It will also support the clinicians to give good health education for their patients in order to avoid recurrent venous thrombosis.

This study also tries to compare the clinical symptom and patient presentation in FDVT and RDVT .In addition the study allows public policy formulators to draft essential health policies concerning prevention of recurrent venous thromboembloisms.

The study serve as the ice breaker for further studies to be done in the country as well in Africa concerning risk factors, clinical features and prevalence of RDVT .So that the population nationwide will be benefited from the subsequent researches, since VTE is now being imposing

high morbidity and mortality in word wide and especially in poor sub-Saharan countries, studying about predictive factors and clinical features of recurrent DVT is highly significant.

2 LITERATURE REVIEW

2.1 WORLD WIDE

In a meta-analysis conducted on 7 prospective researches, Douketis et al. studied 2554 subjects who were followed for an average of 27.1 months and suggested that compared to women, men were 2.2 times more likely to experience a recurrent VTE after their first DVT. Even after adjusting the model based on HRT in women, recurrent DVT was 1.8 times more common among men.(24)But, Unlike some previous studies, this study did not suggest any relation between sex and DVT recurrence (may be because this was a retrospective study conducted on patients With RDVT).

In a cohort study, Hansson et al. followed 738 patients with DVT for 3.7-8.8 years and found the Cumulative incidence of recurrent VTE to be 21.5% in 5 years. Their multivariate survival analysis revealed proximal DVT, cancer and previous history of Thromboembolism to be independent risk factors for the VTE recurrence. They did not find any significant relations between age, sex, antithrombotic treatment or immobilization and disease recurrence. (19)

In another study, White et al. followed 37000 patients with DVT for 6 months and suggested that DVT recurrence is related with age, cancer, surgeries and hospitalization duration. (18)

In 2005, Partsch reviewed the studies on acute DVT recurrence and reported that some studies suggested immobilization or restricted physical activity as important factors in disease recurrence. In addition, the same studies recommended walking accompanied with an appropriate compression on the involved site during the treatment period. His results indicated that immobilization, as one of Virchow's triad criteria, may cause venous stasis. (26)

Prandoni et al. conducted a study on 377 DVT patients and found recurrent DVT associated with immobilization. (3) Similar to Partsch inference, they also suggested quick mobilization of the patients and increasing their physical activity after the first DVT as a good treatment method.

Mohammadzadeh et al. studied 50 IV drug abusers in Northern Iran and indicated pseudo aneurysm with a frequency of 52% as the most common vascular complication among these subjects. DVT was the next common complication with a frequency of 18 %.(27)

Yegane et al. studied the effect of surgery on 62 IV drug abusers complaining from tenderness and swelling in the groin region and noted a high rate of DVT (50%) among these patients. (28)

In a case-control study, Masoomi et al. compared DVT patients with healthy subjects in central Iran (Kerman). They showed that in the regression model, the crude effect of opium addiction on DVT was very strong (OR 4.25, 95% CI 2.6-6.9). However, the effect was eliminated after multivariate regression analysis (OR 0.56, 95% CI 0.1-3). (29)

In Netherlands and Norway they were a research that was done to find a prediction model for recurrent venous thrombosis in all patients with first venous thrombotic event. Data were used from two population based cohort study. Four version of VTE predication model were developed model A (clinical, laboratory and genetic variable), model B (clinical variable and few laboratory markers), model C (clinical and genetic factors) and model D (clinical variables).The outcome measure was recurrent VTE during 19,201 person year follow-up in mega study 507 recurrences occurred. Model A had the highest predictive capability, with C-static of 0.73(95% CI 0.71-0.76).The descriptive performance was somewhat lower in other models C-statics 0.72 for model B, 0.70 for model C, and 0.69 for model D. Finally the predication model proposed in this study applies to patients with provoked or unprovoked first VTE-except for patients with history of cancer (.30)

