ORIGINAL ARTICLE

COMPLIANCE WITH STANDARD THROMBOPROPHYLAXIS GUIDELINES AGAINST VENOUS THROMBOEMBOLISM IN ACUTE MEDICAL WARDS —A SINGLE CENTRE EXPERIENCE

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Background: Venous thromboembolism (VTE) prevention in hospitalized patients is primarily based on adequate risk stratification, but the recommended prophylaxis for associated risk factors are not adequately utilized. Objective was to estimate the implementation of the standard international VTE prophylaxis guidelines in acutely ill patients in medical wards of Hayatabad Medical Complex (HMC), Peshawar. **Methods:** This study was conducted in HMC (1st April to 31st December, 2021), to determine the proportion of patients receiving appropriate VTE prophylaxis according to ANZ WP recommendations, based on their risk profiles. The modalities employed for prevention were Compression Stockings alone, Anticoagulation alone or use of both. Random sampling technique allowed inclusion of 600 patients from medicine department, HMC. **Results:** Out of the 600 patients, 336 were female while 264 were male. Patients stratified as High Risk were 72% while 28% as Low Risk group. Risk factors observed were age >60 years (43.05), past history of stroke with neurological deficits (64.12%), admission with lung disorders (18.05%) and those with active cancers 6.01%. A total of 57.6% were found to be receiving VTE prophylaxis with 54.2% in High Risk group while 45.8% in low risk group. Amongst the patients receiving VTE prophylaxis, 20.80% patients were receiving both modalities, 49.30 were having TED Stockings alone, while 29.90% were receiving anticoagulation alone. **Conclusion:** The international standard guidelines for thromboprophylaxis were observed to be poorly followed in our hospital which calls for strategies to identify high risk individuals and initiation of appropriate prophylaxis.

Keywords: VTE Prophylaxis, Anticoagulation, Compression Stockings

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INTRODUCTION

Venous thromboembolism (VTE) has remained the reason for acute hospital admission in nearly 30,000 patients across Australia with an estimated 5,000 deaths yearly.[1] The condition in UK is even worse with an estimated 25,000 death per year secondary to fatal VTE.[2] The statistics from USA depict that 300,000 people die from fatal Pulmonary Embolism (PE) and 80% have a preceding history of recent hospital admission for surgery or an illness.[3] The frequency of finding various cases of VTE in general medical units remain 10–40% ending up in PE in 10% of the cases. Amongst the cases with PE, surgery as a cause is seen in only 25% of the cases.[4] Despite being a dreadful and imminent threat of VTE in acutely ill patients in hospital, there is huge gap in the implementation of the suggested evidence based guidelines for its prevention in real settings.[5]

Multiple studies have displayed that the improvement in the rates of adoption and subsequent steps in the management of the VTE guidelines can help shrink the occurrence of VTE and resultant effects including deaths.[6] The pharmacological agents employed to prevent VTE primarily have the aim to target the coagulation cascade. Medications employed are unfractionated heparin, low molecular weight heparin, direct thrombin, factor Xa and XIa inhibitors besides heparinoids. The mechanical options remain the graduated compression stockings and the pneumatic pumping devices which aim to retard the venous stasis in the lower limbs.[7]

We did a thorough literature search to know the gravity of the problem and discovered that the local VTE guidelines fail to exist in acutely ill patients admitted to healthcare facilities. The patients admitted in different acute settings in the hospitals continue to receive the thromboprophylaxis at varied rates and with different modalities, however the exact numbers are far from known. This study was designed to estimate the number of patients needing prophylaxis, the actual number receiving the appropriate prophylaxis and estimate the gravity of the problem. The results of the study should help sensitize the health care professionals and jack up the need for formulation of our local scientific guidelines for VTE prevention.

MATERIAL AND METHODS

This study was conducted in Hayatabad Medical Complex, Peshawar from 1st April 2021 to 31 December, 2021. Ethical approval from the Ethics Committee of the hospital was obtained. Fully informed structured written consent was obtained from included individuals or their responsible caregivers. All adult patients of either sex, between 18 to 75 years of age, admitted in the hospital whether through Casualty or Outpatients Department with any acute medical illness were included in the study. Random non-consecutive sampling technique allowed inclusion of 600 patients with equal representation from the three medical units of HMC. We planned to estimate the proportion of patients receiving appropriate VTE prophylaxis according to best practice recommendations in the Australian and New Zealand Working Party guidelines on the Management and Prevention of Venous Thromboembolism ANZ-WP recommendations.[8] The included patients were stratified into low risk and high risk. The primary endpoint of the study was to document the patients being appropriately managed with regards to thromboprophylaxis, the implementation of the guidelines and the choice of modality for prophylaxis.

The data was entered into specifically designed proforma and was analysed using SPSS-23. Mean and standard deviation were calculated for numerical variables, and frequency and percentages were estimated for categorical variables like gender and the risk factors. Results were presented as text and tables.

RESULTS

The mean age of the total 600 patients included in the study was 51±8.3 years. The female patients 336 (56%) outnumbered the male which were 264 (44%). Patients were stratified as High Risk on the basis of the associated co-morbid conditions and constituted 432 (72%) while remaining 168 (28%) were categorized in the Low Risk group. The associated co-morbid conditions in high risk group are reflected in Table-1.

A total of 432 (72%) of the admitted patients were ambulatory prior to hospital admission while the rest 168 (28%) were bed-bound. We observed that the order for thromboprophylaxis was charted down in 506 (84.3%) patients but non-compliance with the orders was seen in 144 (24%) patients.

