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Original article

Patient compliance with venous thromboembolism prophylaxis (VTE)

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ABSTRACT

Venous thromboembolic disease (VTE) comprises pulmonary embolism (PE) and deep vein thrombosis (DVT), and causes morbidity and mortality, particularly in trauma and orthopaedic patients. Prevalence of 0.9% and 1.2% respectively are reported, with mortality rates up to 13.8%.

Chemical thromboprophylactic agents including low molecular weight heparin (LMWH) are considered cost effective in reducing VTE risk. Evidence for anti-platelets including Aspirin for VTE prophylaxis is less compelling and is not supported as monotherapy.

There has been no published data on patient compliance with LMWH in trauma outpatients.

We aimed to determine whether trauma outpatients accept LMWH after discussing their VTE risk and the evidence for prophylaxis. For those accepting prophylaxis, we also investigated their compliance for the duration of immobilisation.

Lower limb injured patients treated with external immobilisation over a 6 month period at our major trauma centre were included. On completion of immobilisation, they were requested to complete a 17-point questionnaire. Patients declining injectable subcutaneous LMWH as prophylaxis were offered Aspirin 75 mg as a second line agent.

Seventy-five questionnaires were completed and five were excluded. Nineteen patients required surgical intervention for their injury, 51 were managed non-operatively.

Thirty-one patients accepted LMWH and 30 chose Aspirin as an alternative. Nine patients declined or were not commenced on prophylaxis.

Nineteen reported no missed Aspirin doses and 25 reported no missed LMWH doses. No patients reported missed doses due to pain, side effects or cessation of treatment for another reason. The mean average pain score recorded on the VAS was 3.8.

No patients in the study were diagnosed with a VTE.

LMWH is a recognised chemical thromboprophylactic and is well tolerated by patients for VTE risk reduction in lower limb immobilised outpatients. With poor evidence supporting Aspirin as a solo prophylactic agent, our local policy has withdrawn Aspirin for this purpose.

1. Introduction

Venous thromboembolism (VTE) is a condition which can cause significant morbidity and mortality.[1] Pulmonary embolism (PE) and deep venous thrombosis (DVT) are both considered under the spectrum of venous thromboembolic (VTE) disease. In those patients who undergo surgery, the prevalence can reach more than 50% without any form of thromboprophylaxis.[2]

Within trauma and orthopaedic surgery, the prevalence of DVT and PE has been estimated to be 1.16% and 0.93%, respectively.[3] Mortality rates have been reported to range between 0.38% and 13.8%.[4,5]

Thromboprophylaxis has been recognised as an effective and cost effective method of reducing the risk of DVT, PE and fatal PE.[6] The National Institute of Clinical Excellence (NICE) published clinical guideline 92, in 2010: "Venous thromboembolism: reducing the risk".[7] This guideline provided detailed guidance which included specific recommendations for trauma and orthopaedic patients however, did not outline recommendations for non-operative trauma patients who may be immobilised as outpatients. A Cochrane review was published in 2014 after reviewing 6 randomised control trials examining the use of Low Molecular Weight Heparin (LMWH). It concluded that using "LMWH in outpatients significantly reduces VTE when immobilisation of the lower leg is required."[8]

There have been no published data on patient compliance with LMWH in non-operative trauma patients.

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2. Aims

Given the limited guidelines for these patients, our primary aim was to determine whether patients in our major trauma centre accept an offer of LMWH in outpatients when their risk of DVT is discussed, and whether those trauma patients using LMWH comply with its administration for the duration of immobilisation.

Whilst it is not evidence-based practice to prescribe anti-platelets to reduce VTE risk in trauma patients, prior to commencing data collection, the authors noted this was a common patient choice in our outpatient department following discussion of the evidence and personal risk factors. Alternative oral prophylactic agents including Rivaroxiban® are not routinely prescribed by our unit.

After identifying the frequent use of Aspirin, secondary aims were included in our study to determine if those patients who declined LMWH following a discussion of the evidence and their personal risk factors, accepted Aspirin as an alternative prophylactic agent.