In Alzahra Hospital, Isfahan, Iran, during April 2000 to April 2011.The prevalence of DVT among men and individuals over 40 years was more than that among women and people below 40. In addition, the third important risk factor (after age and sex) was immobilization. The regression model showed a significant difference between immobilization and coagulation disorders in patients with first and recurrent DVT. Although immobilization was more common among FDVT patients, stepwise regression showed a significant association between immobilization and RDVT (OR = 4.570). Moreover, hospitalization duration and swelling frequency were significantly less common in RDVT subjects. (31)

2.2 AFRICA

In Dakar (Senegal) in April 2014, there was a research done on risk factors for thrombosis in African population. It was a three year cross sectional and case control study involving 105 cases and 200 controls was conducted in various hospitals in DAKAR. Their results conclude that Oral contraception, immobilization by cast, surgery and blood group were significantly associated with VTE occurrences. (32)

In august 2017, there was a systematic review done on epidemiology of theromboembolism in Africa, they searched pub med and Africa journals online to identify articles published on VTE in Africa from inception to November 19, 2016, without language restriction. The research concluded that the prevalence of VTE is high following surgery and in pregnant and postpartum women in Africa. (23)

2.3 ETHIOPIA

In Ethiopia particularly, Addis Ababa University in 2016 there was a five year prospective study designed to obtain information on demographic characteristics risk factors and complication of DVT in 66 Ethiopians and conclude as 12% recurrence rate of DVT .(33)

Several studies conducted on the relation between DVT recurrence and its associated risk factors including age, sex, cancer, bone fractures, hip and knee surgeries, and proximal DVT, immobilization and coagulation disorders.

3 OBJECTIVES

3.1. GENERAL OBJETIVES

The General objectives of this research is to study the prevalence and predicative factors of recurrent DVT in Addis Ababa university college of health science from august 1,2017 –august 1 2020.

3.2. SPECIFIEC OBJECTIVES

- To identify prevalence of RDVT in TASH.
- To determine predicators of RDVT.
- To describe clinical symptoms, treatment method and hospitalization duration in FDVT and RDVT.

4 METHODS AND MATRIAILS

4.1 Study area

Addis Ababa is the capital city of Ethiopia. It is also the largest city in the country by population; with a total population of around 7 million in the year 2017 census. The city is divided into 10 sub-cities and 116 Woreda. The annual growth rate of the population is 3.8%. Currently, there are 29 general hospitals in the city, out of which 7 have government ownership while the remaining 22 are under private and non-governments. According to the Food, Medicine and healthcare administration and control authority of Ethiopia, General Hospital means a health facility at secondary level of healthcare which provides promotive, preventive, curative and rehabilitative service that requires diagnostic facilities and therapeutic interventions with a minimum capacity of 50 beds and at least shall provide gynecology and obstetrics, pediatrics, internal medicine, surgery, psychiatry and emergency services.

This study is conducted at Addis Ababa university black lion Hospital. Which is one of the largest Hospitals in Addis Ababa Ethiopia established in 1947E.c.black lion hospital provides a tertiary level referral treatment and is also open twenty-four hours emergency services. The hospital is administered by the Addis Ababa University and it is the teaching hospital among in Ethiopia. Providing teaching about medical students and other health-related fields. The hospital offers diagnosis and treatment for approximately 2 million patients per year. The hospital has 800 beds.

4.2 Study period

- The total study period is from APRIL 1, 2017-APRIL 1, 2020.

4.3Study design

- An institutional based retrospective cross sectional study. This retrospective cross-sectional study investigated all DVT inpatients in Tekur Anbessa specialized hospital emergency department during April 2017-April 2020. Patient records were collected from the hospital archive. Patients with incomplete records were excluded. The diagnosis was made based on clinical symptoms, existing risk factors and Doppler sonography.

4.4 Source and study population

Source population

- All patients with who visited the emergency department of Black lion referral Hospital from APRIL 1, 2017-APRIL1, 2020.

