Original Article

Prophylaxis for deep venous thrombosis: Knowledge and practice of surgeons

Mehdi Zobeiri[1], Farid Najafi[2]

ABSTRACT

Objective: Despite high incidence (10%-80%) for venous thromboembolism (VTE) after surgery, many report show suboptimal risk assessment and inadequate prophylactic measure for this condition. The aim of this study was to determine knowledge, attitude and practice of surgeons about deep venous thromboembolism (DVT) prophylaxis.

Methodology: The knowledge and attitude of faculty member surgeons working in Kermanshah University of Medical Sciences were evaluated using a questionnaire. In addition, their practice was assessed by reviewing the hospital chart of 4105 patients who had elective or emergency surgery. Patients were categorized based on claget criteria into high, moderate and low risk for DVT.

Results: Mean knowledge score was 9.05±1.07 (82.3% of best predicted) and for attitude was 21.9±2.78 (73.1% of best predicted). There were no statistical significant differences between surgical clinical groups. Nearly all of surgeons believed that use of low dose heparin was dangerous. Type of prophylactic measure was only low dose heparin. Only 9 (3.2%) patients from high risk group and 9 (1.08%) patients from moderate risk group received prophylactic treatment and no one from low risk group for DVT received prophylaxis.

Conclusions: Degree of under use of prophylactic measure for DVT is higher in this study as to compare with other investigations. Increased awareness about optimal prevention and outcomes is needed. It is highly recommended that all patients undergoing surgery must be routinely assess for preoperative risk for DVT and consider aggressive prophylactic measure against this condition.

KEY WORDS: Deep venous thrombosis**,** Risk, Prophylaxis**,** Surgery.

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1. Mehdi Zobeiri, MD,
Dept. of Internal Medicine, School of Medicine,
2. Farid Najafi, MD, PhD,
Kermanshah Health Research Center (KHRC),
School of Population Health,
1-2: Kermanshah University of Medical Sciences,
Imam Reza Hospital,
Kermanshah, Iran.

Correspondence:

Mehdi Zobeiri,
Zacaria Razi Boulevard, Imam Reza Hospital,
Post Code: 67144-15333,
Kermanshah – Iran.
E-mail: mehdizobeiri@yahoo.com

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INTRODUCTION

Deep vein thrombosis (DVT) and pulmonary thromboembolism (PTE) are two of the most important consequences of surgery and trauma are considered preventable causes of morbidity and mortality in admitted patients.[1,2] More recently, the term "venous thromboembolism" (VTE) has been used to refer to both DVT and PTE.[3] Each year, DVT occurs in an estimated two million people worldwide, 600,000 of whom develop PTE and 10,000 die.[2] About one third of patients with DVT develop venous stasis syndrome within 10 years[3] and PTE is one of the most common causes of preventable mortality after major surgery.[2,3] About half of the time, DVT

causes no symptoms and therefore clinical data are unreliable for diagnoses of DVT.[4]

Without anticoagulant prophylaxis incidence of DVT varies from 10% in low risk to 40-80% in high risk surgical patients and fatal PTE occurs in 0.1-0.8% of patients undergoing elective general surgery with 2-3% undergoing elective hip replacement, and up to 4-7% undergoing surgery for a fractured hip.[5-7] Surprisingly, according to a national survey conducted on behalf of the American Public Health Association (APHA), 74 % of adults have little or no awareness of DVT.[8] In clinical trials, usefulness of prophylactic measures was shown for prevention of DVT and lethal PTE.[7] Cost effective analysis also shows that DVT prophylaxis reduces health care cost.[9]

Nevertheless despite the publication of international guidelines, many reports, mainly from developed countries, show suboptimal use of thromboprophylaxis.[10-14] In fact, routine use of simple well-established and effective methods of DVT prevention would save thousands of hospitalized patients each year. Regardless of several studies about the quality of care in patients with DVT, our information about the provided care in Iranian context is not sufficient. The purpose of this study was to determine knowledge, attitude and practice of surgeons about DVT prophylaxis.

