



CLINICAL PROFILE AND RISK FACTORS IN VENOUS THROMBOSIS-A CROSS-SECTIONAL STUDY IN TERTIARY HOSPITAL.

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ABSTRACT Venous Thrombosis alone does not frequently result in death. VT has been associated with multiple comorbidities, presents with thromboembolism. This study aimed to evaluate the clinical profile and risk factors of all cases of venous thrombosis. A Cross-sectional study was conducted on 59 radiographically confirmed cases of venous thrombosis for six months. The mean age of the study group was 43.6 years (SD=±16.4), ranging from 20 to 72 years. 48 were males (81.4%) and 11 were female (18.6%). The mean Body mass index of the patients was 24.33 ± 2.84 kg/m². Out of 37 patients, the most common presenting features were a pain in 64 %, swelling of the limb in 35% of patients, 5% also had associated symptoms of breathlessness, chest pain, and orthopnea. Comorbidities were 8.5 % had IHD, 30.5% had Hypertension, 27% had Diabetes, 6.8% patients had a history of CVA, 15.3% had CKD, 18 patients had CLD, 6.8% had Varicose veins and concluded that venous thrombosis is a common problem among patients presenting to tertiary care hospital affecting young age group (20-29 years), more common in male gender, in BMI > 25 kg/m² and Alcohol, Varicose veins, Diabetes, Hypertension, CLD, CVA, CKD, Surgery, and Cancer emerged as clinical risk factors associated with venous thrombosis. Venous thrombosis can be identified and be prevented well in advance with adequate prophylaxis to prevent the post-thrombotic sequelae and complications.

KEYWORDS : Venous Thrombosis, Thromboembolism, Chest pain, Diabetes.

INTRODUCTION :

According to US Census Bureau, the population of approximately 300 million Americans suggests that more than 350,000 individuals are affected by DVT/PE each year¹. DVT and PE together may be responsible for more than 100,000 deaths each year. The National Center for Health Statistics, reports that it is an underlying or contributing cause of death in over 10,000 cases per year². PE is responsible for many more deaths, widely, ranging from just below 30,000 to over 80,000.³ Even though, venous thrombosis has been associated with multiple comorbidities, not all patients with these comorbidities present with thromboembolism. This strongly provides suspicion that some hidden risk factors could be involved in the pathogenesis of thrombosis and hence focusing the need for further studies in this regard. Most of our population are below the poverty line and not affordable for expensive workup in identifying the inherited risk factors, and these factors are uncommon among most of our population studied. Hence there is a need for the identification of risk factors through easily affordable investigations and cure could be achieved through a reasonable cost-effective approach.

Most cases of venous thrombosis can be identified and be prevented well in advance with adequate prophylaxis to prevent the post-thrombotic sequelae and complications associated with venous thrombosis⁴. Hence it is important to be aware of risk factors, clinical presentation, and course of venous thrombosis, as early diagnosis and treatment can prevent life-threatening complications and give a better outcome. In our teaching Medical college hospital which is a tertiary care center, we get a large number of referrals for the management of venous thrombosis most of which are unprovoked. The exact etiology for this has not been investigated. Most of them are from very low socioeconomic status and unable to afford investigations for the cause of thrombosis.⁵ In the past decade, deep vein thrombosis has increasingly been recognized as an important and possibly preventable cause of morbidity and mortality in hospitalized patients. Understanding the natural history of venous thrombosis is important for optimal management of this condition. Once risk factors are recognized it is possible to avoid these risk factors or to use active prophylaxis to reduce morbidity and mortality. Hence we conducted this study to evaluate the clinical profile of all cases of venous thrombosis and the risk factors associated with venous thrombosis.

AIM: This study aimed to evaluate the clinical profile of all cases of

venous thrombosis and the risk factors associated with venous thrombosis.

METHODS AND MATERIALS:

SOURCE OF DATA:

The study was conducted on patients admitted to Yenepoya medical college Hospital. The study was conducted on 59 radiographically confirmed cases of venous thrombosis. Informed written consent was obtained for participation in the study and conduction of investigations. The study was conducted between the period of November 2017 and September 2019.

STUDY DESIGN:

 Cross-sectional Study

SAMPLE SIZE CALCULATION: Based on open EpiVersion 3, with an anticipated population size of 18,000 admissions per year and anticipated venous thrombosis of 4% among hospitalized patients, a sample size of 59 was calculated at a confidence interval of 95% with absolute precision of 5%.

