Suitability of the Use of Low-Molecular-Weight Heparins in the Prevention of Venous Thromboembolism

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Abstract

Objective: To investigate the prevalence of low-molecular-weight heparins (LMWH) prescription in venous thromboembolism prophylaxis in a general hospital and the suitability of the recommendations from the clinical practice guidelines.

Method: A descriptive, observational, and cross-sectional study of the indication-prescription type, carried out on patients admitted to medical departments and for surgery.

Results: Three hundred forty-five patients were included. The prevalence of LMWH use was 44.6% (95% CI, 39.3-50.1). Depending on the risk of thromboembolism, the decision to treat prophylactically (or not) was appropriate in 261 cases (75.7%; 95% CI, 70.7-80.1), and the action guidelines were not suitable for the remainder of patients. Fifty-five patients (15.9%; 95% CI, 12.2-20.2) presented a high risk and were not prescribed prophylactically (underuse); and 29 patients (8.4%; 95% CI, 5.7-11.8) at low risk were treated prophylactically (overuse). There was a relationship between the appropriateness of the prescription and the type of patient ($P<.01$). In the group of medical patients the prevalence of prescription was 22.6% (95% CI, 16.9-29.1) and only 33.3% of patients with a high to moderate risk of thromboembolism received prophylaxis. The prevalence of prescription in general surgery was 84.2% and 91.3% in traumatology.

Conclusions: The degree of prophylaxis is adequate in surgical patients, but there was a significant percentage of medical patients with a high to moderate risk who did not receive suitable prophylaxis (underuse), despite recommendations with scientific and professional backing.

Key words: Prevalence. Cross-sectional studies. Drug utilization review. Venous thromboembolism. Prophylaxis. Low-molecular-weight heparins.

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Adecuación de la utilización de heparinas de bajo peso molecular en la prevención de la enfermedad tromboembólica venosa

Objetivo: Conocer la prevalencia de prescripción de heparinas de bajo peso molecular (HBPM) en la profilaxis de la enfermedad tromboembólica venosa en un hospital general, así como la adecuación a las recomendaciones de las guías de práctica clínica.

Método: Estudio observacional, descriptivo, de corte transversal, tipo indicación-prescripción, con pacientes ingresados en servicios médicos y quirúrgicos.

Resultados: Se incluyeron 345 pacientes. La prevalencia de prescripción de HBPM fue del 44,6% (intervalo de confianza [IC] del 95%, 39,3-50,1). Según el nivel de riesgo tromboembólico se encontró adecuación en la decisión de tratar profilácticamente (o no) en 261 casos (75,7%; IC del 95%, 70,7-80,1), en el resto la pauta de actuación no fue la adecuada, destacando 55 pacientes (15,9%; IC del 95%, 12,2-20,2) con riesgo alto a los que no se había prescrito profilaxis (infrautilización), y 29 pacientes (8,4%; IC del 95%, 5,7-11,8) con riesgo bajo que estaban con profilaxis (sobreutilización).

En los pacientes médicos la prevalencia de prescripción fue de 22,6% (IC del 95%, 16,9-29,1) y sólo el 33,3% de los de riesgo tomboembólico alto-moderado recibió profilaxis. La prevalencia de prescripción en cirugía general fue del 84,2% y en traumatología del 91,3%.

Conclusiones: En pacientes quirúrgicos el nivel de profilaxis alcanzado es adecuado, pero hay un porcentaje importante de pacientes médicos con riesgo tromboembólico medio-alto, que sigue sin recibir la adecuada profilaxis (infrautilización), a pesar de las recomendaciones de consenso con amplio respaldo científico y profesional.

Palabras clave: Prevalencia. Corte transversal. Estudio de utilización de medicamentos. Enfermedad tromboembólica venosa. Profilaxis. Heparinas de bajo peso molecular.