A total of 345 (57.6%) were found to be receiving appropriate VTE prophylaxis including 187 (54.2%) in the High Risk group and 158 (45.8%) in the Low Risk group. Amongst the patients receiving the VTE prophylaxis, 72 (20.80%) patients were receiving both modalities while the remaining 170 (49.30%) were having TED Stockings alone and 103 (29.90%) were receiving anticoagulants alone.

Table-1: Associated co-morbid conditions of the High Risk group (n=432)

Associated Co-morbid Conditions	Frequency	Percentage
Neurological Causes	277	64.12
Cardiovascular Causes	125	28.93
Geriatric Causes	13	3.00
Diabetes Mellitus	134	31.01
Malignancy	26	6.01
Chronic Kidney Disease	30	6.94
Age ≥60 Years	186	43.05
Morbid Obesity ≥26	56	12.9
Lung Disorders	78	18.05

DISCUSSION

It is an established fact that three factors are known to play a pivotal role in the development of VTE: the stasis in the venous system, any factor leading to damage to the endothelial lining of the vessels and hypercoagulable states.[9] It is the interplay amongst these three core factor with varied contribution in every case that cause VTE. Alikhan R *et al*[10] organized a retrospective review of 6,833 autopsies and the results showed 81% of the fatal cases of PE in patients admitted to healthcare facilities for non-surgical reasons. The use of thrombo-prophylaxis in patients admitted for surgeries has shown significant decline in the occurrence of PE and resultant rates of death.[11] A multicentre (ENDORSE) study, with enrolment of 68,183 patients from 358 hospitals in 32 countries, estimated 51.8% of the hospitalized patients to be at the risk of developing VTE.[12] Edeer AD *et al*[13] did a retrospective review on the postoperative surgical patients and found that only 24.4% of the individuals had appropriate prophylaxis against VTE.

The current study revealed that 345 (57.6%) of the patients admitted to acute medical units for varied reason were receiving appropriate prophylaxis for VTE using Low Molecular Weight Heparine (LMWH) alone (103, 29.90%), compression stockings alone (170, 49.30%), and both (72, 20.80%) of the cases. The percentage of dispensing the prophylaxis amongst the low risk (26.4%) and the high risk (31.2%) was nearly the same. It shows lack of sensitization amongst doctors because even though the percentage of the initiation remains dismal but is more worrisome seeing the same figures in the high risk group where the chances of VTE are much higher and calls for more aggressive approach. The most commonly observed risk factors in the high risk group remained the neurological causes, trailed by advancing age (≥60 years), diabetes, cardiovascular causes, lung disorders, morbid obesity, kidney disorders, and malignancies. The orders for initiation of appropriate prophylaxis was charted down in 506 (84.3%) of the cases and the non-compliance with the orders was seen in 94 (15.7%) of the cases. We observed that 432 (72%) of the included patients were completely and independently mobile before getting admitted in acute medical unit.

The compliance with the VTE prophylaxis has continued as a challenge across the world despite availability of varied guidelines underlining the need. The problem is more worrisome in elderly patients not receiving the appropriate prophylaxis despite being at the utmost risk secondary to the associated diseases.[14] Wiercioch W *et al*, observed that awareness of the nursing staff regarding the need of VTE prevention is limited and this eventually translates into poor adherence to the required standards for prevention.[15] A huge number of nursing staff (67%) failed to adhere to the VTE guidelines in a study amongst the Jordanian nursing staff. These results are far lower than ours where non-compliance was seen in 24% cases.[16] The reason of the poor compliance in our nursing staff is primarily because of lack of formal training in the VTE prevention and lack of standard indigenous practice guidelines. A large scale study[17] done on 3,751 patients admitted to hospital with acute illnesses had 97.6% of the charts with orders for thromboprophylaxis but 11% showed non-compliance, besides 83.3% pharmacological and 14.3% having mechanical prophylaxis alone. This calls for regular performance audits to emphasize the need of VTE prevention.[17] These results are better than ours where the non-compliance rate was observed in 24% of the cases. It has been universally observed in various studies that age remains an independent risk factor jacking up the risk of VTE primarily because of the associated comorbidities like malignancy, chronic heart, lung and liver disorders.[18] Male gender and increasing age remain independent risk factors for causing VTE. The elderly patients in the high risk group with age more than 65 years constituted 43% in that study.[19]

The gravity of the problem doesn't end here. It was observed in a study registering thousands of patients, allocated them in two groups containing enoxaparin with graduated compression stockings versus the placebo with graduated compression stockings. They reported no major dissimilarities in the rates of major bleeding and reduction in death from any cause in acutely hospitalized patients.[20] Mahlab-Guri K *et al*[21] reported a measurable increase in the rates of use of various modalities including the medications for the prevention of VTE in acutely admitted patients in medical wards but no measurable decline in the rates of death. This calls for more wide based studies to clearly formulate local guidelines for VTE vulnerable population and the possible prevention in high risk individuals.

CONCLUSION

In order to decrease the mortality associated with VTE in acutely ill patients, all such patients needs to be started on appropriate prophylaxis against this preventable life threat. The compliance has shown to beef-up following sensitization of the healthcare staff with the help of various training courses and eventually translated in better health care delivery.

STUDY LIMITATIONS

This is a single-centre study, so the results cannot be generalized across the patient population in its present form. The recruitment of the patients was only for the medical department and the implementation of the VTE guidelines in other specialties remains far from known.

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