



Original article

Current guidelines do not sufficiently discriminate venous thromboembolism risk in urology

Kristen McAlpine, M.D.^{a,b}, Rodney H. Breau, M.D., F.R.C.S.C.^{a,b}, Ranjeeta Mallick, Ph.D.^{a,b}, Sonya Clossen, M.Sc.^{a,b}, Ilias Cagiannos, M.D., F.R.C.S.C.^{a,b}, Christopher Morash, M.D., F.R.C.S.C.^{a,b}, Marc Carrier, M.D., F.R.C.P.C.^{b,c}, Luke T. Lavallée, M.D., F.R.C.S.C.^{a,b,*}

^a Department of Surgery, Division of Urology, The Ottawa Hospital, Ottawa, Ontario, Canada

^b Ottawa Hospital Research Institute, University of Ottawa, Ottawa, Ontario, Canada

^c Department of Medicine, The Ottawa Hospital, Ottawa, Ontario, Canada

Received 5 August 2016; received in revised form 14 November 2016; accepted 16 January 2017

Abstract

Purpose: Venous thromboembolism (VTE) is the leading cause of noncancer death following major cancer surgery. Current thromboprophylaxis guidelines do not address procedure-specific risk of venous thromboembolism for urological patients. This project was created to determine the risk and timing of VTE after major urological surgery and to evaluate if surgical procedure was an independent risk factor for VTE after adjusting for previously established risk factors.

Material and methods: The American College of Surgeons' National Surgical Quality Improvement Program was used to create a cohort of patients who received major abdominal or pelvic urologic surgery between 2006 and 2014. The primary outcome was postoperative VTE. A Caprini score was calculated for each patient in our study to determine the risk of VTE. Multivariable logistic regression analyses were performed to determine the association between patient and procedural factors with venous thromboembolism.

Results: During the study period, 65,100 patients were eligible and 956 patients (1.5%) developed a venous thromboembolism. More than half of VTE events occurred after hospital discharge ($n = 570$; 60%). Radical cystectomy had the highest risk of VTE (299/5,976; 5.0%) and laparoscopic nephrectomy had the lowest risk (56/8,475; 0.7%). Most patients (58,782; 90%) were classified as high risk for VTE using the Caprini score. After adjusting for known risk factors, the risk of venous thromboembolism was significantly greater for radical cystectomy compared to laparoscopic nephrectomy (relative risk = 7.0; 95% CI: 5.0–9.2).

Conclusions: This study reports procedure-specific venous thromboembolism risk adjusting for known risk factors. These data demonstrate that procedure-specific thromboprophylaxis guidelines are needed in urology. © 2017 Elsevier Inc. All rights reserved.

Keywords: Deep venous thrombosis; Prophylaxis; Pulmonary embolism; Urology; Venous thromboembolism

1. Introduction

Venous thromboembolism (VTE), comprising deep vein thrombosis (DVT) and pulmonary embolism (PE), is the leading cause of noncancer death following major abdominal or pelvic cancer surgery [1]. When patients are diagnosed with asymptomatic VTE in the postoperative period, their risk of death is 3 to 13 times higher than patients who do not have a VTE [2–4].

Mechanical and pharmacological prophylaxis are frequently used in the perioperative setting to prevent VTEs [5]. Determining the most appropriate thromboprophylaxis strategy for a given patient requires consideration of patient and surgical risk factors [5,6].

In 2012, the American College of Chest Physicians (ACCP) published a landmark article with VTE prophylaxis guidelines for patients undergoing nonorthopedic procedures. The absolute rate of VTE, efficacy of mechanical and pharmacological prophylaxis, and risk of major bleeding were evaluated for different patient populations to develop guidelines based on the best available evidence. The ACCP examined various VTE risk assessment tools and suggested

* Corresponding author. Tel.: +1-613-737-8899, ext. 73019; fax: +1-613-737-6842.

E-mail address: lulavallee@toh.ca (L.T. Lavallée).

incorporating the Caprini score when assessing risk of VTE [5,7]. The Caprini score is a clinical tool that stratifies individual patients into VTE risk categories based on patient and procedure characteristics (Appendix B) [6,7]. The ACCP recommends extended-duration thromboprophylaxis (4 weeks of low-molecular-weight heparin) for high Caprini risk patients receiving abdominal or pelvic cancer surgery [5].