Study population

- The study population will be DVT patients, who visited the Emergency Department of black lion Hospital APRIL1, 2017-APRIL1, 2020.

4.5 Inclusion criteria

- All patients 13years of old who had DVT (with venous Doppler confirmation) in the TASH emergency department from APRIL 1, 2017-APRIL1, 2020.

4.6 Exclusion criteria

- Patients less than 13 years of age.
- DVT diagnosis not supported by venous Doppler study.

4.7 Study variable

Dependent variable (outcome variable)

- Occurrence of recurrent DVT in TASH ED.

Independent variable

- Demographic characteristics
  - Age
  - Sex
- Chronic illness
  - Cancer
  - Coagulopathy disorder
  - Coronary vascular disease
- Immobilization
- Smoking

- Contraceptive
- HRT
- Iv drug abuse
- Pregnancy
- Family history of DVT
- Trauma
- Surgery
- HIV illness

4.8 Sample size determination and sampling procedure

A convenience sampling technique was used

The study design is retrospective cross sectional.

Based on the study conducted at TASH, the prevalence of RDVT is 12.5. (33)

The sample size formula for cross sectional study design is given by;

$$N = \frac{(z^{a/2})^2 p\,(1-p)}{d^2}$$

$Z^{a/2}$=Normal deviant at the portion of 95% confidence interval two tailed test is; = 1.96

P=Incidence of RDVT at TASH 12.5

CI=95%

d=margin of error taken as 5%= 0.05

n Minimum sample size for a statistically significant survey

$$= \frac{(1.96)^2.0.125(1-0.125)}{(o.05)^2}$$

Nfinal=167.8

5. Data collection tool and procedure

A standardized structured questioner composed of closed-ended questions was used to collect the data and it was adopted from a study Marianne Tang Severinsen on their PhD thesis. The questionnaire is compose of closed ended question, mostly composed of tables and some yes and no question. The data was collected by data collector from charts of DVT patients that were collected from 3 years. The charts were collected from card archive using a log book that registers every patients name, card number, diagnosis and disposition. The data then collected and chick list fullifillment done by data collector for the purpose of legitimacy and accuracy.

5.1 Data processing and analysis

Data processing took place during all stages of a study which include all aspects in planning, data collection, data entry, data validation, checking, data manipulation, data files backup and data documentation. The objective is to create a reliable database containing high quality data.

In this study, the data entry was done using SPSS software version 25. First the checklist was designed in the software in such a way that consistency checks and skip patterns are determined during data entry by the software automatically. This typically helps to examine the data and prevent possible data processing errors (consistency errors, implausible values, duplicating errors, transpositions, copying errors).

Demographics, DVT risk factors, clinical symptoms, treatment method, previous treatment for DVT and hospitalization duration was studied in this research. The risk factors included smoking, drug injection, history of surgery, immobilization, and history of cardio vascular diseases, coagulopathy and cancer. In women, however, additional factors such as history of recent pregnancy, hormone replacement therapy (HRT) and oral contraceptive pill (OCP) usage were also considered.

Then, the data exported to the statistical software SPSS version 25. Then, the data further examined using SPSS for possible errors. Frequency of risk factors, treatment method (percent) and average hospitalization duration (mean ± SD) were calculated. Chi-square test was used to

evaluate the risk factors in patients with a history of DVT compared with those experiencing the condition for the first time (FDVT). In order to determine the effective factors in disease recurrences, stepwise logistic regression test was employed to calculate odds ratio (OR). A P-value lower than 0.05 was considered statistically significant.

5.1.1Odds ratio test of association

To examine whether the outcome variable (RDVT) has an association with each categorical independent variable odds ratio test of association was used. The odds ratio is defined as the ratio of the odds of A in the presence of B. Two events are independent if and only if the OR equal 1.The OR is also used to figure out if a particular exposure is a risk factor for a particular outcome, and to compare the various risk factors for that outcome =

$$\text{ODDS RATIO} = A/C.B/D$$

- An odds ratio of 1 means that exposure to property A does not affect the odds of property B.
- An odds ratio of more than 1 means that there is a higher odds of property B happening with exposure to property A.
- An odd ratio is less than 1 is associated with lower odds.

