PROPHYLACTIC USE OF HEPARIN IN DIFFERENT SPECIALITY HOSPITALS IN SULAIMANI PROVINCE, KURDISTAN REGION

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Abstract

Objective: To determine the patterns of use of prophylactic heparin in different specialty hospital in Sulaimani province -Iraqi Kurdistan, in patients at risk of VTE, and compare it with international trends to establish a protocol or an algorithm to start using prophylactic heparin in our hospitals.

Methods: This discriptive study was conducted from August 2011 to August 2012. Three hundred patients from three hospitals in Sulaimaniwere studied.The patient with high risk of thrombotic event (TE) selected from different specialities. No patients with heparin prophylaxis were excluded in the study.Data were collected according to special questioner form. The type of heparin used was unfractionated heparin.

Results: Most of the patients in all three hospitals were female (58%, 100%, 61%), in General Medical hospital, Gynaecology hospital and Surgical hospital respectively. Most of the medical patients were above the age of 40 (71%), while In Gynaecology hospital 69% of patients were below 40 years. All of the patients in three different hospitals had risk factors; Surgical and Gynaecological patients had major risk factors by (80% and 82% respectively). Compared to international standards, heparin prophylaxis was under used in all three hospitals (21%, in medical, 18% in Gynaecology and 12% in surgical hospital).

Conclusion: Despite the existence of comprehensive consensus guidelines for the prevention and treatment of VTE, thromboprophylaxis remains underused in our different speciality hospitals. Therefore, we need to improve thrombotic risk-assessment methods, familiarisation of clinicians with current best practice, and facilitation of appropriate prescribing of prophylaxis (establishing local hospitals guidelines).

Keyword: Prophylactic,heparin, hospitals, Sulaimani, Kurdistan, Iraq

Introduction

A classical venous thrombus as in deep vein thrombosis (DVT), can embolizeand becomes a life-threatening pulmonary embolism (PE). Thromboembolism (VTE or DVT/PE) can refer to DVT and/or PE.[1] Venous thromboembolism results from a combination of hereditary and acquired risk factors, also known as thrombophilia or hypercoagulable states. In addition, vessel wall damage, venous stasis, and increased activation of clotting factors first described by Rudolf Virchow more than a century ago still remain the fundamental basis for our understanding of thrombosis.[2]Hospital-based epidemiologic data suggest that VTE affects one in 1,000 personsyearly in North America and Europe, but this incidenceis likely an underestimate because an unknown number of patients with this condition are undiagnosed or misdiagnosed.Pulmonary embolism is estimated to cause 50,000 deathsin the United States every year. Most deaths that are directlyattributable to acute PE that occur rapidly before the diagnosiscan be confirmed and effective treatment implemented,which makes prevention in the high-risk patient imperative.[3]

In the condition known as thrombophilia, VTE is recurrentand can result in significant disability or death, which in manycases happens late in the course of the disease from thromboembolicpulmonary hypertension and corpulmonale. Venous thromboembolism occurs more often in Caucasiansthan in other races, and its risk increases with age, althoughthe disease is seen in all ages, even children.[4]

The prevalence of VTE, however,appears to be steady and may actually be increasing. Possibleexplanations for this increase includes an aging population andlonger survival of many patients with cancer.[5]Frequently pulmonary embolism is diagnosed post-mortem. For those reasons, the best approach to avoid morbidity & unexpected mortality from venous thromboembolism is prophylactic use of anticoagulants in high-risk patients.[2]

Patients with VTE generally have two or more risk factors, and the effects of multiple risk factors on VTE risk are additive. The type and duration of prophylaxis depends on whether the risk factors are transient (e.g., trauma, surgery, infection, the postpartum period) or persistent (e.g., advanced age, obesity, history of VTE, thrombophilia). Patients admitted to hospital are at particular risk of VTE, and the risk remains elevated after discharge.[6]

