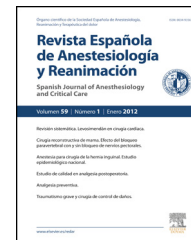




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## ORIGINAL ARTICLE

### National survey on thromboprophylaxis and anticoagulant or antiplatelet management in neurosurgical and neurocritical patients<sup>☆</sup>



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#### KEYWORDS

Neuroanaesthesia;  
Survey;  
Thromboprophylaxis;  
Antiplatelet  
treatment;  
Neurosurgery

#### Abstract

**Objectives:** To determine the protocols used by Spanish anaesthesiologists for thromboprophylaxis and anticoagulant or antiplatelet drugs management in neurosurgical or neurocritical care patients.

**Materials and methods:** An online survey with 22 questions, with one or multiple options, launched by the Neuroscience Subcommittee of the Spanish Anaesthesia Society and available between June and October 2012.

**Results:** Of the 73 hospitals included in the National Hospitals Catalogue, a valid response to the online questionnaire was received by 41 anaesthesiologists from 37 sites (response rate 50.7%). Only one response per site was used. A specific protocol was available in 27% of these centres. Mechanical thromboprophylaxis is used, intraoperatively or postoperatively, in 80%, and pharmacological treatment is used by 75% of respondents. Enoxaparin was the most frequent heparin used in craniotomy patients (78%). Craniotomies were performed maintaining acetylsalicylic acid treatment in patients with coronary stents and double anti-platelet treatment in half of the centres.

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**PALABRAS CLAVE**

Neuroanestesia;  
Encuesta descriptiva;  
Tromboprofilaxis;  
Antiagregantes;  
Neurocirugía

*Conclusions:* Mechanical thromboprophylaxis is used more frequently than the pharmacological approach in neurosurgical or neurocritical populations in Spanish hospitals. Management of patients under previous anticoagulant treatment was highly heterogeneous among hospitals included in this survey. Previous antiplatelet treatment is modified depending on primary or secondary prescription.

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## Encuesta nacional sobre la tromboprofilaxis y el manejo de los anticoagulantes y antiagregantes en pacientes neuroquirúrgicos y neurocríticos

**Resumen**

*Objetivos:* Conocer la práctica clínica de los anestesiólogos españoles en la tromboprofilaxis y el manejo de los anticoagulantes y antiagregantes en pacientes neuroquirúrgicos y neurocríticos.

*Material y métodos:* Encuesta diseñada desde la Sección de Neurociencia de la Sociedad Española de Anestesiología y Reanimación, con 22 preguntas, difundida y contestada en formato electrónico, disponible entre junio y octubre de 2012.

*Resultados:* De los 73 centros hospitalarios con servicio de Neurocirugía incluidos en el Catálogo Nacional de Hospitales, se recibió respuesta válida a la encuesta on line por parte de 41 anestesiólogos de 37 centros (tasa de respuesta del 50,7%). Se consideró una respuesta de cada centro. Solo el 27% de los centros respondedores disponían de un protocolo escrito específico para el manejo de estos pacientes. La tromboprofilaxis mecánica se utilizó hasta en un 80%, aunque de forma variable, y la farmacológica en un 75% de los centros. La enoxaparina fue la heparina de bajo peso molecular más utilizada en pacientes sometidos a craneotomía (78%). En la mitad de los centros respondedores se realizaron craneotomías manteniendo el tratamiento con ácido acetilsalicílico en los pacientes con antecedentes de cardiopatía isquémica, stent coronario y antiagregación dual.

*Conclusiones:* La tromboprofilaxis mecánica es más utilizada que la farmacológica en la población neuroquirúrgica de nuestro país. El manejo de los pacientes tratados previamente con anticoagulantes presenta una marcada variabilidad clínica entre los diferentes hospitales, mientras que el tratamiento con antiagregantes se modifica en función de si se trata de profilaxis primaria o secundaria.

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**Introduction**

Although the incidence of venous thromboembolism (VTE) in neurosurgical patients can be as high as 50%,<sup>1,2</sup> the safety of pharmacologic thromboprophylaxis in these patients compared with orthopaedic surgery patients, for example, is unclear. The controversy is due to the morbidity accompanying the onset of haemorrhage in neurocritical patients or any neurosurgical procedure, and the risk of permanent complications or even death. The risk of VTE becoming symptomatic in patients that have undergone intracranial surgery can be as high as 31%.<sup>3</sup> These patients are considered to be at high risk for developing VTE during the postoperative period. This is particularly true of patients undergoing craniotomy for tumour resection.<sup>4,5</sup> Patients undergoing spinal surgery are also at risk from procedure-related factors, such as the "tuck" position in which the hips and knees are flexed, or from spinal cord retraction.

The VTE prevention method of choice in neurosurgery has traditionally been mechanical thromboprophylaxis, such as graduated compression stockings (GCS) and/or intermittent pneumatic compression (IPC) systems. The risk of bleeding associated with low-molecular-weight heparins (LMWH) has limited their use in neurosurgery. Nevertheless, pharmacologic thromboprophylaxis has been used in many patients in recent years, although opinions differ greatly with regard to clinical practice.<sup>5</sup> No clinical evidence is currently available on the best management strategy for neurosurgical patients on chronic anticoagulant or antiplatelet therapy at high risk for thrombosis (with mechanical heart valves, comorbid atrial fibrillation, history of VTE, thrombophilia or coronary stent). Vitamin K antagonist oral anticoagulants should be replaced with LMWH as bridging therapy. In patients previously treated with antiplatelet agents or new oral anticoagulants, however, this is not the established approach. In 2011, the Spanish Society of Anaesthesiology and Intensive Care Medicine (SEDAR) published clinical

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