To our knowledge, there are no guidelines addressing extended-duration thromboprophylaxis for specific urological procedures [8]. This means, based on available guidelines, the recommended type and duration of thromboprophylaxis for a patient receiving an open radical cystectomy and a laparoscopic nephrectomy would be identical if they had equivalent risk factors on the Caprini score [5].

The purpose of this study was to determine the risk and timing of venous thromboembolism after major abdominal or pelvic urologic surgeries. We hypothesized that the risk of VTE varies by surgical procedure independent of other VTE risk factors.

2. Material and methods

2.1. Study design

A historical cohort study using the American College of Surgeons' National Surgical Quality Improvement Program (NSQIP) database was performed between 2006 and 2014. Patients receiving major abdominal or pelvic urologic surgeries were included. Institutional ethics board approval was obtained before data collection. NSQIP hospitals are the source of data used in this analysis; however, NSQIP has not reviewed the methodology of this study and is not responsible for its content.

2.2. Setting and subjects

NSQIP is a quality-improvement program with more than 700 contributing institutions across 9 countries [9]. NSQIP data are obtained from participating hospitals through a combination of automated data extraction and trained clinical reviewers collecting information from patient charts and direct patient contact. Site audits are performed in an ongoing fashion to ensure that consistency is maintained across participating hospitals [9]. Previous audits have documented an interrater reliability of more than 98% across sites [10].

Patients who received urological surgery during the study period were identified using common procedure terminology codes. Similar common procedure terminology codes were grouped together to form a cohort of patients undergoing 11 major abdominal or pelvic urological procedures (radical cystectomy, partial cystectomy, open nephrectomy, laparoscopic [lap] nephrectomy, open partial

nephrectomy, lap partial nephrectomy, open nephroureterectomy, lap nephroureterectomy, open radical prostatectomy, lap radical prostatectomy, and retroperitoneal lymph node dissection) (Appendix 1). Laparoscopic surgery included pure laparoscopic and robotic-assisted laparoscopic procedures.

2.3. Data collection

Patient and procedure characteristics that are in the Caprini score and available in NSQIP were extracted. Patient characteristics included age, height, weight, recent sepsis, pneumonia, myocardial infarction, pregnancy, congestive heart failure, chronic obstruction pulmonary disease, overall functional status, and presence of malignancy. Procedural characteristics included procedure type, length of operation, and approach (lap or open). International Classification of Diseases codes were used to determine whether malignancy was present for each patient (Appendix A).

Postoperative outcomes collected included DVT, PE, and length of hospital stay. NSQIP defines DVT as a newly diagnosed thrombus in the superficial or deep veins confirmed by imaging or autopsy and requiring treatment [9]. A PE is defined as a newly diagnosed blood clot in a pulmonary artery causing partial or complete obstruction of blood flow, confirmed by imaging or autopsy [9]. The length of hospital stay is the total number of days admitted to hospital [9].

2.4. Data analysis

We calculated the absolute risk of VTE (DVT or PE) for patients undergoing each procedure. In-hospital and post-discharge incidence was determined by comparing the length of hospital stay with the postoperative day the VTE was recorded.

2.5. Caprini score

For each patient, a Caprini score was calculated using patient and procedure characteristics (Appendix B). Patient and procedure characteristics included in our calculation of the Caprini score are listed in Table 1. Not all Caprini score risk factors were available in NSQIP; therefore, our Caprini score is the minimal score for an individual patient. Patients were assigned a risk category based on their cumulative score with high risk ≥ 5 points, moderate risk 3 to 4 points, low risk 1 to 2 points, and very low risk 0 points. The proportion of patients in each risk category was determined for each surgical procedure.

2.6. Association between patient and procedure characteristics and VTE

Two multivariable log binomial regression models were established a priori and used to determine the associations

Download English Version:

<https://daneshyari.com/en/article/5702556>

Download Persian Version:

<https://daneshyari.com/article/5702556>

[Daneshyari.com](https://daneshyari.com)