VOLUME - 12, ISSUE - 04, APRIL - 2023 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

General Surgery

A PROSPECTIVE STUDY OF INCIDENCE AND MEDICAL MANAGEMENT OF DEEP VENOUS THROMBOSIS IN DEPARTMENT OF SURGERY, GRMC GWALIOR

Dr Vinayak Shukla	Resident surgeon, Department of Surgery, Gajra Raja medical college, Gwalior MP 474009
Dr Devendra Prajapati	Assistant professor, Department of Surgery, Gajra Raja medical college, Gwalior MP- 474009
Dr Madan Mohan Mudgal	Associate professor, department of Surgery, Gajra raja medical college, Gwalior MP- 474009
Dr Vinanti Naik	Resident surgeon, Department of surgery, Gajra Raja medical college, Gwalior, MP- 474009

ABSTRACT

Background- Venous thrombosis is a pathological sequel of imbalanced homeostatic mechanisms related to coagulation and can lead to life threatening complications such as pulmonary embolism. This study aimed to investigate the incidences of venous thrombosis and the role of management in the outcome. **Objectives-** To study the risk factors and co-morbidities associated with venous thrombosis and find out incidence among all admitted patients at the tertiary care institute. **Methods-** This was a prospective study done on 100 patients admitted in department of surgery between October 2020 to October 2022. The patient data was collected using detailed proforma. **Conclusion-** Incidence of asymptomatic DVT was found to be 4 percent. And symptomatic patient was found to have age group >50 yrs. The risk factors were found to be prolonged duration of surgery and immobilization in both the cases. For patients who undergo surgery for prolonged duration (especially > 3 hours) and prolonged immobilization (> 2 days), It is recommended to screen them with Doppler for incidence of DVT along with appropriate DVT prophylaxis in the post operative period to avoid morbidity & mortality associated with unforeseen and asymptomatic deep vein thrombosis.

KEYWORDS :

INDRODUCTION

A "Thrombus" is defined as a blood clot lodged in the blood vessel. When the pathologic processes overwhelm the regulatory mechanisms of hemostasis, there is excessive formation of thrombin initiating thrombosis.[1]

A deep venous thrombosis can occur either in the upper limbs or the lower limbs. In the lower limbs, the deep venous thrombosis is classified as either proximal, involving the femoral vein and distal involving the popliteal veins. The proximal lower limb deep venous thrombosis is usually associated with serious chronic diseases such as malignancies, biventricular failure and acute respiratory distress; whereas, distal lower limb deep venous thrombosis is associated with transient risk factors such as recent surgery, immobilization and travel.

Deep vein thrombosis [DVT] is one of the most dreaded complications in postoperative patients as it is associated with considerable morbidity and mortality. The prevalence of Deep Vein Thrombosis (DVT) in various series involving Western population ranges from 15% to 40% among patients undergoing major general surgical procedures. [3]

The autopsy studies document that 50% of all patients dying in hospital have DVT. Around 10–30% of these patients have pulmonary embolism secondary to proximal DVT. [4]

Majority of patients with postoperative DVT are asymptomatic. Its complications like pulmonary embolism can be lethal.

As a sequel to DVT, venous valves become incompetent or destroyed, resulting in chronic venous hypertension and subsequent development of varicose veins, lipoder matosclerosis and venous ulcers causing considerable disability.

MATERIAL AND METHODS

This is a prospective study conducted on 100 patients between October 2020 to October 2022 who underwent elective or emergency operations, admitted in Department of Surgery, G.R. Medical College, Gwalior

Patients admitted in department of surgery who underwent elective or emergency operations, for more than 2 hours including in the study. Patient who underwent cardiac or vascular operations, pre diagnosis of DVT, who ever took anticoagulant such as warfarin, aspirin and clopidogrel during one week before hospital admission, uncorrectable coagulopathy and patient is on heparin were excluded from the study.

Method Of Collection Of Data

The relevant data shall be collected by using:

- Detailed history
- Data of total number of patients admitted in department of surgery in period of 2 year will be collected from Medical Records Department (MRD) section
- The surgical data included nature of surgery, duration, blood loss, blood transfusion according to patient operation note
- Hematological investigations: complete hemogram, liver function test, renal function test.
- Lipid profile; high density lipoprotein, low density lipoprotein, total cholesterol.
- Coagulation profile – Prothrombin Time, activated Partial Thromboplastin clotting Time, International Normalized Ratio.
- Imaging studies: Handheld doppler, venous duplex scanning.

All the patients are subjected to hand held doppler study of deep venous system of both lower limb and iliac system on post operative day 2, day 5 and day 7. Confirmation of DVT using duplex scan.

