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Original Research Article

Evaluation of Prophylactic Anticoagulants Application Practice for High-Risk Surgical Patients at Al-Thawra Hospital, Sana'a

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Abstract

Background: Through clinical practice, it has been noticed that the number of patients who had DVT and PE during their hospital admission period has increased, especially among high-risk surgical patients. Physicians may not be aware of or may not consistently use up-to-date evidence-based prevention guidelines. There is an abundance of evidence documenting the underutilization of prophylactic measures in hospitalized patients.

Objective: The study aimed to determine the percentage of prophylactic anticoagulant application for high-risk surgical patients.

Methods: A retrospective observational research approach was followed using a special questionnaire. Data were collected from files of patients with high risk for VTE who were admitted to the Orthopedic, Gynecological and Neurosurgical surgical departments at Al-Thawra hospital, Sana'a, during the period from 1/1/2014 to 31/12/2014. All selected patient's files were screened for sociodemographic characteristics, other risk factors of DVT, and medications list.

Results: A total of 99 patients files were enrolled in the study, which were divided into 33 patients for every department (Orthopedic, Gynecological and Neurosurgical). The results showed that 68% of the studied high-risk surgical patients were given prophylactic anticoagulants and the percentages of prophylactic anticoagulants application in each department (Orthopedic, Gynecological and Neurosurgical) were 60.6%, 72.7% and 69.7%, respectively.

In the Orthopedic department, 66.6% of the patients were male while in the Neurosurgical department 72.7% of the patients were male. Patients younger than 40 years old in the Orthopedic, Gynecological and Neurosurgical departments were 18.2%, 51.5% & 42.4% respectively.

Conclusion: According to the current study findings, the percentage of prophylactic anticoagulants application for high-risk surgical patient was low in comparison with that of the developed countries, such as Germany 92%, Hungary 87%, Spain 82% and Switzerland 81%.

Introduction

Venous thromboembolism (VTE), which encompasses deep venous thrombosis (DVT) and pulmonary embolism (PE), is one of the three major cardiovascular causes of death, along with myocardial infarction and stroke. VTE can cause death from PE or, among survivors, chronic thromboembolic pulmonary hypertension and post-phlebitis syndrome [1].

The annual incidence VTE following operations in the United States is estimated to 70,000 to 600,000, incurring an additional cost of approximately $12,000 per case. Pulmonary emboli can be fatal and post-thrombotic syndrome, pulmonary hypertension, and heart failure are known consequences of VTE [2].

The U.S. General Surgeon has declared that PE is the most common preventable cause of death among hospitalized patients. Medicare has labeled PE and DVT occurring after total hip or knee replacement as unacceptable "never events" and no longer reimburses hospitals for the incremental expenses associated with treating this postoperative complications. New nonprofit organizations have begun educating healthcare professionals and the public on the medical consequences of VTE, along with risk factors and warning signs [3,4].

In the absence of prophylaxis, DVT occurs approximately after 20% of all major surgical procedures and PE occurs after 1% to 2%. The prevalence of VTE is even higher in orthopedic patients; more than 50% of major orthopedic procedures are complicated by DVT and up to 30% by PE when VTE prophylaxis is not instituted[5-7].

A retrospective study was done in King Fahd General Hospital, Jeddah; Kingdom of Saudi Arabia, which concluded that VTE prophylaxis is extremely underutilized; only 44.1% of high-risk surgical patients received prophylactic antithrombotic therapy [8]. There is a gap between guidelines and practice. ENDORSE global study revealed that more than 50% of hospitalized patients should have received VTE thromboprophylaxis, but only half of them received it. The percentage of high-risk surgical patients who received prophylactic anticoagulant was 92% in Germany, 87% in Hungary, 82% in Spain, and 81% in Switzerland [9,10].

The total VTE case fatality rate in hospitals was found to be 12% and 29-34% per year. The DVT case fatality rate ranged from 1 to 10%, which is mainly due to fatal PE and is highest in those with malignancies [11].

Physicians may not be aware of, or may not consistently use, up-to-date evidence-based prevention guidelines. Since 1986, physicians have increasingly relied on the ACCP guidelines recommendations for VTE prevention. However, implementation of the recommendations has remained a challenge; there is an abundance of evidence documenting the underutilization of prophylactic measures in hospitalized patients [12].