Tertiary aims were to establish the number of missed doses, the cause of missed doses, the pain or discomfort experienced from LMWH injections with a visual analogue scale (VAS) and whether the person administering the LMWH had any influence over compliance with LMWH.

3. Patients and methods

Trauma patients treated in consultant led fracture clinics at our major trauma centre, the Royal Stoke University Hospital, were included retrospectively over a 6-month period between 18/11/2014 and 18/05/2015.

Patients requiring cast, brace or removable boot immobilisation are simultaneously seen in the fracture clinic and dedicated plaster room. All patients are given written instructions for their immobilisation device and the plaster room contact number for problems or concerns.

A questionnaire consisting of 17 questions on a double sided A4 sheet was formulated (Appendix 1 – Questionnaire) and given to appropriate patients upon completion of their immobilisation treatment. This included all adult patients treated in cast, brace or removable boot regardless of their duration of treatment or weight bearing status. Clinical staff in the fracture clinic were instructed to support patients with questionnaire completion, but requested not to assist directly, and allow patients privacy whilst answering. Other than being competent to complete the questionnaire, no further exclusion criteria were set. VAS was completed by patients on a scale from 0 to 10 to represent the level of discomfort experienced from the injections.

Completed questionnaires for patients who recorded "no prophylaxis" were identified. Hospital electronic clinic records were reviewed to determine if a documented discussion regarding prophylaxis during their clinic visits occurred.

4. Results

A total of 75 questionnaires were completed. Five patients were excluded because; 3 questionnaires were inadequately completed to allow meaningful analysis, 1 was completed by a paediatric patient (15 years) and 1 had no patient identifying features to determine the reason they had no prophylaxis.

Of the 70 remaining patients, 19 patients had received surgical intervention, and 51 were managed non-operatively. Injuries sustained included; 47 ankle injuries, 16 foot injuries, 5 knee or tibia and 2 Achilles tendon.

The duration of non-weight bearing (NWB) and partial weight bearing (PWB) averaged 3 weeks and 1 week respectfully (range 0–9 weeks NWB, 0–8 weeks PWB).

Thirty-one patients accepted LMWH, however 30 declined and chose Aspirin as an alternative. Nine patients were not commenced on new prophylaxis; 6 had no documented discussion, 1 was advised to mobilise and did not require thromboprophylaxis, 1 patient was already on Rivoroxaban and 1 patient was already on warfarin.

Table 1 summarises patient compliance in the Aspirin group, with 19 reported not missing any doses.

The reason for missed doses in all but one case was; "forgotten". The other cause was reported as a supply issue causing between 5 and 9 missed doses for that patient.

Table 2 summarises missed doses within the LMWH group, where 25 patients reported they missed no doses.

"Forgotten" was also the most common reason for the LMWH patients, however there were 2 patients who missed doses because of supply problems. One patient missed less than 5 doses because of this supply problem, but the other missed between 10 and 20 doses.

Table 3 highlights the correlation between missed doses of LMWH and the person administering the injection.

It is important to note that no patients reported missed LMWH doses due to pain, side effects or cessation of treatment for another reason. The mean average pain score recorded on the VAS, was 3.8, with a mode of 2, median of 3 but a range of 1–10 (Fig. 1).

Only one patient in the study had a past history of VTE, and they received LMWH for prophylaxis. Included in the questionnaire were 8 recognised independent risk factors for DVT (Table 4) which are identified during the discussion of personal risk with each patient.

Perceived risk factors recorded by patients in each group were comparable, without significant differences between them.

Of the 70 patients included, 3 were investigated for VTE during their treatment, 2 with negative D-Dimer tests and one negative USS Doppler and CT pulmonary angiogram.

Table 1
Missed Aspirin doses.

Number of missed doses	Number from Aspirin group
0	19
<5	5
5–9	1
10–20	2
>20	1

Table 2
Missed LMWH doses.

Number of missed doses	Number from LMWH group
0	25
<5	3
5–9	2
10–20	1

Table 3
Person performing LMWH injection.

LMWH administered by	Number	Missed doses
Patient	15	6
Relative	8	0
District nurse	7	0
Carer	1	0