INTRODUCTION

Venous thromboembolism (VTE) is an ongoing issue. The health significance of this disease lies in the morbidity and mortality of pulmonary thromboembolism (PTE) and post-thrombotic syndrome, principal complications of deep venous thrombosis (DVT). According to recent population studies, annual incidence of DVT is 50 per 100 000 persons and 70 per 100 000 for PTE. However, actual incidence of the problem could be greater because the majority of VTE is asymptomatic.[1] In the United States, there are 150 000-200 000 deaths annually from VTE, and despite treatment advances, 1 of 10 hospital deaths are due to PTE, 75% of these occurring in non-surgical patients.[2] In Spain, PTE is the third cause of death among cardiovascular diseases, behind ischemic cardiopathy and ictus.[3] Furthermore, it represents the first cause of preventable inpatient death.[3] The high incidence of VTE combined with its serious consequences makes the correct prophylaxis for medical and surgical patients a priority objective for the health system. In spite of strong evidence on the effectiveness of prophylactic treatments, there is broad variation in the application of these methods in clinical practice.[4,5] Various surveys find fluctuations from 28% to 100% in regular use of this prophylaxis.[4] Low-molecular-weight heparins (LMWH) are the main drug choice for treatment, and in fact, in recent years, various practice guidelines have been published on VTE prophylaxis which recommend LMWH drug prophylaxis as a main method of prevention.[2,4-9]

In view of these facts, finding if LMWH is used effectively and rationally in VTE prophylaxis is an issue of great interest. Because of this, this study was established, with a principal objective of finding the prevalence of LMWH prescription for VTE prophylaxis in a general hospital and the suitability of the recommendations of clinical practice guidelines.

METHOD

An observational, descriptive, and cross-sectional study (30/11/05), of the indication-prescription type, carried out in Hospital Juan Ramón Jiménez of Huelva (hospital with specializations, 553 beds and medical residency).

Inclusion criteria: patients admitted to the departments of internal medicine, pneumology, neurology, digestion, cardiology, oncology, haematology, nephrology (excluding haemodialysis), general surgery, gynaecology, vascular surgery, traumatology, urology, otolaryngology, ophthalmology, neurosurgery, and multipurpose intensive care unit (ICU). These departments cover 77% (425) of the hospital's beds.

Exclusion criteria: patients in thromboembolism treatment (received non-fractionated heparin [NFH] or LMWH at therapeutic dosages at the time of the cross-sectional) or anticoagulants (received acenocoumarol or warfarin) at the time of the study.

The main variable was the prevalence of LMWH prescription for thromboembolism prophylaxis, and other demographic and clinical characteristics were collected (Appendix 1).

To evaluate adequacy of LMWH treatment, 2 variables were taken into account: thromboembolic risk and dosage used.

Thromboembolic risk was measured as a categorical variable and classified as *"low," "moderate,"* or *"high"* according to risk factors present and taking into account specific epigraphs from the 7th Consensus Conference of the American College of Chest Physicians (ACCP)[5] for surgical patients, and the PRETEMED guidelines[6] for medical patients.

The LMWH dosage used was classified as *"no LMWH"* (patient with no dosage of LMWH), *"low dosage"* (20 mg of enoxaparin, the LMWH is enoxaparin, which is the only drug included in the drug treatment guidelines of Hospital Juan Ramón Jiménez), *"high dosage"* (40 mg of enoxaparin).

According to the aforementioned recommendations, patients with a "high" thromboembolic risk should receive a "high" dosage of LMWH; those with "moderate" thromboembolic risk receive a "low" LMWH dosage, and those with a "low" thromboembolic risk should not receive LMWH prophylaxis[2,4-9] (Appendix 2). These risk and dosage combinations could be defined as "suitable." A synthetic variable was established to evaluate the suitability of LMWH prescription for thromboembolic risk with 3 categories: underuse (patients with moderate or high thromboembolic risk who had any contraindication to LMWH use and were not prescribed this were classified in the underuse group), overuse, and suitable use (Table 1).

Likewise, for the purpose of evaluating the dosage correction used, another synthetic variable was established called suitability of dosage for thromboembolic risk, also with 3 distinct categories: suitable guideline, underdosage, and overdosage (Table 1).

Five forms for data collection were designed (general surgery, traumatology, and orthopaedic surgery, other surgeries, medical patients, and ICU patients) which were previously subject to a pilot study.

The calculation of the sample's size was carried out by the program Epiinfo version 6, taking the following parameters: prevalence of LMWH prescription for thromboembolism prophylaxis of at least 32% (according to published data from other previous descriptive studies[10-12]), precision for detecting