

VTE risk assessment in hospitalized patients of medical unit - a cross-sectional study

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ABSTRACT

Aim: To find out how many medical patients are being risk assessed for VTE development in hospital and what proportion of these patient received Thromboprophylaxis (TP) who were found to be at higher risk of developing VTE.

Study design: This single center cross-sectional study

Place and duration of study: Bahawal Victoria Hospital in September 2020

Methods & Results: Eleven hundred and twenty four patients were included. Risk assessment was done in 22.9% cases. TP was given to 15.6% patients. RA showed 22% patients are high risk of VTE and out of these 12.9% received TP.

Conclusion: A national effort in streamlining the entire procedure from admission to discharge along with development and implementation of RA tool followed by prescription of TP in high risk patients is the way forward for prevention of hospital acquired thrombosis.

Keywords: Hospital acquired thrombosis, venous thromboembolism, DVT, pulmonary embolism,

INTRODUCTION

Venous thromboembolism (VTE) remains an important risk factor in hospitalized patients and its incidence is more than hospital acquired infections¹. Hospital acquired VTE is defined as VTE event diagnosed within hospital, not present on admission or occurring within 90 days of discharge from hospital². It is one of the leading causes of preventable deaths in hospital settings comprising almost 10% of total hospital related deaths in UK³. While almost 260,000 cases of VTE were reported in acute hospital care settings in US per year⁴. DVT and Pulmonary embolism (PE) are two of the most common VTE encountered with PE responsible for 1 in 10 deaths in England as data suggests⁵. A study carried out in European union (EU) showed that most of the VTE and VTE associated deaths remain undiagnosed as it is most often asymptomatic and of these VTE related deaths almost three-fourth are hospital acquired which could be prevented with appropriate steps⁶.

The foremost step towards prevention of this expected complication would be to carry out risk assessment (RA). National Institute of Clinical Excellence (NICE) came up with a risk assessment tool for patients aged 16 and above to prevent VTE in hospitalized patients^{1,7}. The risk of VTE is higher in post-operative patients however it varies according to the type of surgery⁸. Risk Assessment tool also takes into consideration factors like age, family history, co morbidities, bleeding times and if any anticoagulants were being taken by patients⁹. Immobility also adds in as a huge risk factor for thrombosis¹⁰.

Consideration of Thromboprophylaxis (TP) must follow RA of patients in hospital to reduce the incidence of VTE and VTE associated fatality. Timely prophylaxis is thus linked with reduced rate of HAT⁹. However, the overall rate of prophylaxis has been low which continues to be a problem because of lack of doctor-patient awareness, counseling and compliance^{11,12}. In many hospitals a multidisciplinary approach has been taken up to ensure prompt risk assessment and administration of prophylaxis¹³. Patients must be counseled about the VTE risks upon admission and the concerned doctor should also be kept in loop even after patient discharge in case the said patient develops VTE to help with future RA and TP¹⁴.

We also conducted a similar cross-sectional study in Cork University Hospital in year 2014/2015, wherein 1019 patients were screened. Only 24% of patients were RA and more than 80% were found to be at high risk for VTE. TP was administered in 46.3% of the high risk population patients². This single center cross-sectional study was set in Bahawal Victoria Hospital (BVH), Bahawalpur which is a 2200 bedded tertiary care hospital. Study population was taken from the medical unit of the center. Such studies also help to assess the number of cases that remain inadequately thrombolysed and its impact on the trend of HAT cases⁹.

The main aim of the study was to determine that how many in-patients in medical wards were risk assessed for developing VTE and what proportion of the patients received TP who were found to be at higher risk of developing HAT.

METHODS

This study was conducted at BVH Bahawalpur, which is a tertiary referral center in south Punjab. After ethical

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approval, data was collected in September 2020. The aim of the study was to determine how many patients in hospital are being risk assessed for VTE and what proportion of these patients are getting TP.

All patients admitted to four medical units were included in the study. Those patients taking any form of anticoagulation were excluded from the study. Only doctors from each ward were assigned to collect data after they were taught about the study and proforma sheet. Data was collected on two specified days ten days apart. Admission notes and medication prescription were reviewed. Demographics included age, sex, cause for admission, diagnosis and co-morbidities. Patients were risk assessed by using National Institute for Health and Care Excellence (NICE) guidelines (NICE clinical guidelines 92., 2010). Patients were divided in three groups, high risk of VTE with low risk of bleeding, high risk of VTE with significant risk of bleeding and low risk of bleeding.

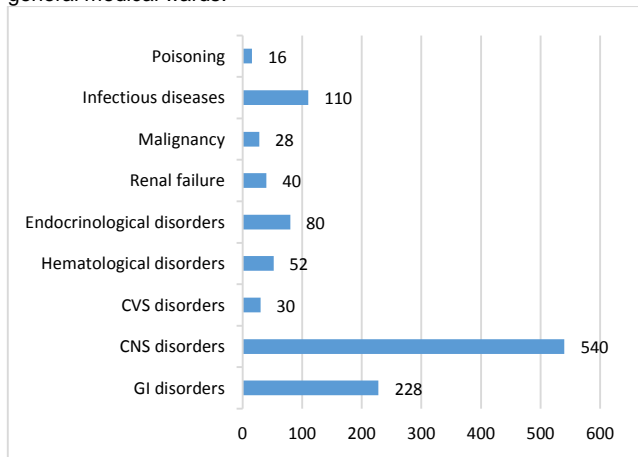
RESULTS

A total of 1124 patients were included in this study. All of them were admitted in medical wards of the hospital. Out of these 554 (49.3%) were males. Mean age of study population was 52.8±18.6 years while the median day on which patient chart was reviewed was day-4. Only 257 (22.9%) patients underwent risk assessment and out of these 40 (15.6%) received Thromboprophylaxis. Patients with high risk of thrombosis with low risk of bleeding were 248/1124 (22.06%) and 32/248 (12.9%) received TP. While 8/808 (01%) also received TP in patients with significant risk of bleeding. Table 1 shows stratification of patients according to the risk of thrombosis and bleeding as done by researchers according to guidelines.