5.1.2 Stepwise Regression Selection

Stepwise regression is a combination of the forward and backward selection techniques. It was very popular at one time. Stepwise regression is a modification of the forward selection so that after each step in which a variable was added, all candidate variables in the model are checked to see if their significance has been reduced below the specified tolerance level. If a non significant variable is found, it is removed from the model.

Stepwise regression requires two significance levels: one for adding variables and one for removing variables. The cutoff probability for adding variables should be less than the cutoff probability for removing variables so that the procedure does not get into an infinite loop

5.2 Data quality assurance

The quality of data assured through careful design, translation and retranslation from English version to Amharic and vice versa. Furthermore, continuous and close supervision of the data collecting procedures and proper categorization was done. The principal investigators and the supervisors checked the accuracy and reliability of the data collection process. They gave clarifications when ambiguity occurred during data collection period. Discussions held among the principal, in Different ways that lids to improve the quality of the data collected. Some of these are as follows.

- A convenience sampling procedure used to select a sample of patients. This assures every DVT patient was included in the sample and thus the information obtained from the sampled patients is not biased.
- The checklist filled by a data collector with a health education background.
- Data collectors received training initially prior to data collection; training carried out for a minimum of 2-4 hours providing the collectors with the overview of the objective and relevance of the study as well as confidentiality information.
- A supervisor checked each checklist for completeness.

The data entered in a designed checklist in SPSS version 25. Based on the feedback from the supervisors and data collectors, immediate corrective measures were taken. Thus, these methods provided a reliable database containing high quality data.

5.3 Ethical consideration

Written ethical approval to conduct the study obtained from the Ethics and Research committee of Addis Ababa University College of Heath science for approval. Approval also is obtained from TASH center by a formal written request. The data entered without disclosing patient name so that confidentiality is protected. All data obtained was only used for this study purpose.

5.4 Limitations of the study

During the collection of data there are many limitations faced some of these are:-

- Charts requested for card archive is 532 but only 130 cards obtained. Lot of patients' charts is disappeared.
- Some Charts obtained from card archives are incomplete.
- Full Investigations are not documented and some basic investigations like coagulation profile are not done for some patients.
- Poor documentation of patient's health information.
- Available cards miss some paper out and poorly handled.

5.5Dissemination the result

The final report of the study will be presented and discussed in the Department of Emergency Medicine College of Health Sciences Addis Ababa University. Finally, the results of the study disseminated to the Department of Emergency Medicine. Prospectively it will be disseminated to Society of Ethiopian Emergency Medicine Professionals' Association and Federal Ministry of Health.

6 Operational definitions

- Emergency department-a section of a hospital where life threatening conditions will be detected and managed.
- DVT-the aggregation of blood cells in the venous system abnormally seen with the aid of Doppler venous ultrasound.
- Cancer-patients who have been diagnosed to have malignancy.
- Hormone replacement therapy-is a form of hormone therapy used to treat symptoms associated with female menopause.
- Coronary vascular disease-is diseases that affect major blood vessels that supply heart.
- Adult-in TASH age of 14 and above considered adult
- Coagulopathy disorder-is any disorder that result in bleeding

7 RESULTS

Out of a total number of 532 patients hospitalized due to DVT during the 3 studied years in Tekur Anbessa hospital emergency department, only 130 records were extractable. Most involvements were seen in left leg, in 75 cases (57%) and in 43(33%) cases with right leg involvements. Moreover, the average hospitalization duration was 9.5±6.95.

