



ORIGINAL ARTICLE

Thromboprophylaxis in critically ill children in Spain and Portugal[☆]



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KEYWORDS

Anticoagulation;
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Abstract

Introduction: Although critically ill children may be at risk from developing deep venous thrombosis (DVT), data on its incidence and effectiveness of thromboprophylaxis are lacking.

Objective: To describe the use of thromboprophylaxis in critically ill children in Spain and Portugal, and to compare the results with international data.

Material and methods: Secondary analysis of the multinational study PROTRACT, carried out in 59 PICUs from 7 developed countries (4 from Portugal and 6 in Spain). Data were collected from patients less than 18 years old, who did not receive therapeutic thromboprophylaxis.

Results: A total of 308 patients in Spanish and Portuguese (Iberian) PICUs were compared with 2176 admitted to international PICUs. Risk factors such as femoral vein ($P = .01$), jugular vein central catheter ($P < .001$), cancer ($P = .03$), and sepsis ($P < .001$) were more frequent in Iberian PICUs. The percentage of patients with pharmacological thromboprophylaxis was similar in both groups (15.3% vs. 12.0%). Low molecular weight heparin was used more frequently in Iberian patients ($P < .001$). In treated children, prior history of thrombosis ($P = .02$), femoral vein catheter ($P < .001$), cancer ($P = .02$) and cranial trauma or craniectomy ($P = .006$), were more frequent in Iberian PICUs. Mechanical thromboprophylaxis was used in only 6.8% of candidates in Iberian PICUs, compared with 23.8% in the international PICUs ($P < .001$).

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¹ The researchers of the PROTRACT international multicentre study are listed in [Annex 1](#).

Conclusions: Despite the presence of risk factors for DVT in many patients, thromboprophylaxis is rarely prescribed, with low molecular weight heparin being the most used drug. Passive thromboprophylaxis use is anecdotal. There should be a consensus on guidelines of thromboprophylaxis in critically ill children.

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PALABRAS CLAVE

Anticoagulación;
Trombosis venosa profunda;
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Unidad de cuidados intensivos pediátricos;
Pediatría

Utilización de medidas de trombotprofilaxis en niños críticamente enfermos en España y Portugal

Resumen

Introducción: Los niños críticos pueden tener riesgo de trombosis venosa profunda (TVP), pero no conocemos ni su incidencia ni la eficacia de la trombotprofilaxis.

Objetivo: Describir la trombotprofilaxis en niños críticos en España y Portugal, en comparación con datos internacionales.

Material y métodos: Análisis secundario del estudio multinacional PROTRACT, realizado en 59 unidades de cuidados intensivos pediátricos (UCIP) de 7 países desarrollados (4 de Portugal y 10 de España). Se incluyeron los pacientes menores de 18 años que no recibieran anticoagulación terapéutica.

Resultados: Se analizaron 308 pacientes, que se compararon con 2.176 de UCIP internacionales. Los factores de riesgo: catéter en vena femoral ($p=0,01$), yugular ($p<0,001$), cáncer ($p=0,03$) y sepsis ($p<0,001$) fueron más frecuentes en las UCIP ibéricas. El porcentaje de pacientes con trombotprofilaxis farmacológica fue similar en ambos grupos (15,3% vs. 12,0%). La heparina de bajo peso molecular se utilizó con mayor frecuencia en las UCIP ibéricas ($p<0,001$). En los pacientes con profilaxis, la historia de trombosis ($p=0,02$), catéter venoso femoral ($p<0,001$), cáncer ($p=0,02$) y trauma craneal o craneotomía ($p=0,006$) fueron más frecuentes en las UCIP ibéricas. En solo el 6,8% de los candidatos de las UCIP ibéricas se utilizó trombotprofilaxis mecánica, en comparación con el 23,8% de los internacionales ($p<0,001$).

Conclusiones: A pesar de que los pacientes ingresados en UCIP ibéricas suelen presentar factores de riesgo de TVP, la trombotprofilaxis es poco utilizada, siendo la heparina de bajo peso molecular la medida más habitual. La trombotprofilaxis pasiva se utiliza raramente. Se deberían consensuar las pautas de trombotprofilaxis en los niños críticamente enfermos.

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Introduction

Deep vein thrombosis (DVT) and pulmonary embolism (PE) are severe but often unrecognised complications in critically ill hospitalised patients.^{1,2} In adult patients admitted to the ICU, the prevalence of DVT or PE with evident clinical manifestations exceeds 20 cases per 1000 patients, with an incidence higher than 14.5 cases per 1000 patients despite the use of pharmacological thromboprophylaxis (PTP),³ so its use is justified unless there is a recognised contraindication for anticoagulation.⁴

Using the scarce data available for children admitted to paediatric intensive care units (PICUs), the prevalence of DVT or PE with clinical manifestations is estimated at 9 cases per 1000 patients and their incidence at 7 cases per 1000 patients,⁵ and there are no specific recommendations for the use of PTP in these patients.⁶

A survey of paediatric intensivists in the United States showed that they were more likely to prescribe PTP to adolescents receiving mechanical ventilation, with a hypercoagulable state, a prior history of DVT or a cavopulmonary anastomosis.⁷

The PROTRACT prospective multicentre study concluded that the low frequency and great variability in the use of thromboprophylaxis in PICUs call for well-designed research that can set the foundation for establishing the indication of PTP in children.¹ In the secondary analysis of the PROTRACT data performed in our study,¹ we evaluated the frequency of thromboprophylaxis in critically ill children in Spain and Portugal in an attempt to determine the patient and PICU characteristics associated with its use.

Materials and methods

Study design

We performed a secondary analysis of the data of the PROTRACT¹ prospective observational multicentre multinational study, which was carried out over four study dates in 2012 (February 1st, May 1st, August 1st, and November 1st) in 59 PICUs of 7 developed countries (United States of America, Canada, Australia, New Zealand, Singapore, Portugal and Spain) and included 2484 patients. Our study analysed the data of the patients corresponding to the 4 Portuguese

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