


Venous Thromboembolism in Patients Diagnosed With Lung Cancer

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E. Salla, MD¹, Evangelos P. Dimakakos, MD, PhD¹,
S. Tsagkouli, MD, PhD¹, I. Giozos, MD, PhD¹,
A. Charpidou, MD, PhD¹, E. Kainis, MD, PhD¹,
and K. N. Syrigos, PhD^{1,2}

Abstract

Purpose: Considering the high prevalence of lung cancer, our purpose was to summarize the existing literature to identify the several factors that contribute to the increased risk of venous thromboembolism (VTE) in patients with lung cancer and to analyze the current recommendations for thromboprophylaxis and treatment of VTE in those patients. **Methods:** We searched the Medline and EMBASE databases from February 1985 to February 2014 to identify retrospective and prospective randomized controlled studies that investigate one or more risk factors for VTEs in patients with lung cancer. **Results:** A VTE is a major complication for patients diagnosed with lung cancer. The risk factors for VTE events in patients with lung cancer consist of cancer-related (histological type and stage of cancer), treatment-related (surgery, chemotherapy, angiogenic agents, and supportive care agents), and patient-related factors (comorbidities, immobility, performance status, and prior thrombosis). Low-molecular-weight heparins are recommended for long-term treatment of cancer-associated thrombosis. Duration of anticoagulant therapy beyond 6 months should be based on individual clinical evaluation. Thromboprophylaxis for patients with lung cancer during hospitalization and immediate postoperative period is well established. **Conclusions:** Efforts to assess thrombotic risk in patients with lung cancer may improve therapeutic and preventive strategies in the future, with final goal to minimize the burden and consequences of thrombotic events in patients with lung cancer.

Keywords

venous thromboembolism, lung, cancer, low-molecular-weight heparin, anticoagulant

Introduction

Venous thromboembolism (VTE), which includes deep vein thrombosis (DVT) and pulmonary embolism (PE), has an incidence in the general population of 1 to 2 in 1000 per year.^{1,2} Cancer is an important and well-recognized risk factor for VTE,³⁻⁶ since the first description of this association by Trousseau in 1865.⁷ Indeed, in patients with cancer, each of the 3 components of Virchow triad that predisposes for thrombus formation (vascular endothelial damage, stasis of blood flow, and hypercoagulability) is present.⁸ Tumor cells create a thrombogenic environment by several mechanisms including production of procoagulant,⁹ impairment of the fibrinolytic system,¹⁰ and the release of proinflammatory and proangiogenic cytokines.¹¹ Especially, tissue factor (TF), the primary initiator of coagulation, is overexpressed in malignancy.^{12,13}

Among solid tumors, lung cancer has been reported to be associated with a high incidence of VTE,^{14,15} although the statistics vary in the literature. Considering the high prevalence of lung cancer¹⁶ and the fact that it is now the most common cause of death among patients with cancer,¹⁷ it is important to study VTE as a major complication of lung cancer, affecting morbidity, mortality,^{18,19} quality of life,²⁰ and cost.^{21,22}

This review aims to identify and analyze the factors that contribute to the increased risk of VTE in patients with lung cancer. Furthermore, we discuss the specific recommendations for VTE prophylaxis and treatment in these patients.

Methods

A comprehensive search of the Medline and EMBASE databases from February 1985 to February 2015 was carried out to identify studies that assessed risk factors for VTEs in patients with lung cancer. Reference lists of the appropriate review articles were searched to identify studies missed by the search of databases. We included reports from retrospective and prospective randomized controlled trials (RCTs) involving adult patients diagnosed with lung cancer or several

¹ Oncology Unit GPP, Sotiria General Hospital Athens School of Medicine, Athens, Greece

² Yale School of Medicine, New Haven, CT, USA

Corresponding Author:

Evangelos P. Dimakakos, Aisopou 10, Marousi 15122, Greece.
Email: edimakakos@yahoo.gr