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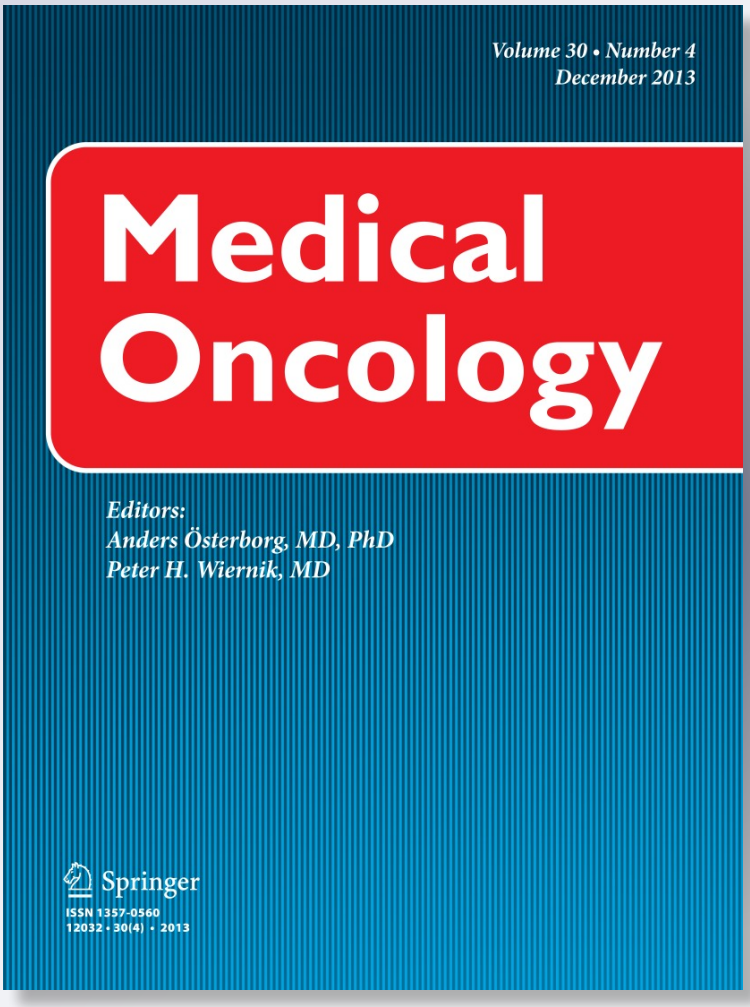

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ORIGINAL PAPER

The prognostic significance of the circulating neuroendocrine markers chromogranin A, pro-gastrin-releasing peptide, and neuron-specific enolase in patients with small-cell lung cancer

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Abstract Lung cancer is the most common cancer, and small-cell lung cancer (SCLC) accounts for around 20 % of lung cancers. SCLC has a neuroendocrine cellular origin, and the tumor cells usually express neuroendocrine markers. There have been major recent advances in the management of SCLC, and multimodal approaches are now the norm. An improved knowledge of the prognostic variables would assist in defining which patients were better candidates to receive these newer intensive therapies. This single-center retrospective study of 97 previously untreated and histologically proven SCLC patients analysed the circulating neuroendocrine markers chromogranin A (CGA), pro-gastrin-releasing peptide (ProGRP), and neuron-specific enolase (NSE) in addition to the other more classical variables. Fifty patients had limited-stage disease and 47 had extensive disease. Sixty patients had an ECOG performance status (PS) of 0–1 and 37 had PS 2–4. Median survival for the whole study population was 13 months. Univariate analysis and univariate Cox regression modeling found a statistically significant association between survival and PS, disease stage, and CGA, ProGRP, and NSE levels. Age and sex were not prognostic. A shorter survival time was found in patients with a PS equal to or >2, extensive stage disease, a serum CGA level >56 ng/ml, a serum ProGRP level >58 pg/ml, and a serum NSE level >19 ng/ml. This study has found that there is a potential role for ProGRP, NSE, and CGA in both staging and prognosing survival in SCLC patients.

Keywords Lung cancer · SCLC · ELISA · Prognosis · Therapy · Neuroendocrine markers

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Introduction

Lung cancer is the most common worldwide malignancy. It is classified into small cell lung cancer (SCLC) (20 %) and non-small cell lung cancer (NSCLC) (80 %). SCLC is characterized by its rapid doubling time and propensity for early metastases. In essence, there are two clinical stages, limited disease (LD), where the tumor is confined to one hemithorax, and extensive disease (ED), when metastases occur in the contralateral chest and at distant sites. Metastases initially occur in the lymph nodes and thereafter in other organs such as other areas of the lung, the liver, adrenal glands, brain, bone, and bone marrow [1, 2]. Twenty to 25 % of patients have LD, and though treatment is potentially curative, 5-year survival rates are poor (15–25 %, compared with <5 % in ED patients); and median survival (MS) times are 14–20 months and 7–10 months in LD and ED patients, respectively [3].

There have been major advances in the management of SCLC over the past two decades, and multimodal approaches are now the norm [4]. One can achieve an 80–90 % overall response rate with a 30–40 % complete response rate by using several cytotoxic agents. The treatment of choice for ED SCLC is currently cisplatin or carboplatin and etoposide. Some protocols also include newer drugs such as topoisomerase I inhibitors and taxans [1, 5, 6].

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