7.1Socio demographic characteristics of the respondents

From the total patients with DVT females accounts 77(59%). The average age among the subjects, was 45 ± 16.96 years. Almost 84% of FDVT and 80% of RDVT had provoking factor A previous history of DVT existed in 30 subjects (23%). Table 1 represents a comparison between demographics in FDVT and RDVT groups. As this table shows, although the FDVT group had a higher age, the difference was not significant. In addition, sex distribution in the two groups was similar.

Table 1. The comparison of participants' baseline demographics in FDVT and RDVT

Variable	Total (n %)	FDVT (n %)	RDVT(n%)	p value
N	130	100(76.9%)	30(23%)	
Age	45± 16.9	46.74 ±17.6	41.5 ± 14.5	0.485+
Sex(men)	53(40.7%)	42(42%)	11(36%)	0.45+
Sex (female)	77(59%)	58(58%)	19(63.3%)	

+chi square test ± standard deviation

7.2The comparison of risk factors of DVT in FDVT and RDVT

Most of the recurrent DVT occur with a duration of more than 1 year since the occurrence of first DVT(35.7%).Secondly, 28.6% of the recurrent DVT occur within 3 to 6 month duration

of first DVT. The rest of recurrent DVT occur with the duration of less than 3 months (25%) and 6 to 12 months (10.7%).

Table 2 shows the comparison of risk factors between two groups

Variable	Total (n %)	FDVT (n %)	RDVT(n%)	p value
N	130	100(76.9%)	30(23%)	
Family history	1(0.76%)	0	1(3.3%)	0.06+
Coagulopathy	5(3.8%)	2(2%)	3(3%)	<0.04+
Immobilization	20(15.3%)	14(14%)	6(20%)	0.71+
Smoking	2(1.5%)	1(1%)	1(3.3%)	0.36+
Knee injury	5(3.8%)	3(3%)	2(6.6%)	0.11+
Pelvic surgery	8(6.1%)	7(7%)	1(3.3%)	0.46+
Cancer	55(42.3%)	44(44%)	11(36.6%)	0.17+
Contraceptive	0			0.06+
CVD	20(15%)	17(17%)	3(10%)	0.35+
Pregnancy	14(10.7%)	11(11%)	3(10%)	0.4+
RVI	8(6.1%)	5(5%)	3(10%)	0.31+
Trauma	14(10.7%)	13(13%)	1(3.3%)	0.34+
IV drug use	0			
Hospital stays	9.5±6.95	9.1±4.08	12.13±20.67	0.66+

+chi square test,± mean & standard deviation

7.3The participant's clinical symptoms, treatment and hospitalization duration in FDVT and RDVT.

Table 2 shows the clinical symptoms, treatment method, and hospitalization duration in FDVT and RDVT groups. Based on this table, Erythma was significantly more in FDVT patients than in RDVT subjects. In addition, the hospitalization duration was significantly shorter in FDVT group.

Table 2. The participants' sign and symptoms and the method of treatment between two groups

Variable	Total	FDVT (n %)	RDVT(n%)	p value
Site				0.4+
Left leg	75(57%)	60(60%)	15(50%)	
Right leg	43(33%)	33(33%)	10(33.3%)	
Both	12(9.2%)	7(7%)	5(16.6%)	
Swelling	129(99.2%)	100(100%)	29(96.6%)	0.007+
Pain	108(83%)	82(82%)	26(86.6%)	0.33+
Erythema	56(43.07%)	49(49%)	7(23.3%)	0.005+
Treatment				0.38+
Heparin + warfarin	104(80%)	80(80%)	24(80%)	
Enoxaparin + warfarin	21(16.15%)	17(17%)	4(13.3%)	
Novel anticoagulant	6(4.6%)	4(4%)	2(6.6%)	
Proximity				0.37+
Proximal	87(66.9%)	65(65%)	22(73.3%)	
Distal	17(13%)	13(13%)	4(13.3%)	
Both	26(20%)	22(22%)	4(13.3%)	
Provoked	108(83%)	84(84%)	24(80%)	0.007+

+ chi square value , $\pm$ mean & standard deviation

7.4The Association of respondents risk factors with RDVT.

