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Risk Factors for Venous Thromboembolism in Patients With Small Cell Lung Cancer

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Abstract. *Background/Aim: Small cell lung cancer (SCLC) accounts for 13% of all lung cancers. Venous thromboembolism (VTE) is a frequent complication. The purpose of this study was to investigate the incidence and risk factors for VTE in SCLC patients. Patients and methods: Retrospective analysis of patients with histologically confirmed SCLC treated between January 2015 and June 2018 at Sotiria General Hospital, Athens, Greece. Results: Two hundred and seventeen patients were included in the analysis. The incidence of VTE was 4.1%. Increased body mass index (BMI) was correlated with the development of VTE. Moreover, VTE appeared more frequently in patients with major vessel infiltration and with poor Eastern Cooperative Oncology Group Performance Status. Other factors, including gender, age, stage, presence of metastasis, treatment, immobilization, anticoagulation, comorbidities, and laboratory values did not correlate with the development of VTE. Conclusion: Factors associated with the development of VTE were BMI, major vessel infiltration and PS. Identifying factors that predispose to VTE could help physicians detect high-risk patients who would benefit from prophylactic anticoagulation therapy.*

Lung cancer is the second most frequent type of malignancy in both males and females in the United States and is projected to cause 131,880 deaths in the United States in 2021 (1). Small cell lung cancer (SCLC) accounts for approximately 13% of all new lung cancer cases (2, 3).

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The annual incidence of venous thromboembolism (VTE) ranges from 1 to 2 per 1,000 individuals per year in the general population (4, 5). Malignancy constitutes a significant risk factor for VTE, with cancer patients facing 4 to 10 times higher risk of developing VTE compared with the general population; risk of developing VTE is 20 times higher in patients with lung cancer in particular (6-11). The incidence of VTE in SCLC patients ranges between 6.8% and 11.5% (12, 13). Risk factors for VTE can be classified as disease-, treatment- and patient-related. Extensive disease and infiltration of the superior vena cava have been shown to increase the risk of thromboembolism (14, 15). As far as treatment-related factors are concerned, chemotherapy and treatment with cisplatin in particular also appear to correlate with VTE (16, 17). Finally, smoking and coexisting disorders predispose patients for VTE.

VTE incidence has been associated with decreased survival, with a hazard ratio of 1.5 (7). Simultaneous detection of cancer and VTE further augments the risk of death in lung cancer patients (18). However, prophylactic anticoagulation therapy has been shown to improve one-year survival rates of SCLC patients with limited disease (19). Furthermore, anticoagulation treatment administered to SCLC patients in addition to chemotherapy or chemotherapy and radiotherapy, leads to improved median survival, along with better response to anticancer therapy (20, 21).

The purpose of this study was to determine the incidence and identify the risk factors associated with VTE in SCLC patients. This will enable the detection of patients at increased risk for VTE, who may benefit from early thromboprophylaxis.

Patients and Methods

Medical records of sequential, non-selected patients with lung cancer who were treated at the Oncology Unit, Sotiria General Hospital, Athens, Greece between January 2015 and June 2018 were reviewed. Patients with histologically confirmed SCLC were