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Research Article

THE CLINICAL FEATURES AND RISK FACTORS OF DEEP VEIN THROMBOSIS

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A R T I C L E I N F O

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- Deep vein thrombosis
- Clinical features
- Risk factors.

A B S T R A C T

Background: Understanding the natural history of venous thrombosis is important for optimal management of limb deep vein thrombosis. Once risk factors are recognized it is possible to avoid these risk factors or to use active prophylaxis to reduce the morbidity and mortality.
Objectives: The aim of the study was to document the clinical presentation, acquired predisposing risk factors and inherited risk factors of limb deep vein thrombosis
Methods: This is a descriptive study done prospectively in 30 patients admitted with a diagnosis of limb deep vein thrombosis during MAY 2021 to OCTOBER 2021
Results and Conclusion: Most of our patients were male {56%} and majority belongs to age group 20-40 years. Pain with limb swelling were the most common presenting symptoms in limb deep vein thrombosis. 28% patients presented with recurrence of venous thrombosis.78% patients with symptomaticdeep vein thrombosis had involvement of calf muscle veins. 36.6% patients had no evidence of acquired risk factors, while 66% of patients had one or more acquired risk factors .33.3% had high serum homocysteine levelsand among 15 patients' protein c and s deficiency is seen in 40 percent of patients and factor v laden mutation is seen in 13.3 percent cases and antithrombin 111 deficiency seen in 20 percent cases. Inherited risk factors could not be evaluated in all patients because of financial constraints.

INTRODUCTION

Venous thromboembolism encompasses deep vein thrombosis and pulmonary embolism and causes cardiovascular death[1] and disability as well as psychological illness and emotional distress. Globally, it represents the third most frequent acute cardiovascular syndrome, behind myocardial infarction and stroke[2,3]. Since the last two decades deep vein thrombosis has increasingly been recognized as an important and possibly preventable cause of morbidity and mortality in hospitalized patients. venous thrombosis tends to occur due to the additive effects of endogenous, genetic and environmental risk factors present simultaneously[6].

Understanding the natural history of venous thrombosis is important for optimal management of this condition. Once the risk factors are recognized it is possible to avoid these risk factors or to use active prophylaxis to reduce the morbidity and mortality. Although factor V Leiden is relatively rare in African-Americans it confers a similarly increased risk of thrombosis[4]. Deep vein thrombosis is generally related to factors included under the classical triad of stasis, vessel wall damage and hypercoagulability. The obese patients have a further increase in thrombosis risk when they are exposed to other thrombosis risk factors, such as exogenous contraceptive or postmenopausal hormones[5].

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Tissue factor is considered the initiator of coagulation and in concert with P-selectin are essential components ofthrombosis[7]. The association of hypercoagulability with venous stasis, which allows accumulation of activated coagulation factors in venous valve sinuses of the calf, is presently regarded as the primary triggering mechanism in development of most venous thrombi. Inherited causes like protein c, protein s and anti thrombin3 deficiency leads to formation of venous thrombosis and in 50% cases deep vein thrombosis is due to acquired causes like immobilization, trauma, and recent surgery and others.

A proximal DVT may involve popliteal, femoral, and iliac veins, and the inferior vena cava (IVC), while isolated distal deep vein thrombosis (IDDVT), or calf DVT, that represents around 30–50% of all lower-limb DVTs[8].Factors, such as advanced age, cancer, immobilization, recent trauma or surgery, and hospitalization are all considered risk factors for DVT progression into venous thromboembolism[9,10].Other risk factors include male gender, heart failure, systemic lupus erythematosus, and arteriopathy. This study targeted at identifying the factors predisposing to thrombosis with in the limit of available investigation at a tertiary care hospital such as KING GEORGE HOSPITAL, VISAKAPATNAM.

Gender	N	Percentage
Total	30	100
Male	17	56
Female	13	44

Aims and Objectives

1. To study the clinical features of limb deep vein thrombosis
2. Assessment of risk factors that are associated withlimb deep vein thrombosis

MATERIALS AND METHODS

Study Area: Department of general medicine, Andhra medical college, Visakhapatnam, Andhra Pradesh.

Study Population: The study was performed among the patients admitted in medical wards and those attending the medical out patient department of general medicine, Andhra medical college, Visakhapatnam.