Data Analysis:

All the data analysis was done using IBM SPSS . Continuous

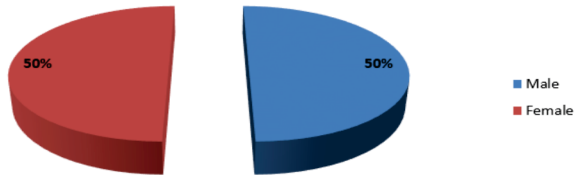
data was presented as mean ±SD. For calculation of significance between continuous variables between two proportions and percentages, Chi-square and Fischer's test was used.

OBSERVATION AND RESULTS

Demographic Profile:-

In our study, we included equal number of male and females.

Graph 1: Distribution of cases according to gender



Age Distribution:-

The predominant age group was 31-60 years constituting 78%. Followed by <30 years constituting 12% The mean age of the patients was 46 years with a standard deviation of 11.486. There was equal male and female predisposition with 50% of the population being male

Table 1: Distribution of cases according to age

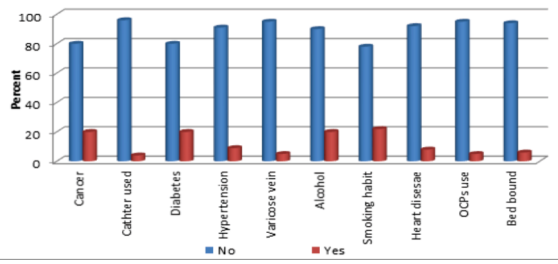
	N	Minimum	Maximum	Mean	Std. Deviation
Age	100	25	70	46.38	11.486

AGE GROUP	Frequency	Percent
<30YRS	12	12
31-60YRS	78	78
>61 YRS	10	10

Co-morbid Condition & Risk Factor Distribution In Different Cases:-

Out of the 100 patients studied, 20% had history of malignancy, The history of smoking was present in 22% of the patients. There were 6% of the patients who were bedbound and dependent on their caretakers for their daily activities. There were 20% patients who had diabetes and 8% of patients who had history of heart disease.

Graph 2: Distribution of the cases in different categories



Type Of Surgery:-

In this study 24 cases were emergency cases and 76 cases were elective cases.

Table 2: Distribution of cases according to type of surgery

Type of surgery	Frequency	Percent
Elective	76	76
Emergency	24	24
Total	100	100

Type Of Anaesthesia Given:

81 cases received general anaesthesia and 19 cases received spinal anaesthesia.

Table 3: Distribution of cases according to type of anaesthesia used

Anaesthesia used	Frequency	Percent
General	81	81
Spinal	19	19
Total	100	100

Site Of Dvt:-

Among 4 patients, 2 patients develop DVT in Left lower limb and 2 cases develop DVT in right lower limb.

Table 4 : Distribution of cases according to site

Site	Frequency	Percent
No	96	96
Left leg	2	2
Right leg	2	2
Total	100	100

Treatment Given:-

Among 4 proven cases, 3 patients were given LMWH, and 1 patient was given novel anticoagulant.

Table 5: Distribution of cases according to treatment

Treatment	Frequency	Percent
No	96	96
LMWH	3	3
NOAC	1	1
Total	100	100

Duration Of Surgery:

84% cases were finished in 2-3hrs and 9 cases were finished within 3-4hrs and 6 cases took >4hrs to finish. In which cases which took >4hrs developed DVT and which was prolonged develop DVT in our cases

Table 6: Distribution of the cases according duration of surgery with DVT

Duration of surgery	DVT					
	No		Yes		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
< 2 hrs	1	100	0	0	1	100
> 4 hrs	4	66.7	2	33.3	6	100
2-3 hrs	82	97.6	2	2.4	84	100
3-4 hrs	9	100	0	0	9	100

P value = 0.002*

Mobilization After Surgery:-

Among total patients, 8 patients were mobilized within 24hrs, 86 patient mobilized within 24-48hrs, and 1 patient was mobilized within 48-72 hrs, 5 patients mobilized after 48hrs, among 3 patients who were mobilized after 48hrs and color Doppler was done on postoperative day 2, day 5 and day 7 and DVT was found on day 7 postoperative day of surgery

Table 7: Distribution of the cases according to mobilization after surgery

Mobilization after surgery	DVT					
	No		Yes		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
< 24 hrs	8	100	0	0	8	100
> 24 hrs	1	100	0	0	1	100
> 48 hrs	2	40	3	60	5	100
24-48 hrs	84	98.8	1	1.2	85	100
48-72 hrs	1	100	0	0	1	100

P value = <0.01*

DISCUSSION

In our study, the incidence was supposed to be 4% which is compared with below mentioned studies. **In study audrin lenin et al 2014-15**[6] – mean age was 47 yr, malignancy was

present in 4.7% of cases, In our study, The mean age of the patients was 46 years with a standard deviation of 11.486. There was equal male and female predisposition with 50% of the population being male. Out of the 100 patients being studied, 20% had history of malignancy, The history of smoking was present in 22% of the patients. There were 6% of the patients who were bedbound and dependent on their caretakers for the activities of daily living. There were 20% patients who had diabetes and 8% of patients who had history of heart disease.

