Rates of elastic compression stockings prescription following the diagnosis of deep venous thrombosis among Canadian emergency physicians and trainees

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ABSTRACT

Introduction: Postthrombotic syndrome (PTS) is a complication of deep vein thrombosis (DVT) characterized by chronic pain, swelling, and heaviness, and may result in ulceration. Elastic compression stockings (ECS) worn daily after DVT have been shown to reduce the incidence and severity of PTS. The aim of our study was to investigate practices and perceptions of physicians regarding adjunct therapies to anticoagulation in patients diagnosed with lower extremity DVT.

Methods: A national online survey was conducted of Canadian emergency medicine staff physicians and residents (n = 471) to investigate their attitudes toward the prescription of ECS post-diagnosis of DVT. A paper survey of patients in a thrombosis clinic (n = 58) was also administered to better understand the patient experiences with ECS.

Results: The majority of staff physician (62%) and resident (69%) respondents were unsure of whether ECS were effective in preventing PTS and managing venous symptoms. Only 6% of staff physicians and 7% of residents routinely prescribed ECS for above-knee DVTs. More than 78% of respondents were unsure about the optimal timing of initiation of ECS and duration of therapy. Although all patients noted symptomatic relief with ECS, only 50% were prescribed stockings by an emergency or family doctor, and 69% of those patients wore the stockings on a daily basis. Staff physicians most frequently identified poor fit as the reason for lack of patient compliance, whereas patients most frequently cited cost.

Conclusions: Our findings suggest that there is variability in practice among Canadian emergency medicine physicians and trainees and a need for widespread education regarding the latest evidence of the benefit of ECS after DVT.

Keywords: Venous Disease, Deep Vein Thrombosis, Elastic Compression Stockings, Post-thrombotic Syndrome, Knowledge Translation, Medical Education
physicians and trainees involved in the care of post-DVT patients. The opinions of patients and nonthrombosis clinicians on the use of ECS were also surveyed. It was hypothesized that ECS were not consistently prescribed by emergency doctors and trainees and that there was variability in practice regarding their use in patients with DVT.

METHODS

Between September 2011 and March 2012, two surveys were conducted to assess physician and patient attitudes toward ECS after DVT. The study protocol was approved by the Ethics Review Boards of the University Health Network and St. Michael’s Hospital at the University of Toronto.

Physician survey

A survey was developed (Appendix A) based on experience and a literature review to gauge current physician practices and views on ECS prescription after DVT.11 The survey items were generated using the literature and by interviewing physicians and nurse practitioners experienced in prescribing ECS. The number of items was reduced based on feedback received. To ensure content face validity and question comprehension, the survey was pretested and piloted by staff and residents in vascular surgery, family medicine, and emergency medicine, as well as by a nurse practitioner at our institution’s thrombosis clinic.

An online survey was then created using a commercial survey software (www.surveymonkey.com) and administered using the Dillman Tailored Design Method.12 The survey was distributed by email through the Canadian Association of Emergency Physicians membership list, which includes emergency medicine physicians and trainees from across Canada. One reminder email was sent 2 weeks after the initial invitation email. All surveys were anonymous.

Patient survey

A paper-based questionnaire was developed from experience and a literature review to assess patient perceptions and satisfaction with ECS after DVT (Appendix B).11 All patients with a DVT diagnosis who were referred to the thrombosis clinic at University Health Network, University of Toronto, were approached to participate. Each month, approximately 50 new and returning patients were approached. Recruitment occurred from September 2011 to January 2012.

Data analysis

Descriptive statistics (e.g., means, proportions) were calculated for all data. Chi-squared test statistics were generated to compare staff and resident physician responses. Statistical significance was determined at the \( p = 0.05 \) level. All data analyses were carried out using the statistical software package STATA, version 12 (College Station, Texas).13 Figures were generated using Microsoft Excel 2010 (Redmond, Washington).14

RESULTS

Physician survey

Four hundred seventy-one physicians participated in the survey, including 403 staff emergency physicians (56% response rate) and 68 emergency medicine residents (59% response rate).