Venous thromboembolism is the third most common cardiovascular illness after acute coronary syndrome and stroke. Although the exact incidence of VTE is unknown, it is believed there are approximately 1 million cases of VTE in the United States each year, many of which represent recurrent disease. Nearly two thirds of all VTE events result from

hospitalization, and approximately 300, 000 of these patients die. Pulmonary embolism is the third most common cause of hospital-related death and it is the most common preventable cause of hospital-related death. Most hospitalized patients have at least one or more risk factors for VTE. Long-established and well-known cardiovascular risk factors including hypertension, diabetes mellitus, cigarette smoking, and high cholesterol levels have been linked to acute PE.[7]

Risk factors for VTE are well known. Patients with VTE generally have two or more risk factors, and the effects of multiple risk factors on VTE risk are additive. The type and duration of prophylaxis depends on whether the risk factors are transient (e.g., trauma, surgery, infection, the postpartum period) or persistent (e.g., advanced age, obesity, history of VTE, thrombophilia). Patients admitted to hospital are at particular risk of VTE, and the risk remains elevated after discharge. This is particularly important in view of the current trend towards reducing the duration of inpatient stay, and suggests that patients will increasingly be discharged while still at risk. Furthermore, clinical events occurring after discharge from hospital can give the false impression of a declining risk of VTE related to hospitalisation.[8]Thromboembolic prophylaxis remains a significant problem and is obviously incompletely understood. It would appear, however, that at present the information available implies several points. First, administration of low-dose heparin is efficacious in preventing deep vein thrombosis and pulmonary emboli in most general surgical patients who are at risk for thromboembolic complications. Second, low-dose heparin probably works by augmenting the effect of the naturally occurring inhibitor to Factor Xa. Third, patients in whom surgical operations are done and extensive tissue dissection or postoperative immobilization (such as hip arthroplasties) is required are probably not protected by low-dose heparin administration; full anticoagulation with warfarin or treatment with one of the platelet anti-aggregating agents should be carried out. Fourth, any form of anticoagulation carries some risk of bleeding complications, but it appears that the incidence of major bleeding complications is not significantly greater in the treatment groups.[9]

Aim of the study

To describe the practice of prophylactic heparin use in different specialty hospitals inSulaimani province –Northern Iraq, in thosepatients who are at risk of VTE, and compare with different studies in the world to establish a draft or an algorithm to start using prophylactic heparin in our hospitals.

Patients and Methods

This was a prospective studycarried out for 300 patients from three different hospitals and different specialities (medical,surgery, orthopaedics, gynaecology and obstetric), the data was collected fromAugust 2011 to August 2012.The patients were randomly selected.All patients had verbal consents taking to participate in this study. All ages and both genders were included in this study. The permission had been taken from directorate of health in Sulaimani governorate for all three hospitals.

Special questioner designed and appropriately filled up for each patient, that include (personal details, length of hospital stay, presence of risk factors and using of prophylactic heparin).The type of heparin used in this study was mostly unfractionated heparin and low molecular weight (LMW) heparin.

Results

The study populationwere 300 patients, one hundred patients in each hospital; most of the patients in all three hospitals were female (58%,61%,and 100%), in general medical hospital, surgical hospitaland gynaecology hospital,respectively.Most of the patients in three different hospitals were from inside the Sulaimani city (76% from general medical hospital, 62% from gynaecology hospital, and 52% fromsurgicalhospital, Table 1.

Regarding age distribution; 71% of the patients were above 40 years in general hospital, 69% of the patients were below 40 years in gynaecology and obstetrics hospital, and 57% were above 40 years of age in surgical hospital, Table 2.

As far as the length of stay in the hospital was concern; patients in medical hospital stayed more than surgical and gynaecological hospital (55% stayed more than 4days in medical hospital compare with 38% and 39% in gynaecology and surgical hospital respectively), Table 3.

The co-morbidity was 59% of surgical patients, 43% of medical patients and only in 22% of gynaecology patients, Table 4.

Six percentages of patients in medical hospital, 76% of patients in gynaecology hospital, and 73% of patients in surgical hospitalhad of history recent operation, Table 5.