INCLUSION CRITERIA: In the age group between 18 – 80 yrs, all Orthopaedic cases, Surgical cases of DVT, Bedridden cases, Pregnant women all cases of venous thrombosis diagnosed by venous Doppler, CT Scans, MRI Scans.

EXCLUSION CRITERIA: Age under 18 Years and cases of acute long bone fractures were excluded from the study.

MATERIALS AND METHODS: Diagnosed cases of Deep vein thrombosis, Pulmonary thromboembolism, Cerebral venous thrombosis, Portal and splenic vein thrombosis were detected by radiographic imaging like Doppler ultrasonography, Computerized Tomography/ MR Venogram. Clinical data, Case history including personal history, comorbid illness, and physical examination were done according to the enclosed Proforma. With informed consent, blood samples were collected from patients with deep vein thrombosis. The venous blood samples from all subjects were collected under aseptic precautions and sent for a complete Haemogram study. ESR, CRP, peripheral blood smear, Lupus anticoagulant work up, and serum Homocysteine levels.

STATISTICAL ANALYSIS

The data was documented on a master chart. Descriptive statistical

analysis has been carried out in the present study. Collected Data was summarized by frequency and percentage and represented in the form of Diagrams. Inferential methods such as Chi-square/ Fisher Exact test were used to compare. Analysis was performed by SSP17 software and a P value less than 0.05 considered as significant.

RESULTS :

A total of 59 patients who were admitted with a diagnosis of venous thrombosis at Yenepoya Medical College Hospital were included in the study. The mean age of the study group was 43.6 years (SD= ±16.4) ranging from 20 to 72years. Out of the 59 patients, 48 were males (81.4%) and 11 were female (18.6%). Out of 59 participants. 17 (28.8%) were in the age group of 20-29yrs, 4 (6.77%) in the age group of 30-39yrs, 14 (23.7%) in the age group of 40-49yrs, 10 (16.9%) in the age group of 50-59, 8 (13.55%) in the age of 60-69 years and 6 (10.1%) in the age group of 70 -79 years as shown in table 1. The mean Body mass index of the patients was 24.33 ± 2.84 kg/m². Among 59 patients studied 33 (55%) patients had BMI 18-25, 24 (40.6%) patients had BMI 25-30, 2 (30%) patients had BMI 30-35 kg/m² shown in fig 1. Among 59 patients 37 participants (62.71%) presented with deep vein thrombosis of limbs. 12 patients (20.3%) presented with cortical venous thrombosis, 5 patients had a pulmonary embolism (8.47%), 4 patients (6.7%) presented with portal vein thrombosis, and 1 presented with splenic vein thrombosis. Among 12 patients who had CVT, 9 (72%) had Transverse and superior sagittal sinus thrombosis, 2 (33%) had Inferior Sagittal sinus thrombosis, 1 (8.3%) had sigmoid sinus thrombosis. Out of 37 patients, the most common presenting features were a pain in 24 patients (64 %), swelling of the limb in 13 (35%) patients, 2 (5%) also had associated symptoms of breathlessness, chest pain, and orthopnea. Among 5 patients with pulmonary thrombosis, 3 had palpitations and all 5 had Dyspnoea.

Associated comorbidities were 5 patients (8.5 %) had a history of IHD, 18 (30.5%) had Hypertension, 16 (27%) had Diabetes, 4 (6.8%) patients had a history of CVA, 9 (15.3%) had CKD, 18 patients (30%) had CLD, 4 patients (6.8%) had Varicose veins. Among 59 patients 12 (20.3%) had polycythemia, which was defined by a Haemoglobin level of >17 mg/dl and by peripheral smear reports, and 11 patients were Anemic with Haemoglobin <10 mg/dl. The mean Hemoglobin was 13.2mg/dl (SD±7.07). 38 patients, 64 % had elevated ESR. The mean Erythrocyte sedimentation rate (ESR) was 33.45. 48 patients (81.3%) had elevated CRP. The mean CRP was 16.66. All patients underwent Serum Homocysteine level estimation, of which 46 patients (77%) had Elevated Serum Homocysteine levels (>15µmol/L). Among 59 participants 61% had low HDL, 74.6% had High LDL, 27 % had high Triglycerides. Total Cholesterol was elevated by 40.7 %. D dimer levels were elevated in 98.3 %.

Table 1 : Age and Gender distribution of patients studied groups.