Thus, this study aims to recognize the percentage of prophylactic anticoagulants

application for high-risk surgical patients who had been admitted to the surgical departments (Orthopedic, Gynecological/Obstetric and Neurosurgery) at Al-Thawra Hospital, Sana'a, during the period from 1/1/2014 to 31/12/2014.

Method and Tools

Study Design: This study was a retrospective observational study conducted in Al-Thawra Hospital, Sana'a. Data were collected from medical record files of High-risk patients for VTE who had been admitted to the Neurosurgical, Gynecological and Orthopedic surgical departments. A convenient sampling technique was used. The total sample size included 99 patients' file, randomly collected as 33 files from every department involved in the study.

Inclusion Criteria: Adult patients aged 18 years and above who underwent high-risk surgical operation for VTE and admitted to the Neurosurgical, Gynecological and Orthopedic surgical department at Al-Thawra Hospital, Sana'a.

Data Collection: A questionnaire was designed to collect data. All patients' files who were selected to participate in the study were screened for sociodemographic characteristics, other risk factors of DVT, and medication lists to detect the presence of prophylactic anticoagulants.

Statistical Analysis: The collected data were reviewed, coded, and analyzed using the Statistical Package of Social Sciences（SPSS) software version #. The primary outcome in this study (dependent variable) was the percentage of prophylactic anticoagulants application in high-risk surgical patients while the secondary outcome was the percentage of prophylactic anticoagulants application in each department.

Ethical Consideration: An official permission was granted by Al-Thawra hospital management to conduct this study.

Results

A total of 99 patients files were enrolled in this study, divided into 33 files from each department (Orthopedic, Gynecological and Neurosurgical). The results revealed that 68% of the studied high-risk surgical patients were given prophylactic anticoagulants.

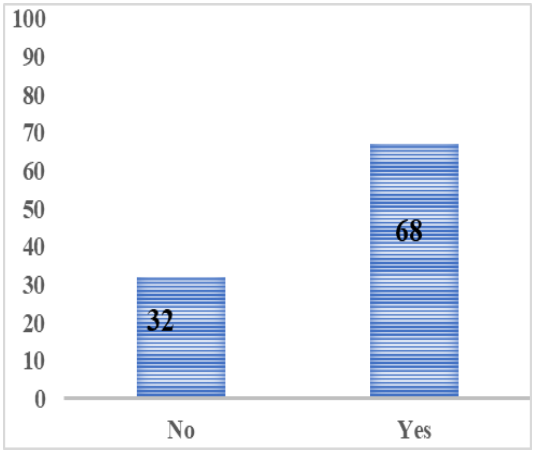

Figure1: Percentage of prophylactic anticoagulants application among the totally studied high-risk patients

Orthopedic Patients

In the Orthopedic department, about 60.6% of the high-risk patients were given prophylactic anticoagulants, where 66.6% of the patients were male and 18.2% of them were younger than 40 years.

Table 1: Distribution of the high-risk patients in the Orthopedic department according to Age & gender.

Age(years)/Gender	No.	Percent (%)
>40	27	81.8
<40	6	18.2
Male	22	66.6
Female	11	33.4

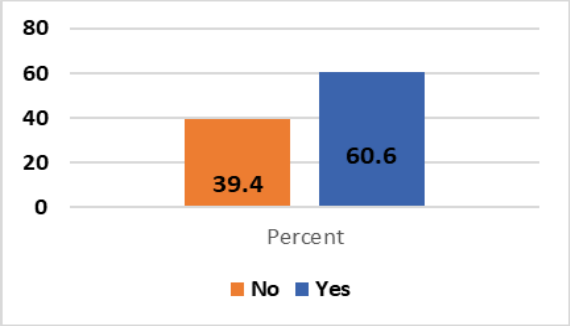

Figure 2: Distribution of the high-risk patients in the Orthopedic department according to the percentage of application of prophylactic anticoagulants

Gynecological/ Obstetric Patients

In the Gynecological department, about 72.7% of the high-risk patients were given prophylactic anticoagulants. Of all patients in this department, 51.5% were younger than 40 years and only 6.1% had other risk factors for VTE (one patient with a history of previous DVT and another patient with a history of previous stroke).