Table 1: Stratification of patients according to VTE and bleeding risk done by the researchers

Variables	High risk of VTE with low risk of bleeding	High risk of VTE with significant risk of bleeding	Low risk of VTE n (%)
n	248 (22.06%)	808 (71.89%)	68(6.05%)
TP risk assessment done	62 (24.%)	183 (71.2%)	12 (4.7%)
TP given	32	8	0

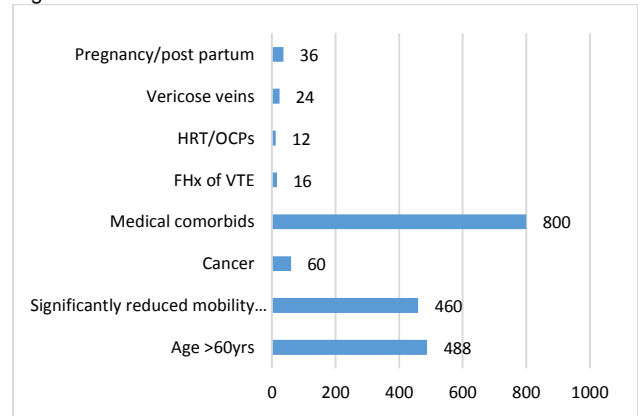
Figure 1. Spectrum of systemic diseases in study population of general medical wards.



Majority of the patients admitted were suffering from neurological diseases followed by gastroenteric and infectious diseases. The pattern of systemic illnesses is shown below in figure 1.

The Study population was assessed for a variety of risk factors for VTE and the incidence of the said risk factors was seen to demonstrate a widely distributed pattern. A number of patients were seen to exhibit more than one risk factors. The following Figure 2 shows the prevalence of varying risk factors in the study population.

Figure 2. Risk factors for Venous thromboembolism.



DISCUSSION

To the best of our knowledge this was the first study of this kind in BVH. According to our results, RA was recorded in less than 25% of total admissions and TP prescription was grossly underutilized in medical inpatients. Only 32/248 (12.9%) received TP in high risk category.

The risk assessment tool which was used took into consideration factors like age, co morbidities, cancer, varicose veins, family history, pregnancy or use of hormone replacement therapies. It was one of the first RA tools applied on patients in this setting, previously patients were merely assessed on basis of superficial history and there was no appropriate TP tool in place. Our RA tool not only identified the patients who were at high risk of VTE with low risk of bleeding but also took into consideration those who were at low risk and thus did not require TP, giving us a good indication about the percentage of patients at high risk of VTE.

However, our results also indicate, for poorly explained reasons that of the total 248 patients who were found to be high risk for VTE and low bleeding risk only 32 (12.9%) received TP. This reflects underutilization of effective TP even in the setting where RA tool was employed. Our study results are also a little confounded by limitations like it being a single center study that only took into consideration medical patients while surgical and gynecological patients were not considered who are at a much higher risk of developing VTE post surgery¹⁴. This was due to constraints of time and lack of manpower that made it impossible to increase the study pool.

The results of our study reflect the general picture of VTE and its risk assessment being carried out worldwide, which is to say not sufficient. According to a similar cross-sectional study carried out in Cork Hospital, Ireland 80% patients were found to be at high risk of thrombosis with

low risk of bleeding as compared to 22.06% of our patients and TP was given to 46.3% of patients as compared to our 12.9%². The contrast in these results is probably due to the fact that we did not consider surgical patients unlike the Cork Hospital and also maybe lack of resources. Other studies that solely consider medical inpatients for VTE include a multicenter retrospective study in America which showed that overall, 31% received TP out of a total of 100 patients¹⁵. A Canadian retrospective study showed that out of 446 patients 33% received TP. They also took into account non pharmacologic methods of TP¹⁶. A case control comparative study carried out in Saudi Arabia demonstrated that out of 249 medical patients enrolled in the study 39.35% patients received thromboprophylaxis¹⁷. Finally, another retrospective multicenter study carried out in Italy showed that 46.4% of medical inpatients received TP of the total 112 patients under study¹⁸. The overall percentage of TP given in our study population is grossly less than study population in other countries, this reflects a lack of resources, patient-doctor awareness and not enough importance given to this aspect of patient care.

In addition to this 8/808 (01%) patients in the high risk of bleeding group also received TP inappropriately in our study. These results also show lack of knowledge of our physicians about the morbidity and mortality of pharmacological anticoagulants.

Thromboprophylaxis and VTE risk assessment is a new rising healthcare practice worldwide, and compared to the world we still have a long way to go. VTE itself is a clinically silent disease that remains under-diagnosed. This contributes to the overall mortality associated with in hospital care settings and otherwise. There has been no proper RA tool set in place to stratify patients when they are admitted in hospital, making a risk assessment sheet compulsory with every admission chart will help to overcome this problem. Awareness is a very important step to bridge the gap between VTE RA and provision of TP, because both patients and doctors are largely unaware of the morbidity associated with this. Educating patients regarding the signs and symptoms and making the concerned doctors aware and more conscious of this will help to increase the percentage of patients for RA. Streamlining the entire procedure from admission to discharge and documenting along the way will also have a positive impact on the incidence of hospital acquired VTE.

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