Age in years	Number of patients	Percentage (%)
20-29	17	28.8
30-39	4	6.77
40-49	14	23.7
50-59	10	16.9
60-69	8	13.55
70-79	6	10.1
Total	59	100.0
Mean ± SD	43.6±16.4	
SEX	Male 48(81.4%)	Female 11(18.6%) Total 59(100%)

Table 2: Analysis of symptoms of CVT and Intra abdominal venous thrombosis.

Symptoms in CVT	no. of patients (n=12)	Percentage (%)
Headche	10	83
Weakness	2	16.6
Vomiting	3	25
Blurring of vision	1	8.3
Seizure	6	50
Fever	1	8.3
Symptoms of Portal vein thrombosis	no. of patients (n=4)	Percentage%
Abdominal pain	4	100
Abdominal Distension	4	100

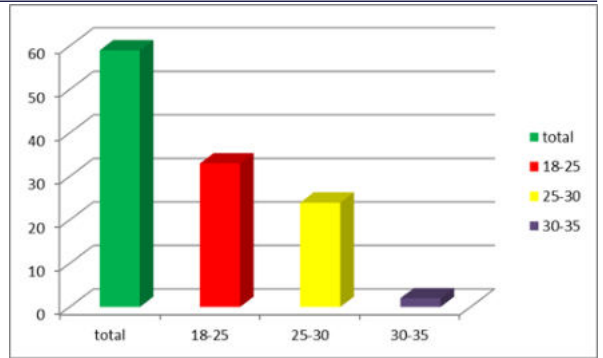


Fig 1: BMI of the Patients studied in DVT (kg/m²)

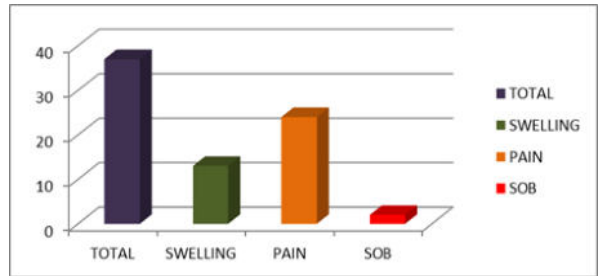


Fig 2: Symptoms of DVT

DISCUSSION

This was a study on 59 patients with venous thrombosis presenting to a teaching medical hospital to find out the risk factor profile of these patients. The results of our study showed that nearly one-third of these patients belonged to age group 20-30 years with the second biggest group being in the age group 40 -50 years and nearly 80 percent were males.

This indicates that these patients did not have traditional risk factors such as pregnancy, puerperium, and hormonal contraceptive use or comorbidities such as embolization which often are risk factors in females. Similar observations were made by Silverstein, John Heit JA et al⁶ who conducted a 25-year population-based, retrospective study of the incidence of Deep vein thrombosis and pulmonary embolism involving 2218 patients, incidence was higher in males. Male: female ratio was 1.2:1 and the mean age was 61.7 ± 20.4 years.

In a study done in 2013 among 2195 patients studied, men had an RR-2.1 at 95%, confidence interval, increased risk of venous thrombosis when compared with women.⁷ However in another study reported in a total of 24,911 patients, (17.1%) patients had DVT. Women aged 40-69 had a higher proportion (RR -6.7; 95, CI:3.7; -9.9) which mainly showed female preponderance. This could have been due to hormonal contraceptive use.⁸

The majority of our cases (nearly 60%) were deep vein thrombosis, followed by cerebral venous thrombosis (20%). Pulmonary embolism and visceral thrombosis occurred less commonly in our series. This is probably because we included patients mainly referred to the medical department. In comparison with a similar study by Cheena Garg et al⁹ among a total of 622 patients, 26 suffered from venous thrombosis, Eleven patients (58%) had deep vein thrombosis and 8 patients (42%) had pulmonary thromboembolism and 7 patients (26.9%) patients had CVT.

Our study showed that nearly 45% had high BMI, however, it did not emerge as a risk factor for venous thrombosis in general, but emerged as a risk factor for deep vein thrombosis and CVT, and pulmonary embolism.

A study by Paul Dstein, Afzal Beemath et al¹⁰ 21 years population-based study in a population, Among 1,89, 25,000, patients 1,20,15,000 patients diagnosed with obesity, of which (0.76%) had a pulmonary embolism. Deep vein thrombosis was diagnosed in 2.02% diagnosed with obesity. When compared to non- obese patients, obese patients relative risk was 2.50(95% confidence interval [CI] = 2.49-2.51). The relative risk of pulmonary embolism was 2.21 (95% CI = 2.20-2.23). Over weight had the maximum impact on both genders aged less than 40 years.

