

Role of Clinical Assessment and D-Dimer Assay in Evaluating DVT in High Risk Surgical Patients

Dr.anupam ranjan¹ Dr sweta rani² Dr mahesh chaudhary³

The Department of General Surgery, A.N. Magadh Medical college & Hospital, Gaya

Corresponding Author: Dr.anupam ranjan

Abstract

Background & objectives: Deep vein thrombosis (DVT) is a potentially dangerous condition that can lead to preventable morbidity and mortality. The true incidence of DVT is unknown in high risk surgical patients and may lead to high morbidity and mortality when allowed to progress. It is often difficult to diagnose due to non-specific sign and symptoms. Though there are ample of studies about DVT in the west but very few studies are from india. We sought to study a cost effective clinical model for diagnosis and exclusion of DVT in symptomatic patients on the basis of clinical assessment and D-dimer.

Methods: A prospective study of Patients with high risk group for DVT without evidences of clinical thrombosis was carried out in the Department of General Surgery , A .N.Magadh medical college and hospital Gaya from August 2017 to july 2018. Total 90 patients with high and highest risk were included in the study . The patients who already had a proven DVT and the patients who were receiving thromboprophylaxis were excluded. All the high risk surgical patients according to wells criteria underwent D-Dimer assay on POD 7 or clinical evident of DVT on the same POD. All patients who were clinically evident for DVT and D-Dimer value $\geq 0.3\text{mg/L}$ underwent colour duplex scan study to see for evidence of DVT in the Department Of Radiodiagnosis A.N.Magadh medical college, Gaya.

Results: In our study we found incidence of DVT 2 per 90 high risk patients. Study design had maximum 100% patients as abdominal cases . Total 40 (50%) cases were malignant and rest 50% were benign cases. None of the patient had past history of DVT or family history. Regarding illness most of patients 27.5% were suffering from intestinal obstruction followed by intestinal perforation 15% and 10% stomach tumor and like condition. All DVT proved cases had Wells score of ≥ 3 (high risk group). Regarding D dimer concerned the patient who showed DVT have D dimer value $\geq 0.3\text{mg/L}$. None of the patient developed pulmonary embolism.

Interpretation & conclusions: Thus in our setting, although many hospitalized medically-ill patients had risk factors for DVT, the absolute risk of DVT was low compared to the western population. In our study we found 2.2% incidence of DVT in high risk surgical patients. Large studies from India are required to confirm our findings. None of the patient developed pulmonary embolism.

Key words- D-dimer, wells criteria

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I. Introduction

Deep vein thrombosis (DVT) is a potentially dangerous condition that can lead to preventable morbidity and mortality. The true incidence of DVT is unknown in high risk surgical patients and may lead to high morbidity and mortality when allowed to progress. It is often difficult to diagnose due to nonspecific sign and symptoms. Lower extremity is the most common site for venous thrombosis. Pulmonary embolism is the most dreaded acute complication of DVT. Approximately 90% of thromboemboli arise from lower extremity.

II. Material & methods

A prospective study of Patients with high risk groups for DVT without evidences of clinical thrombosis was carried out in the Department of General Surgery, Anmmch, Gaya from August 2017 to July 2018. A written informed consent was obtained from all patients participating in the study. Patient's identification data followed by detailed history related to symptoms and their duration, presence or absence of risk factors for DVT, past history of DVT or any other vascular disease in family, comorbidity, trauma, surgery, malignancy, drug intake including a detailed examination of the lower limbs for signs of DVT was performed.

Total 90 patients with high risk were enrolled in the study based on the Well's scoring system which was done in all patients. The patients who already had a proven DVT and those who were receiving thromboprophylaxis were excluded. All the symptomatic patients underwent D-Dimer assay on the same day and asymptomatic patients on the POD 7 . The cut off level Of D-Dimer was taken as **0.3 mg/L** .All patients with

clinically evident features of DVT and raised D-Dimer level underwent color doppler study of the limb. Finally it was analyzed that how many patients of high risk group according to wells score and clinically evident patients really developed evidence of DVT.

III. Result

A prospective study of total 90 high risk patients prone to develop DVT were analyzed. Study design were all abdominal cases 100%.

Table 1. Distribution of cases according to disease

Disease	No of cases	Percentage
Intestinal obstruction	48	53.33
GI Perforation	32	35.56
Ca gallbladder	6	6.67
Acute cholangitis with choledocholithiasis	4	4.44

On analysis out of 90 high risk patients only 2 developed DVT. All cases had symptom of prolonged immobilization followed by malignant . All 2 DVT cases had immobilization, limb pain, swelling lower limb and painful walking. None of the patient had past history of DVT or family history. Regarding risk factors for developing DVT is concerned all patients had prolonged immobilization as risk factor followed by prolonged surgery.

Table 2. Distribution of cases according to well's criteria

Wells score	No of Cases	Percentage
0	None	
1-2	84	93.33
≥ 3	6	6.6

All DVT patients were high risk according to wells score. On D-dimer assay, Out of 88 non DVT patients 56(63.63%) had D-dimer value <0.3mg/L while 32 (36.36%) had D-dimer value of ≥0.3mg/L.

Table3 .distribution of cases according to D-Dimer assay

D-Dimer mg/l	DVT Case	Normal study	Percentage
<0.3	0	56	62.22
≥0.3	2	34	37.78

All 2 DVT cases were having D dimer value ≥0.3mg/L.

IV. Discussion

In western countries, the cumulative incidence of DVT among medical in-patients was found to be 10-20 per cent, and it was 10-80 per cent among critical care patients (Geerts WH et al; 2008). In a recent survey of hospitals from 32 countries worldwide, about 42 per cent of hospitalized medical patients were found to be at risk for venous thrombosis (Cohen AT et al, 2005). Jain et al, 2004 conducted a prospective study in post – surgical patients with total knee (26 patients) and hip arthroplasty (45 patients), and showed a very low incidence (2/71) of DVT.

In India maximum study has been done in orthopedic population only one done in surgical patient (shead et al ,1980). Presently Sharma et al 2009 did prospective study in 163 medical in patients and found incidence of 3 %.None of the patient developed pulmonary embolism. Thus in our setting, although many hospitalized medically-ill patients had risk factors for DVT, the absolute risk of DVT Is low compared to the western population. The limitation of our study was that d-dimer and Doppler study was assumed to be diagnostic tests and venography which is considered gold standard for DVT could not be performed but most of the studies done on DVT assumed colour Doppler as diagnostic test .

V. conclusions

In our study we found 2.2% DVT in high risk surgical patients according to wells criteria.None of the patient developed pulmonary embolism and no mortality.Large studies from India are required to confirm our findings.

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