Regarding the presence of risk factors in general medical hospital,58% of the patients had minor risk factor, and 42%patients had major risk factors, $P > 0.05$. In gynaecology Hospitals, 82% had major risk factors, and 18% had minor risk factors, $P < 0.01$. In surgical hospitals 80% had majorrisk factors and 20% had minor risk factors, $P < 0.01$ (Table 6).

Only21 patients (21%) among selected patients in general medical hospital received prophylactic heparin, $P < 0.01$. While in gynaecology and

surgical hospitals, only 18%and 12% were receiving prophylactic heparin treatment, $P < 0.01$ and $P < 0.01$ respectively (Table 7). The type of heparin used was mostly unfractionated compare with LMW, 52% in general medicine hospital, 83% in gynaecology and obstetric hospital, and 75% in surgery and orthopaedic hospital Table 8.

The authors found that, some of the patients were having contraindication for the using heparin (fifteen percentages in medical hospital, 18% in gynaecology hospital, and 19% in surgical and orthopaedic hospital, Table 9.

Discussion

According to this study most of the patients in the three different hospitals were form inside the Sulaimani city.(76% in medical hospital, 62% in gynaecology hospital, and 52% in surgical hospital were from inside the city), this might reflect that people of big cities have higher risk of VTE, rather than rural area.[10]

Regarding length of hospital stay; patients in medical department stayed in hospital more than surgical and gynaecological hospital, (55% stayed >4days in medical hospital compare with 38% and 39% in gynaecology and surgical hospital, respectively).Females were predominant in all three hospitals over male, (58%, 100%, and 61%), in general medical hospital, gynaecology hospital and surgical hospital respectively. This finding issimilar to the results of other studies done in this field especially.[11]

All patients in this study were at a risk for VTE (minor or major), only 21% (21 patients) among patients with risk group in medical hospital received treatment with prophylactic heparin, this washigher although not significantly than gynaecology and surgical hospitals, that only (18% and 12% respectively) were receiving prophylactic heparin treatment, this finding are very low in comparison with American college of clinical pharmacy guidelines (ACCP).[7]

A multinational middle eastern survey of venous thromboembolism (VTE) risk and prophylaxis, was assessing 101 hospital in 10 countries, the result showed that, 24% of medical patients and 44% of surgical patients at risk receiving prophylaxis.[12] In another study done inJames Cook University Hospital, Middlesbrough, United Kingdom, (improving compliance with primary thrombo-prophylaxis (PTP) guidelines in medical patients), showed that compliance of using thrombo-prophylaxisincreased from 22% in 2007 to 47% in 2008(10,11,12). In venous thromboembolism risk and prophylaxis in a Saudi hospital, the studyrecommended VTE prophylaxis, was given only to 16 (35.6%) surgical patients at risk, 12 (26.7%) at-risk medical patients, and 17 (37.8%) at-risk gynaecology/obstetrics patients, these levels were very low compared with this study.[2,13,14]According to the data in this study, most

of those on prophylactic treatment, they were using Unfractionated heparin more than LMW heparin, (48%, and 52% in medical hospital), (17% and 83% in gynaecology hospital), (25% and 75% in surgical hospital). In most of other studies suggested that LMW heparin is superior to unfractionated heparin.[1,13,15]In all three hospitals there were nearly the same contraindication for using prophylactic heparin ranging from 15-19 %.

Conclusion

Despite the existence of comprehensive consensus guidelines for the prevention and treatment of VTE], thromboprophylaxis remains underused in our different speciality hospitals. Reasons for underuse are complex and include underestimation of the risks of VTE, underestimation of the impact of non-fatal outcomes of VTE, lack of awareness of relevant guidelines, absence of local thromboprophylaxis strategies, and concerns about the risk of bleeding.We needs to improved thrombotic risk-assessment methods, familiarisation of clinicians with current best practice, and facilitation of appropriate prescribing of prophylaxis (establish local hospital guidelines).

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Tables

Table 1. Gender and residency of study population.