Study Period: Approximately 6 months from May 2021 to October 2021

Sample Size: Total of 30 patients who are newly diagnosed as limb Deep vein thrombosis are included in the study.

Sample design: Having had informed consent for participation from the patient and, the patient was included in the study according to the following criteria.

Study Design: Descriptive observational study.

Inclusion Criteria

1. Age above 18 years
2. Patients with a radiologically {Doppler} proven limb deep vein thrombosis.

Exclusion Criteria

1. Age less than 18 years
2. Those are not given valid informed consent.
3. Those who are diagnosed with other sites of deep vein thrombosis {cerebral, portal, splenic}

Statistical Software

The statistical software namely social statistics was used for the analysis of the data and Microsoft excel, and word have been used to generate graphs, tables etc.

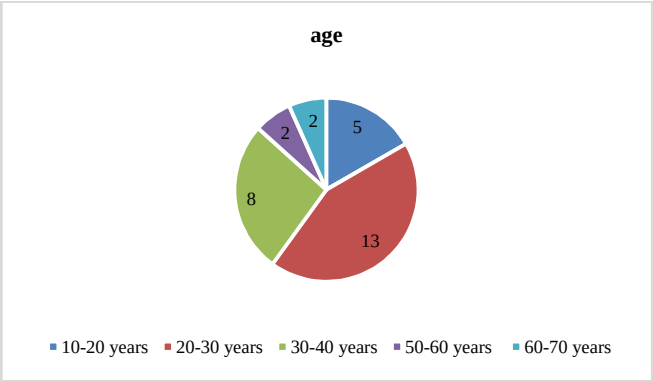
Method of Collection of Data

Diagnosis of limb deep vein thrombosis was by radiographic imaging like doppler ultrasonography or rarely MR venogram
Blood sample was collected with informed consent.This was done either at presentation before starting anticoagulation, after withdrawal of anticoagulant for more than one week {to ensure anticoagulant free period before collecting the samples}
The investigations done in all patients includes blood count, peripheral blood smear, liver and renal function tests, platelet count, prothrombin time, activated partial prothrombin time, lupus anticoagulant work up, serum homocysteine levels, protein c, protein s, antithrombin activity, factor 5 assay are performed.

RESULTS

30 patients who were admitted with a diagnosis of limb deep vein thrombosis at king George hospital Visakhapatnam were included in this study.
Sex distribution

Age distribution



Analysis of symptoms and signs of deep vein thrombosis

Symptoms and signs	No of patients	Percentage {%}
Edema	29	96.6
swelling	19	63.3
Calf tenderness	19	63.3
Pain	13	43.4
Sob/chest pain	8	26.6
Redness	9	30
Homans sign	9	30

Comorbid illness

3 patients had history of cerebrovascular accident,one patient each had history of systemic lupus erythematosus, polycythemia, acute myeloid leukemia, 3 patients had varicose veins, and another patient had seizure disorder which were independent risk factors for development of venous thrombosis.

Comorbid illness	No of Patients
Cerebrovascular accident	4
Smoking and alcoholism	4
Diabetes	3
Hypertension	2
Old pulmonary tuberculosis	2
Acute myeloid leukemia	1
Varicose veins	1
Chronic kidney disease	1
Polycythemia	1
Systemic lupus erythematosis	1
Cirrhosis /portal hypertension	0
Rheumatic heart disease	0
Seizure disorder	0

Investigation profile

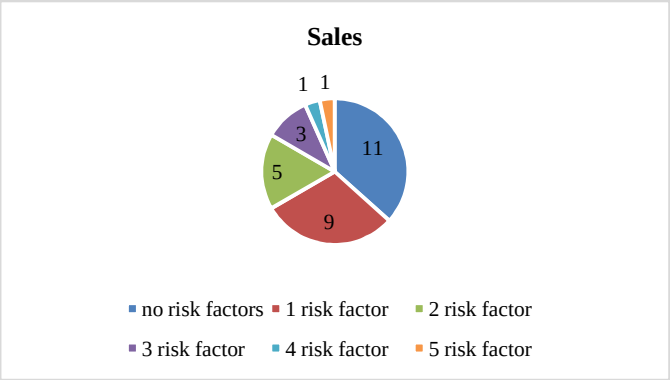
One patient had polycythemia, which was defined as HB % more than 17 mg/dl And rest 6 members were anemic with hemoglobin less than 10 mg/dl. Two patients had ESR above 50 mm/1 sthour and prothrombin and INR was normal in majority of patients but APTT was prolonged in 3 patients. 3 patients had deranged liver function tests but none of the patients had deranged renal function tests.