METHODOLOGY

This hospital-based cross-sectional study was carried out in Kermanshah University of Medical Sciences in 2005. Faculty member surgeons including general surgeons, urologists, orthopedists, obstetric-gynecologists and neurosurgeons were selected. Assessment of their knowledge and attitudes was done using a questionnaire which included 11 knowledge questions scoring from 0-11 and 6 attitudes questions with Likert scale and scoring from 6-30. Both face and content validity of the questionnaire were evaluated by five clear sighted faculty members from internal medicine, general surgery and biostatistics and its reliability with test re-test (reliability coefficient=0.83). For the purpose of this study, a favorable knowledge and attitude was defined as scoring more than 70%.

Patients' chart review was done retrospectively from 1998-2005 by study of 4105 patients who had elective or emergency surgery. From any surgical procedure of any surgeon at least six cases were selected sequentially. Patients were categorized based on Clagett criteria into high, moderate and low risk for DVT and the type of DVT prophylaxis was identified.[15] Data were analyzed by using central tendency indices (mean and standard deviation), frequency and non parametric Kruskal-Wallis test.

RESULT

This study evaluated the knowledge and the attitude of 19 faculty member surgeons who completely responded to the questionnaire. It included seven obstetricians and gynecologist, four general surgeons, three urologists, one neurosurgeon and four orthopedists.

Mean knowledge score was 9.05±1.07 (82.3% of best predicted) with 21.9±2.78 for the attitude (73.1% of best predicted). There was no statistical significant difference between surgical groups in terms of knowledge and attitude scores. More than 50% of study groups did not know that general anesthesia for more than 30 minutes increases DVT risk. Also the majority of them (84.2%) did not know that surgery in patients with cancer had higher risk for development of DVT in aged or obese patients. Nearly all surgeons believed that use of low dose heparin was dangerous and therefore were not in favour of such practice. They thought that routine ultrasonography screening at discharge or during outpatient follow-up is necessary in asymptomatic patients.

From 4105 patients assessed for DVT prophylactic measure, 1850 were male and 2255 were female. Patients were categorized based on Clagett criteria and risk factors of DVT recorded in their files (Table-I). Almost 66.6% of high risk patients had malignancy and 15.5% had pelvic or lower limbs surgery. The prophylaxis used was only low dose heparin.

DISCUSSION

Our study showed that, average scoring of knowledge and attitude were favorable but few of the patients in need received prophylactic measure

Table-I: Patients categorization of DVT risk based on claget criteria and who received prophylaxis.

DVT risk	*Frequency*	*Patients who received prophylaxis (%)*
low risk	2996(72.51)	0
Moderate risk	833(6.20)	9 (1.08)
High risk	276(6.84)	9(3.2)
Total	4105 (100)	18 (0.43)

Annexure-A

Questionnaire for evaluation of surgeon's knowledge:

1. Which one of the following variable had more probability of risk for DVT?
   a. males
   b. females
   c. person less than 30 years old
   d. person more than 40 years old
2. Which one is correct?
   a. General anesthesia dose not increased DVT risk
   b. Any duration for general anesthesia increased risk of DVT
   c. General anesthesia only in abdominal or pelvic surgery raised risk of DVT
   d. General anesthesia with more than 30 minute duration increased DVT risk
3. Which one had more incidence of DVT during surgery?
   a. obese patient
   b. surgery for malignancy
   c. old age
   d. pelvic surgery
4. What is the most important mechanism or mechanisms of DVT risk during surgery?
   a. hypercoagulability
   b. stasis
   c. vascular injury
   d. all of them.
5. Which one is correct?
   a. DVT of thigh had 50% chance of pulmonary embolism.
   b. Calf DVT had 40% probability of pulmonary embolism.
   c. Proximal extenton of DVT decrease risk of pulmonary embolism.
   d. DVT is a most common source of pulmonary embolism.
6. Which one is not risk factor of DVT?
   a. Cardiac failure
   b. peripartom state
   c. OCP consumption
   d. Surgery duration with less than 30 minute
7. Which one of the following statements reflects the outcome of DVT without treatment?
   a. proximal extension
   b. limitation by fibrinolysis or organization in calf DVT
   c. embolisation risk increased
   d. all of above
8. Which one has not applicable for DVT prophylaxies during surgery?
   a. Intermittent pneumatic compression
   b. low dose heparin
   c. warfarin with INR of 2.5-3
   d. elastic stocking
9. Selection of DVT preventive measures determined by
   a. number of risk factors
   b. type of surgery
   c. kind of anesthetic drug
   d. a and b
10. In pulmonary thromboembolism which one is not correct?
    a. most common cause of preventable mortality in hospital
    b. DVT is the most common source
    c. most common cause of cyanosis in surgery
    d. most of them have normal CXR
11. Diagnosis and beginning of therapy for pulmonary thromboembolism is based on
    a. clinical criteria
    b. simple hematologic tests
    c. sophisticated imaging
    d. clinical suspicious is enough