	General Medical Hospital	**Genecology and Obstructive Hospital**	**Surgical and Orthopaedics Hospital**
	No. (%)	**No. (%)**	**No. (%)**
Gender			
Male	42 (42%)	0 (0%)	39 (39%)
Female	58 (58%)	100 (100%)	61(61%)
Residency			
Inside city	76 (76%)	62 (62%)	52 (52%)
Outside city	24 (24%)	38 (38%)	48 (48%)

Table 2. Age distribution of study population.

Age	**General Medical Hospital**	**Genecology and Obstructive Hospital**	**Surgical and Orthopaedics Hospital**
	No. (%)	**No. (%)**	**No. (%)**
< 20 years	8 (8%)	22 (22%)	13 (13%)
20 – 40 years	21 (21%)	47 (47%)	30 (30%)
40 – 60 years	36 (36%)	26 (26%)	34 (34%)
> 60 years	35 (35%)	5 (5%)	23 (23%)
Total	100 (100%)	100 (100%)	100 (100%)

Table 3. Length of stay in a hospital of study population.

Length of stay in a hospital	**General Medical Hospital**	**Genecology and Obstructive Hospital**	**Surgical and Orthopaedics Hospital**
	No. (%)	**No. (%)**	**No. (%)**
< 4 days	45 (45%)	62 (62%)	61 (61%)
> 4 days	55 (55%)	39 (39%)	39 (39%)

Table 4. Presence of co-morbidities in study population.

Presence of co-morbidities	General Medical Hospital	Genecology and Obstructive Hospital	Surgical and Orthopaedics Hospital
	No. (%)	**No. (%)**	**No. (%)**
Yes	43 (43%)	22 (22%)	59 (59%)
No	57 (57%)	78 (78%)	41 (41%)

Table 5. History of recent surgery in study population.

History of recent surgery	General Medical Hospital	Genecology and Obstructive Hospital	Surgical and Orthopaedics Hospital
	No.	**No.**	**No.**
Yes	6 (6%)	76 (76%)	73 (73%)
No	94 (94%)	24 (24%)	27 (27%)

Table 6. Presence of risk factors in three hospitals.

Risk factors	General medicine	Genecology and obstetric**	Surgery and orthopa**
	No.	**No.**	**No.**
Major	42 (42%)	82 (82%)	80 (80%)
Minor	58 (58%)	18 (18%)	20 (20%)

**= P<0.01

Table 7. Use of prophylactic heparin in study population.

Use of prophylactic Heparin	General Medical Hospital**	Genecology and Obstructive Hospital**	Surgical and Orthopaedics Hospital**
	No.	**No.**	**No.**
Yes	21 (21%)	18 (18%)	12 (12%)
No	79 (79%)	82 (82%)	88 (88%)

**= P< 0.01

Table 8. Type of heparin used in study population.

Type of Heparin	General Medicine	Genecology and Obstructive	Surgical and Orthopaedics
	No.	**No.**	**No.**
LMW	10 (48%)	3 (17%)	3 (25%)
Unfractionated	11 (52%)	15 (83%)	9 (75%)

Table 9. Presence of contraindication in study population.

Presence of contraindication	General Medical Hospital	Genecology and Obstructive Hospital	Surgical and Orthopaedics Hospital
	No.	**No.**	**No.**
Yes	15 (15%)	18 (18%)	19 (19%)
No	85 (85%)	82 (82%)	81 (81%)

Appendix 1 (questionnaire)

Name; sex; age; hospital;
Address; date of admission; date of sample collection;
Duration of hospital stay in days;
Recent operation; Yes No
Co-morbidities; Yes No
Risk factor for TED;
Major ;
Major surgery
Obstetric surgery
Preclampcia
Malignancy
Lower limb problem
Reduce mobility
Previous DVT
Old or new CVA
Pregnancy
Minor ;
CVS (IHD, HF)
Renal disease (CRF)
CCP- HRT
Myeloproliferative disease
Smoking
Obesity
Inherited;
Family history of DVT
On prophylactic treatment Yes No
Type of heparin; LMWH Un fractionated heparin

Right dosage; Yes No
Contraindication for TE prophylaxis; Yes