In our study patients (20.3%) had a history of venous thrombosis, (8.5%) had a history of IHD, (6.8%) had a history of CVA, and (27%) history of Diabetes, (30.5%) had HTN and (15.3%) had CKD. (30.5%) had CLD. (6.8%) had Varicose veins. In our study Diabetes and CLD were significantly associated with pulmonary embolism. Hypertension, CKD, CVA, IHD, were associated with venous thrombosis in general. In a study conducted in 2013, among 1231 patients, 26. % had a history of venous thromboembolism, 22.3 % had Cancer, 11.2% had a history of Major surgery, 8.2% had Congestive heart failure, 5.8% had Varicose veins, 3.7% had Fracture (hip or leg), 1.8% had Stroke 0.7% had Myocardial infarction.¹¹

A similar study done by Gregory Piazza et al¹² in 2012, among 2488 cases of venous thrombosis 476 had diabetes was correlated with a major increase in the possibility of recurrent deep vein thrombosis. In our study 21 (35.6%) patients had a history of alcohol, of which 6 Developed lower limb venous thrombosis, 6 had CVT, 4 had portal vein thrombosis. Alcohol emerged as a risk factor for all venous thrombosis in general but not specific to any particular venous thrombosis.

In a study conducted using data from the NHIRD 61,229 patients with acute Alcohol intoxication, 244,916 were controls. The incidence rate of DVT during the 10 years follow-up period was 9.36 per 10,000 person-years in patients with alcohol intoxication and 2.07 per 10,000 person-years in non-alcoholic cohorts, respectively. Moreover, the incidence rate of PE was 4 per 10,000 person-years in the Alcoholic cohort and 0.93 in the non-Alcoholic cohort. The risks of DVT and PE were 3.40 after adjustment of age and sex. [95% confidence interval (CI) 2.83–4.08] and RR 3.53 (95% CI 2.69–4.65)-fold higher in the Alcoholic cohort than in the non-Alcoholic cohort. In our study 10.2% had malignancy and it emerged as a risk factor for all venous thrombosis in general.

In a study conducted by Sabah Sallah et al¹⁴ in 2002 involving 1041 patients 81 (7.8%) were diagnosed with DVT and PE. Chemotherapy (p=0.0001) and Advanced malignancies.

In our study, 6.8% had a history of major surgery within 12 weeks and it emerged as a risk factor for all thrombosis in general. According to a study conducted by

In a study done among 214 subjects 23 (9.5%) patients had H/O Total Hip replacement and was concluded as an independent risk factor for DVT. However, most of the study group were from patients admitted in medical wards and we did not include orthopedic patients with fractures needing a total hip replacement.¹⁵

In our study 20.3% had polycythemia and it emerged as a risk factor for DVT and CVT. In our study APLA was identified as a risk factor in 2 patients. In our study 78% had high Serum Homocysteine levels (>15µmol/L). This emerged as a risk factor for all venous thrombosis and CVT. However, we do not have data on the population prevalence of hyperhomocysteinemia. Low fruits and vegetable consumption causing folate deficiency, low dairy and nonvegetarian food consumption causing Vitamin B 12 deficiency combined with genetic factors could have been responsible. In a study conducted by Paolo Simion, Paolo Prandoni et al¹⁶ 60 patients (28.8%) had Hyperhomocysteinemia. The odds ratio for having an acute DVT in patients with Hyperhomocysteinemia was 2.6 (95% CI: 1.1-5.9). Venous thrombosis is an important and possibly preventable cause of morbidity and mortality in hospitalized patients.

CONCLUSION :

We conclude that unprovoked venous thrombosis is a common problem among patients presenting to tertiary care hospital affecting young age group (20-29 years), more common in male gender, in BMI > 25 kg/m² and Alcohol, Varicose veins, Diabetes, Hypertension, CLD, CVA, CKD, Surgery, and Cancer emerged as clinical risk factors associated with venous thrombosis. Understanding the natural history of venous thrombosis is important for early and optimal management of this condition. Venous thrombosis can be identified and be prevented well in advance with adequate prophylaxis to prevent the post-thrombotic sequelae and complications.

Limitations of Study:

Small study population and it was a cross-sectional study with no controls.

Competing interests :

The authors declare no competing interests.

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