Feature	No of Patients
Anemia {macro or microcytic}	6
Deranged LFT	3
Prolonged APTT	3
Elevated ESR	2
Thrombocytosis	1
Polycythemia	1
Deranged RFT	0

Acquired Risk Factors

The following risk factors were analyzed in all 30 patients.11{36.6%} patients had no evidence of acquired risk factors, 9{30%} patients had at least one risk factor which was a predisposition to venous thrombosis.5{16.6%} patients had 2

risk factors ,3patients had 3 risk factors and 1{3%} patient had 4 risk factors and 1{3%}patient had 5 risk actors which predisposed to venous thrombosis.



Acquired risk factors are past history of thrombosis, bed rest for more than 3 days in past 4 weeks and hospitalization within 6 weeks,surgery with in the 12 weeks, smoking, stroke, obesity,APLA, oral contraceptive pills and pregnancy.

APLA is positive in 3 patients where all of them presented with lower limb deep vein thrombosis

Inherited Risk Factors

All the patients underwent Homocysteine level estimation of which out of which 10 patients had serum homocysteine levels elevated. out of 30 patients 15 patients underwent factor v laden, Anti thrombin 111 mutation assay, protein c and protein s deficiency assays.Out of all these protein c and protein s deficiency present in 6 patients, antithrombin 111 deficiency present in 3 patients and factor v laden mutation present in 2 patients.

Inherited risk factors	N =	No of patients	Percentages
S homocysteine	30	10	33.33
Protein s deficiency	15	6	13.33
Protein c deficiency	15	6	20.00
Antithrombin111deficiency	15	3	40.00
Factor v laden mutation	15	2	40.00

DISCUSSION

30 patients admitted in king George hospital Visakhapatnam, with a diagnosis of limb deep vein thrombosis were analyzed to clinical spectrum, presence of acquired /inherited risk factors for development of venous thrombosis.

Most of our patients were 20 – 40 years of age. out of 30 patients 17 {56%} were male and rest were female. Most common presenting feature of limb deep vein thrombosis is painful swelling of limb {63.3%}.on examination calf tenderness also present. 9 patients {28%} had past history of venous thrombosis,4 patients {13.3%} patients had history of old cerebrovascular accident, one patient each had history of SLE, polycythemia, varicoseveins, and acute myeloid leukemia which were independent risk factors for development of limb DVT.

Investigation profile for these patients shows one patient had polycythemia,3 patients had elevated APTT, 2 patients had elevated ESR, deranged LFTs seen in 3 patients and thrombocytosis observed in 1 patient.Acquired risk factors most commonly observed are past history of thrombosis, prolonged bed rest for more than 3 days in the past 4 weeks, smoking and alcoholism seen in 13.3% cases. APLA were positive in 3 patients out of which all the patients develop lower limb deep vein thrombosis and 1 patient had history of oral contraceptive pills intake.

All patients underwent homocysteine levels estimation and positive in 33%patients, protein c and protein s deficiency seen in 40 % of patients, factor v laden mutation is seen in 13% of patients and antithrombin 111 mutation is seen in 20 percent of patients.

CONCLUSION

1. most of our patients were male {56%}, in age group between 20-40 years
2. pain with limb swelling {63.3%} is most common presentation seen in majority of cases.
3. majority of symptomatic involved limb deep vein thrombosis patients had involvement of calf muscle veins.
4. 28% patients presented with recurrence of deep vein thrombosis.
5. 11{36.6%} patients had no evidence of risk factors and 9 patients had at least one risk factor,5 patients had two risk factors,3 patients had three risk factors, and 1 patient had four risk factors and one patient had five risk factors which predisposed to venous thrombosis.
6. All the patients underwent Homocysteine levels estimation and were positive in 33.3 percent patients, and APLA positive in only 3 patients.
7. Inherited risk factors were analyzed only in those patients who are affordable protein c and protein s deficiency seen in 6 patients, factor v laden mutation is seen in 13.3 percent of patients and finally anti thrombin 111 deficiency is seen in 20 percent.
8. Serum homocysteine, protein c and protein s are most common inherited risk factors.

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