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ORIGINAL ARTICLE

Incidence and risk factors of venous thromboembolism in major spinal surgery with no chemical or mechanical prophylaxis☆

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Abstract
Objectives: To evaluate the incidence of venous thromboembolism in spine surgery with no chemical and mechanical prophylaxis, and to determine the specific risk factors for this complication.
Materials and methods: A historical cohort was analysed. All patients subjected to major spinal surgery, between January 2010 and September 2014, were included. No chemical or mechanical prophylaxis was administered in any patient. Active mobilisation of lower limbs was indicated immediately after surgery, and early ambulation started in the first 24–48 h after surgery. Clinically symptomatic cases were confirmed by Doppler ultrasound of the lower limbs or chest CT angiography.
Results: A sample of 1092 cases was studied. Thromboembolic events were observed in 6 cases (.54%); 3 cases (.27%) with deep venous thrombosis and 3 cases (.27%) with pulmonary thromboembolism. A lethal case was identified (.09%). There were no cases of major bleeding or epidural haematoma. The following risk factors were identified: a multilevel fusion at more than 4 levels, surgeries longer than 130 min, patients older than 70 years of age, hypertension, and degenerative scoliosis.

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Discussion: There is little scientific evidence on the prevention of thromboembolic events in spinal surgery. In addition to the disparity of prophylactic methods indicated by different specialists, it is important to weigh the risk-benefit of intra- and post-operative bleeding, and even the appearance of an epidural haematoma. Prophylaxis should be assessed in elderly patients over 70 years old, who are subjected to surgeries longer than 130 min, when 4 or more levels are involved.

PALABRAS CLAVE
Cirugía espinal;
Tromboembolismo venoso;
Trombosis venosa profunda;
Tromboembolismo pulmonar;
Profilaxis

Incidencia y factores de riesgo de enfermedad tromboembólica venosa en cirugía mayor espinal, sin profilaxis química o mecánica

Resumen
Objetivos: Evaluar la incidencia de enfermedad tromboembólica venosa sin profilaxis química o mecánica y valorar factores de riesgo específicos.
Material y métodos: Realizamos un estudio de cohorte histórica en pacientes sometidos a cirugía espinal mayor, entre enero de 2010 y septiembre de 2014, con un total de 1.092 casos. En ningún paciente se administró tromboprofilaxis perioperatoria química o mecánica, indicando la movilización activa de los miembros inferiores y la deambulación precoz en torno a las primeras 24–48 h. Los casos clínicamente sintomáticos se confirmaron con eco-doppler de miembros inferiores o angio-TC de tórax.
Resultados: Se identificaron 3 casos (0,27%) con TVP y 3 casos (0,27%) con TEP, con un caso letal (0,09%). En total, los eventos relacionados a ETV ascendieron a 0,54% ($n = 5$). No hubo casos de complicaciones de sangrado mayor o hematoma epidural. Se identificaron los siguientes factores de riesgo: cirugías de 4 o más niveles, intervenciones más largas de 130 min, más de 70 años de edad, el padecimiento de HTA y el diagnóstico de escoliosis degenerativa.
Discusión: En cirugía espinal, actualmente existe poca evidencia científica que determine la influencia de los distintos factores de riesgo tromboembólicos y la prevención de los mismos, sumado a la disparidad de los métodos profilácticos indicados por los distintos especialistas, teniendo que sopesar el riesgo de sangrado perioperatorio, incluso la aparición de hematoma epidural. La indicación de profilaxis farmacológica debe valorarse en pacientes mayores de 70 años con HTA, cirugía prolongada más de 130 min o de 4 o más niveles.

Introduction

Venous thromboembolism (VTE) is a known complication in major orthopaedic surgical procedures, and in particular in total arthroplasty of the hip and knee, and in hip fracture surgery. There is an estimated incidence of distal deep vein thrombosis (DVT) of between 40% and 60% and proximal DVT of between 10% and 30% in patients who undergo surgery without any thromboprophylaxis.[1] The incidence of symptomatic VTE is 4.3% (2.8% for symptomatic DVT, 1.5% for symptomatic pulmonary thromboembolism [PTE]).[2] This has affected surgical practice and thromboembolic prophylaxis is now already considered an obligatory indication in this type of surgery.

It has long been reported that spinal surgery patients are at recognised risk of developing VTE due to prolonged prone position, prolonged surgeries, lying down and limitation of movement.[3–5] In orthopaedic surgery the majority of resources have gone into VTE research in knee and hip arthroplasty but the volume of publications relating to spinal surgery complications is substantially limited. Furthermore, the majority of studies reporting on epidemiological values of these events is highly varied with VTE figures being quoted as between 0.3% and 31%, due to the variability of simple sizes and diagnostic methods of detection (clinical evaluation, Doppler screening, phlebograms).[3–8] Another aspect which may affect incidence is the variety of spinal injury procedures, the different forms of surgical approach, and the different specific risk factors affecting each individual patient.

The publication of medical guidelines for VTE prophylaxis in different areas of surgery has encouraged specialists in spinal injury to review the matter, with the aim of establishing relevant risk incidence and factors to determine how thromboembolic prophylaxis is to be applied in these patients. It is generally acknowledged that risk for patients undergoing elective spine surgery is low, somewhat higher in oncology surgery and high in trauma surgery with spinal cord injury.[9,10] Notwithstanding, there is a lack of homogeneity in the application and election of the type of thromboprophylaxis, which is exacerbated by the individual preferences of the different spinal injury specialists.[11,12]