Table 2: Distribution of the high-risk patients in the Gynecological/ Obstetric department according to age

Age	NO	Percent
>40	16	48.5
<40	17	51.5

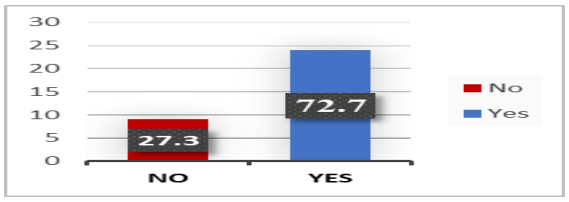

Figure 3: Distribution of the high-risk patients in the Gynecological/ Obstetric department according to the percentage of application of prophylactic anticoagulants

Neurosurgical Patients

In the Neurosurgical department, 69.7% of the high-risk patients were given prophylactic anticoagulants for VTE, where 72.7% of them were male and 42.4% were younger than 40 years.

Table 3: Distribution of the high-risk patients in the Neurosurgical department according to age and gender

Age/Gender	NO	Percent
>40	19	57.6
<40	14	42.4
Male	24	72.7
Female	9	27.3

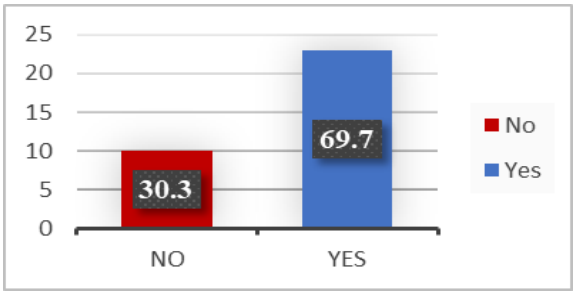

Figure 4: Distribution of the high-risk patients in the Neurosurgical department according to the percentage of application of prophylactic anticoagulants.

Discussion

This study aimed to identify the percentage of prophylactic anticoagulant application in high-risk surgical patients admitted to the Neurosurgical, Gynecological and Orthopedic surgical departments at Al-Thawra Hospital, during the period from 1/1/2014 to 31/12/2014.

A remarkable finding of this study is that out of the 99 studied high-risk surgical patients, 67 patients (68 %) were given prophylactic anticoagulants. This percentage is low compared with the findings of the ENDORSE global study, in which the percentages of high-risk surgical patients who received prophylactic anticoagulant for VTE in the developed countries were 92% in Germany, 87% in Hungary, 82% in Spain, and 81% in Switzerland [9,10].

However, a retrospective study in King Fahd General Hospital disclosed that 44.1% of the high-risk surgical patients received prophylactic antithrombotic therapy [8].

The current study outcomes showed that the percentages of high-risk surgical patients who were given prophylactic anticoagulants for VTE at AL-Thawra Hospital, Sana'a, during the period from 1/1/2014 to 31/12/2014, in the Orthopedic, Gynecological and Neurosurgical department were 60.6%, 72.7% and 69.7%, respectively. The prevalence of VTE was even higher in orthopedic patients, more than 50% of major orthopedic procedures are complicated by DVT and up to 30% by PE when VTE prophylaxis is not instituted. Despite that higher prevalence, the application of prophylactic anticoagulants was slightly lower comparing to the Gynecological and Neurosurgical departments. In the orthopedic department, 66.6% of the patients were male gender and 18.2% of them were younger than 40 years. In the Neurosurgical department, 72.7% of the patients were male and 42.4% of them were younger than 40 years. In the Gynecological department, 51.5% of the patients were younger than 40 years.

Conclusion

Based on the present study findings, it can be concluded that there is underutilization of prophylactic anticoagulant application as compared to the higher percentage of application globally, according to the ENDORSE study results. It was also found that there is no significant difference in the percentage of prophylactic anticoagulant application among the patients of the Orthopedic, Neurosurgical and gynecological surgical departments. There is a gap between guidelines and practice, physicians may not be aware of or may not consistently use up-to-date evidence-based prevention guidelines. However, this study had some potential limitations which should be considered while interpreting the results. The data were collected only during short visits to the hospital. Since there were no follow-up visits, the outcomes and the pattern of anticoagulant prophylaxis were not evaluated according to the recommendations of the ACCP guidelines.

Finally, it is recommend to improve physicians' knowledge, attitudes, and practices in relation to the assessment of the risk factors leading to the development of VTE in surgical patients and use up-to-date evidence-based guidelines about the prophylaxis

strategies for VTE. Continuing medical education (CME) on VTE is also important and can make a change in physicians' behavior.

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