Table 3 represents the model applied to determine the risk factors of RDVT. This model was designed based on regression test using enter method and included all demographics and risk factors. As shown in this table, the calculated odds ratio (OR) was only significant in coagulopathy. Stepwise regression analysis found only coagulopathy (OR: 5.389; 95% CI: 0.004-0.761; P < 0.048) to have a significant relation with RDVT.

Table 3. The effect of risk factors on the recurrence of deep vein thrombosis.

Variable value	OR	P
Age (years)	0.978	0.515
Sex (men)	0.695	0.316
Family history	0.00	1
Coagulopathy	5.389	< 0.048
Immobilization	1.229	0.625
Smoking	3.414	0.344
Cancer	0.545	0.256
Contraceptive	0.0	1
CVD	0.542	0.421
RVI	2.111	0.453
Pelvic surgery	0.458	0.513
Knee surgery	3.556	0.094
Pregnancy	1.618	0.483
Trauma	0.478	0.399

8 DISSCUSION.

The study shows that the occurrence of recurrent DVT is common in females which accounts 77(59%).unlike this study, Douketis et al. studied 2554 subjects who were followed for an average of 27.1 months and suggested that compared to women, men were 2.2 Times more likely to experience a recurrent VTE after their first DVT. Even after adjusting the model based on HRT in women, recurrent DVT was 1.8 times more common among men. (24) This increased prevalence of recurrent DVT in females in Ethiopia might be correlated with the expansion of preventable malignancies such as cervical cancers and primitive life styles. For instance Ethiopians women's predisposes for unwanted and un planned pregnancies', in which that led to repeated hypercoagulable states and this facilitate for occurrence of DVT. In other study done in Alzahra hospital, Isfahan, Iran similar to Douketis et al. finding, the prevalence of recurrent DVT was high in male(59.2%)as compared to females that accounts to 40(8%).(31)

Concerning the Age of the patients this study revealed that the average age of patients with both FDVT and RDVT is 45 ±16.9.contrarly in study done Alzahra hospital the average age of both FDVT and RDVT patients is 48.30 ± 19.16.this gab occurred mainly due to the variation of life expectance difference between two countries.(31)

The prevalence of recurrent DVT in this study was 23%.this finding is in agreement to a study done by Hansson et.al which shows that the prevalence of recurrent DVT is 21.5%.(19) In different from our study, Addis Ababa University in 2016 did a study that shows that there is 12% recurrence rate of DVT. (33) Also, in study done in Alzhara hospital, Iran the recurrence rate of RDVT is 12.5% which has significant difference from our study. (31)

The clinical sign in this study shows that 66.9% of the DVT occurs in proximal extremities which are similar with a study done by Hansson po. shows that proximal DVT had the highest occurrence.(19) Concerning to the side of extremity to be affected , Both FDVT and RDVT patients have left leg predominance 57% ,followed by right leg 33%.This finding is almost similar with the finding in Alzhara hospital in which left leg is affected 59.48% then right leg follows 37.4%.(31)The reason postulated as a reason for the high frequency of left leg to develop

DVT by scholars is due to compression effect of left common iliac vein by right common iliac artery causing venous stasis.

In other point this study shows that coagulopathy disorder has significant association with recurrent DVT having designed regression test using enter method. As shown in table 4, the calculated odds ratio (OR) was only significant in coagulopathy. Stepwise regression analysis founds that coagulopathy disorder has (OR: 5.389; 95% CI: 0.004-0.761; P < 0.048) .In line with our study ,the finding in Alzhara hospital from Iran states that there is significant association between coagulopathy disorder and recurrent DVT .After applying regression test they found that coagulopathy disorder has (OR: 0.33;95% CI: 0.13-0.81; P < 0.016) .(31)unlike that of a study done by partsch and prandoni which says that immobilization had significant association with recurrence of DVT ,our study didn't found as such significant association between immobilization and recurrent DVT. White et al.also followed 37000 patients with DVT for 6 months and suggested that DVT recurrence is related with age, cancer, surgeries and hospitalization duration. (18) A clinical trial conducted by Schulman et al. followed 897 subjects and they found a significant association between disease recurrence and high age, but our study shows no significant association between being male and having cancer. (25)