Most respondents did not routinely prescribe ECS to patients with newly diagnosed above-knee (94% total, 93% staff, 97% residents) or below-knee DVT (93% total, 93% staff, 93% residents). A majority of staff and resident respondents were unsure of whether ECS could prevent PTS in newly diagnosed DVT (Figure 1). Most were also unsure about the optimal timing to initiate ECS after a new diagnosis of DVT (Figure 2) or the length of time for which ECS should be prescribed (Figure 3). Staff respondents most frequently cited poor fit, need for assistance, and cosmesis as the main reasons for lack of patient compliance with ECS. Conversely, most residents cited the need for assistance in putting on the stockings, cosmesis, and pruritus as the main reasons for lack of patient compliance. Most respondents correctly believed that ECS did not increase the risk of pulmonary embolism (PE) in newly diagnosed DVT (Figure 4) but incorrectly selected Class II (20–30 mmHg) rather than Class III (30–40 mmHg) as the optimal strength of ECS to prevent PTS (Figure 5). Most staff and resident respondents believed that the compliance rate with ECS in patients with newly diagnosed DVT was 25% (Figure 6). There was no significant difference between the staff and resident answers at the \( p = 0.05 \) level for any of the binary and categorical survey questions.
Of the patients presenting to the clinic and invited to participate in this study, 58 completed the survey. Of those, 50% were prescribed ECS by their emergency or family medicine physician. Sixty percent of respondents subsequently bought ECS, and, of those, 69% wore them daily, whereas 20% never wore them.
Of the patients who complied with their ECS prescriptions, all described symptomatic relief. Those who did not comply with wearing ECS most frequently listed cost, discomfort, and cosmesis as the main reasons for lack of compliance.

DISCUSSION

The aim of this study was to assess current day views and practices of Canadian emergency medicine physicians regarding the use of ECS in post-DVT patients. Our findings suggest a general lack of awareness among Canadian emergency medicine staff and trainees about the indications and uses of ECS post-DVT. Most physician respondents were unaware of when, how, and how long ECS should be prescribed.

To investigate reasons other than lack of knowledge for current ECS prescription patterns, physicians were asked if they believed that there was a relationship between ECS and a higher incidence of PE in DVT patients, which has been previously refuted. Most respondents did not believe that there is an association between ECS and PE.

We also investigated patient views and compliance rates with ECS. Although half of patient respondents were prescribed ECS before a referral to a thrombosis clinic for management of their DVT, only two-thirds of those patients wore them on a regular basis. These compliance rates are similar to other emergency department-prescribed outpatient treatments. Several survey-based studies have reported medication non-compliance rates between 40% and 49% upon discharge from the emergency department. The causes for lack of ECS compliance cited by patients and physicians were different. Patients were mostly concerned about cost followed by discomfort, whereas most staff physicians cited poor fit and need of assistance. A better understanding of patient needs and concerns regarding ECS might improve compliance.

Our study was limited by a relatively low response rate for staff physicians and trainees. However, systematic reviews of questionnaires have reported a 54%–61% mean response rate among physicians. Furthermore, Grava-Gubins and Scott reported that survey response rates among Canadian physicians and trainees varied between 28% and 32%, despite employing various strategies, such as shortened surveys, emailed surveys, lottery incentives, and multiple marketing methods. The authors attributed a variety of factors, including survey fatigue, time pressures, and general indifference to the low response rates that they reported.

Another limitation was the recruitment of the patient respondents from a single thrombosis clinic at a tertiary-care centre with a well-established patient referral base, which likely led to selection bias. The clinic receives emergency department referrals and inpatient referrals at our institution. Evaluation for stockings, if not completed before the referral, is done by the clinic staff within 2–3 weeks or earlier from the date that the referral is made. Nonetheless, the views of patients on lack of compliance with ECS offer a valuable perspective into the importance of adequate doctor-patient collaboration in preventing the disastrous sequelae of DVT.

In summary, we have established a substantial lack of awareness among Canadian emergency physicians and trainees regarding the indications and uses of ECS in preventing PTS. Our future work will focus on addressing this knowledge gap and developing educational initiatives to help decrease the likelihood of developing this devastating complication.

Competing interests: None declared.

SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit http://dx.doi.org/10.1017/cem.2014.37.

REFERENCES


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