In Khalid Ansari et al 2007[7], the most common risk factors were major surgery(80.25%), central venous access(59.24%) and age 40-60years (46.6%). In our study of the patients studied 4% of the patients had central venous catheter insertion. None of the patients had past history of DVT or Pulmonary embolism. There were no patients who have received DVT prophylaxis.

In Audrin Lenin study 2014-2015,[6] 4% had history of malignancy, The history of smoking was present in 20.9% of the patients. There were 51.2% of the patients who were bedbound and dependent on their caretakers for the activities of daily living. There were 11.6% patients who had cerebrovascular accident and 6 (14%) of patients who had history of heart disease In this study, 4 patients had malignancy, but one of them developed deep vein thrombosis and malignancy was not risk factor for DVT. There were 22 patients who had history of beedi/cigarette smoking. Among the 22 patients, none of them developed deep vein. Smoking was not found to be a risk factor for development of deep vein thrombosis. Among the patients screened, 6 patients were bed bound. Of the bed bound patients, none of them developed DVT. Being bed bound was not found to be a risk factor for development of deep vein thrombosis. In this study, 20 patients had diabetes, but none of them developed deep vein thrombosis. None of them developed DVT and diabetes was not proved to be associated with DVT. In this study, 8 patients had had history of heart disease, but one of them developed deep vein thrombosis. and heart disease was not associated with DVT.

In this study, 9 patients had hypertension state. None of the patients with hypertension state developed deep vein thrombosis and hypertension was not associated with DVT. In this study, 4 patients had central venous catheters. Among the patients with central venous catheter, no patients developed deep vein thrombosis Central venous catheter was not a risk factor for development of deep vein thrombosis.

In this study, 5 patients had varicose veins, but none of them developed DVT and varicose veins was not associated with DVT. **Özbaş and Karadağ** (2020)[8] found that mobilization 17-24 hours after surgery was 68.6% . Early mobility, especially in the first 24 hours after surgery, is critical for preventing DVT. In this study, 76 patients were operated electively and 24 patients operated in emergency, 2 patients each of elective and emergency surgery developed DVT. Type of surgery was not associated with DVT. And each 2 patients who underwent prolonged surgery >4 hrs and 3-4hrs developed DVT and prolonged surgery was associated with development of DVT.

Out of 100, 81 patients general anaesthesia was given and in 19 patients spinal anaesthesia was given and 4 patients who have received general anaesthesia developed DVT and anaesthesia given was not associated with development of DVT. None of the patients received DVT prophylaxis. In post operative period. 8 patients were mobilized within 24 hrs, 85 patients were mobilized within 24-48hrs and 1 patient developed DVT, 7 patients were mobilized after > 48hrs out of which 3 patients developed DVT after following colour Doppler on post operative day 2,5,7 serially and the DVT was seen on post operative day 7 in all patients and each 2 patients developed DVT in left and right lower limbs and immobilization after operation was associated with DVT.

CONCLUSION

Incidence of asymptomatic DVT was found to be 4 percent. And symptomatic patient was found to have age group >50 yrs. The risk factors were found to be prolonged duration of surgery and immobilization in both the cases. For patients who undergo surgery for prolonged duration (especially > 3 hours) and prolonged immobilization (> 2 days), It is recommended to screen them with Doppler for incidence of DVT along with appropriate DVT prophylaxis in the post operative period to avoid morbidity & mortality associated with unforeseen and asymptomatic deep vein thrombosis.

REFERENCES

1. Furie B, Furie BC. Mechanisms of Thrombus Formation. N Engl J Med. 2008 Aug 28;359(9):938–49.
2. Longo D, Fauci A, Kasper D, Hauser S, Jameson J, Loscalzo J. Harrison's Principles of Internal Medicine, 18th Edition. McGraw-Hill Prof Med/Tech; 2011. 2800 p.
3. Coon WW, Willis 3rd PW, Keller JB: Venous thromboembolism and other venous disease in the Tecumseh community health study. Circulation 1973; 48:839-846.
4. Esmon CT: Inflammation and thrombosis. J Thromb Haemost 2003; 1:13431348.
5. Heit JA, Cohen AT, Anderson FJ: Estimated annual number of incident and recurrent, non-fatal venous thromboembolism (VTE) events in the US. Abstracts of the American Society of Hematology 47th annual meeting, December 10-13, 2005, Atlanta, GA. Blood 2005; 106(11).
6. Audrin lenin et al Bauer KA, Caprini JA, Comp PC, Gent M, Muntz JEApollo Investigators. J Thromb Haemost 2007; 5:1854-1861.
7. Khalid Ansari et al venous thrombosis. J Vasc Surg 2007; 46:1065-1076.
8. Özbaş and Karadağ Elsharawy M, Elzayat E: Early results of thrombolysis vs anticoagulation in iliofemoral venous thrombosis. A randomised clinical trial. Eur J Vasc Endovasc Surg 2002; 24:209-214.