even in high risk group (Table-I). It also showed under use of prophylaxis for DVT which is based on responder knowledge and attitude. It may be partly due to under estimation of DVT risk in surgical patients, different perception about risk assessment and fear of surgeons from the risk of bleeding in case of use of prophylaxis. Though other studies have reported similar results,[7,12,13] there is no agreement as to which method is optimal.[16] The degree of under use of prophylactic measure is much higher in our study. In fact, risks for VTE in acquired conditions with multiple risk factors such as major surgery or trauma, history of previous VTE, age of more than 70 and pregnancy are the highest and therefore the use of preventive measures for VTE is highly recommended.[4,15] Randomized controlled trials have shown that preoperative anticoagulation is safe and effective when used carefully, reducing the risk of DVT and PTE by two-thirds.[2,5,15]

The most commonly used anticoagulants include unfractionated heparin ,low-molecular-weight heparin and warfarin sodium. In our study, low dose heparin was simple and available method for DVT prophylaxis. A traditional non-pharmacological prophylaxis strategy for DVT is a mainstay for conditions with absolute contraindications to antithrombotic or anticoagulant therapy like neurosurgery, ocular surgery. Such strategies include early mobilization and the use of sequential compression devices to prevent blood clotting. In addition, nonpharmacologic prophylaxis is recommended for low-risk patients throughout the preoperative period until they are ambulatory.

Physicians and other healthcare professionals must routinely assess a person's risk for DVT in the same way they currently look for risk factors for heart disease and other common conditions. Recommendations for VTE/DVT prophylaxis have been propagated by various organizations since 1986.[1] The sixth American College of Chest Physicians (ACCP) consensus conference on antithrombotic therapy recommend that patients be classified as having low, moderate, high, and very high risks for the development of DVT or PTE and that the prophylactic regimens be used according to this risk stratification.[5] The recent guidelines from seventh (ACCP) consensus conference in 2004 recommend that every hospital develop formal strategy to prevent complication of thromboembolism.[17] Use of routine ultrasonography screening at discharge or during outpatient follow-up is not recommended in asymptomatic patients. Recommendations include consideration of prophylaxis for DVT in all patients undergoing surgery and preoperative risk stratification for determination of aggressive prophylaxis measure as well as resuming anticoagulant regimens promptly and continuing them throughout the postoperative period when indicated by increasing awareness of medical staff about VTE and venous screening program.

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Annexure-B

Attitude questions	*Very low*	*Low*	*Average*	*High*	*Very high*
1. How much know the sensitive and objective tests (Duppler sonography) necessary for DVT screening in post surgical patients?					
2. How much detection of DVT risk factors is necessary prior to surgery?					
3. How much DVT prevention is necessary in surgery?					
4. How much consultation with the patient and his attention about preventive measures of DVT (Pressing the legs into bed and Way early fall after surgery) need to know?					
5. How much you know training of nurses in the prevention of DVT is essential?					
6. How much you know dangerous administration of low dose heparin before surgery?					

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