Concerning the treatment method for DVT patients, this study find that most of our patients in first line get heparin and warfarin (80%) as treatment option for both DVT. This finding is in line of treatment choice that was prevalent in study done in Alzhara hospital ,Iran from April 2000-2011.(31)Despite this ,there is currently increasing demand of novel anticoagulant use from time to time in our hospital.(4.6%)This is because of the low bleeding risk and no need of monitoring, making them to be the preferred option of anticoagulant by health professionals and patients.

Several studies conducted on the relation between DVT recurrence and its associated risk factors including age, sex, cancer, bone fractures, hip and knee surgeries, and proximal DVT, immobilization and coagulation disorders. However, these studies were most Prospective and included patients with only FDVT. Unlike the mentioned researches, our study did not find any

significant relation between RDVT and cancer, age, surgery, sex, and proximal DVT. However, our results revealed the strong effect of coagulopathy disorder on RDVT. ,

Numerous studies suggested coagulation disorders to be one of the most important Factors causing DVT, either for the first time or as a recurrent disease. And we prove coagulopathy as a significant risk factor that predicate for the occurrence of recurrent DVT. The reason might be due to the poor care Individuals get for coagulopathy disorders and the absence of sophisticated proper treatment center for both inherited and acquired coagulopathy disorders in our hospital. And further prospective study would be beneficial in clearly Understanding the issue.

9 CONCULSION AND RECOMMENDATION.

Based on the results from the present study, the prevalence of recurrent DVT is increasing (23%) so that early recognition and treatment of risk factors that predispose to recurrence is very crucial. Particularly as it clearly mentioned from the study that the presence of coagulopathy disorder will have significant contribution to recurrent DVT so that early diagnosis and treatment of coagulopathy disorder will have huge role in decrementing recurrence rate of DVT. For the diagnosis of coagulopathy disorders the hospital and the health bureau should import sophisticated investigation materials that can able to diagnose coagulopathy disorders. Since our study reveal that most DVT patient will have proximal extremity involvement, it will endanger patients for further fatal complication like pulmonary embolism so that early anticoagulation should be in mind in every clinician.

Regarding the treatment options our study found a good result concerning the increasing prevalence usage of these novel anticoagulants as they have low bleeding tendency and low monitoring.

This was a retrospective study based on the information and physical examination that patients provided for their

Physicians. A prospective study can follow the patients with first DVT and exactly record the risk factors and treatment methods applied to determine their effects on disease recurrence. This will enhance the health system diagnosing and treating capabilities.

10References

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ANNEX-1QUESTIONNAIRE (English Version)

Validation scheme for Recurrent deep Venous Thromboembolism (VTE)

- Age --------- sex male□ female □
- FDVT diagnosis and date confirmed: date ----------
- RDVT diagnosis and date confirmed: date ----------
- Is the DVT is Recurrence?

CLINICAL INFORMATION

	FDVT	RDVT
Swelling		
Redness		
Pain		
Duration of hospital admission		
Treatment		

	FDVT	RDVT
Proximal DVT...		
Pelvic DVT ...		
Upper extremity DVT		
Lower extremity DVT		
Right leg DVT		
Left leg DVT		

	FDVT	RDVT
Cancer		
RVI		
Trauma		
Family history		
Immobilization.		
CVD		
regular contraceptive use		
Surgery		
Coagulation disorders		
Smoking		
Pregnancy		
IV drug abuse		
Pelvic		
Knee		