

Long-term survival of a small cell lung cancer patient with proper endobronchial management

Abstract

Small cell lung cancer (SCLC) is considered as a disease with poor prognosis and early metastasis with a very short survival. Endobronchial involvement is fairly common finding in SCLC and can cause respiratory symptoms. In this report we present a 47-year-old man diagnosed with small cell lung cancer. In the disease course, primary involvement of right bronchus spread to left bronchus and carina. Scheduled sessions of bronchoscopic interventions with electrocautery and argon plasma coagulation were used to maintain his large airways open. The intrabronchial interventions were accompanied by six courses of cisplatin-based chemotherapy as a standard treatment. Although patient's definite diagnosis was extensive SCLC, he remained in a good condition for 5 years. In last year of his follow up, headache and dizziness were added to his occasional respiratory symptoms. Brain MRI identified metastatic lesion in his brain. Hence, brain radiotherapy was suggested, but he refused further aggressive treatment. Seven months later, he died of brain metastatic lesion. Considering long survival of this patient with adequate and proper scheduled endobronchial interventions along with standard courses of chemotherapy, we conclude that this combined treatment strategy in patients with endobronchial involvement might increase survival.

Keywords: small cell lung cancer, endobronchial involvement, interventional bronchoscopy, survival

Rezumat

Supraviețuire pe termen lung a unui pacient cu carcinom microcelular prin management endobronșic adecvat

Cancerul pulmonar microcelular (SCLC) este considerat o afecțiune cu prognostic nefavorabil și metastaze precoce, cu supraviețuire foarte scurtă. Implicarea endobronșică este o manifestare comună în SCLC și poate duce la apariția simptomelor respiratorii. Prezentăm cazul unui bărbat de 47 ani diagnosticat cu cancer pulmonar microcelular. În cursul evoluției bolii, afectarea primară a bronhiei primitive drepte s-a extins la bronhia primitivă stângă și carină. Au fost efectuate ședințe programate de bronhologie intervențională cu electrocauterizare și coagulare argon plasma pentru a menține deschise căile aeriene mari. Intervențiile endoscopice au fost acompaniate de 6 cure de chimioterapie pe bază de cisplatin ca și regim terapeutic standard. Deși diagnosticul definitiv al pacientului a fost SCLC extensiv, acesta a rămas într-o condiție bună timp de 5 ani. În ultimul an de urmărire, cefaleea și vertijul s-au adăugat simptomelor respiratorii ocazionale. RMN-ul cerebral a identificat leziuni metastatice cerebrale. Prin urmare, i s-a propus radioterapie cerebrală, dar pacientul a refuzat alte tratamente agresive. A decedat șapte luni mai târziu, din cauza metastazelor cerebrale. Având în vedere supraviețuirea îndelungată a acestui pacient cu intervenții endobronșice adecvate și corespunzătoare, programate, împreună cu ședințe de chimioterapie standard, concluzionăm că această strategie de tratament combinat la pacienții cu afectare endobronșică ar putea crește supraviețuirea.

Cuvinte-cheie: cancer pulmonar microcelular, atingere endobronșică, bronhologie intervențională, supraviețuire

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Introduction

Lung cancer is the primary cause of cancer-related deaths worldwide. It comprises more than a million new patient annually¹. Approximately less than 20% of lung cancers are diagnosed as small cell lung cancer (SCLC). SCLC is a distinct subtype associated with a typical clinical picture of early metastasis, initial response to chemotherapy but subsequent relapse.

This type of lung cancer has worse clinical outcome in comparison with other types of lung cancer. Median range of survival for limited disease and extensive disease are less than 2 and 1 years, respectively¹. Over 50% of patients with lung cancer have central airway involvement. Complete obstruction of the airway is not seen in all patients. Patients with partial obstruction usually have less severe symptoms and this group of patients comprises most of the cases with endobronchial involvement in a setting of SCLC². In this study, we present a 47-year-old man diagnosed with extensive small cell lung cancer. Although he had an advanced SCLC, with a proper management of the disease and intrabronchial involvements he survived more than 6 years after the initial diagnosis.

Case-report

A previously healthy 47-year-old male with complaints of productive cough, hemoptysis and dyspnea was admitted to the Masih Daneshvari Medical Center (National Research Institute of Tuberculosis and Lung Diseases, Tehran, Iran) in June 2004. His symptoms had been started one month before admission



Figure 1. Chest X-ray of the patient on admission

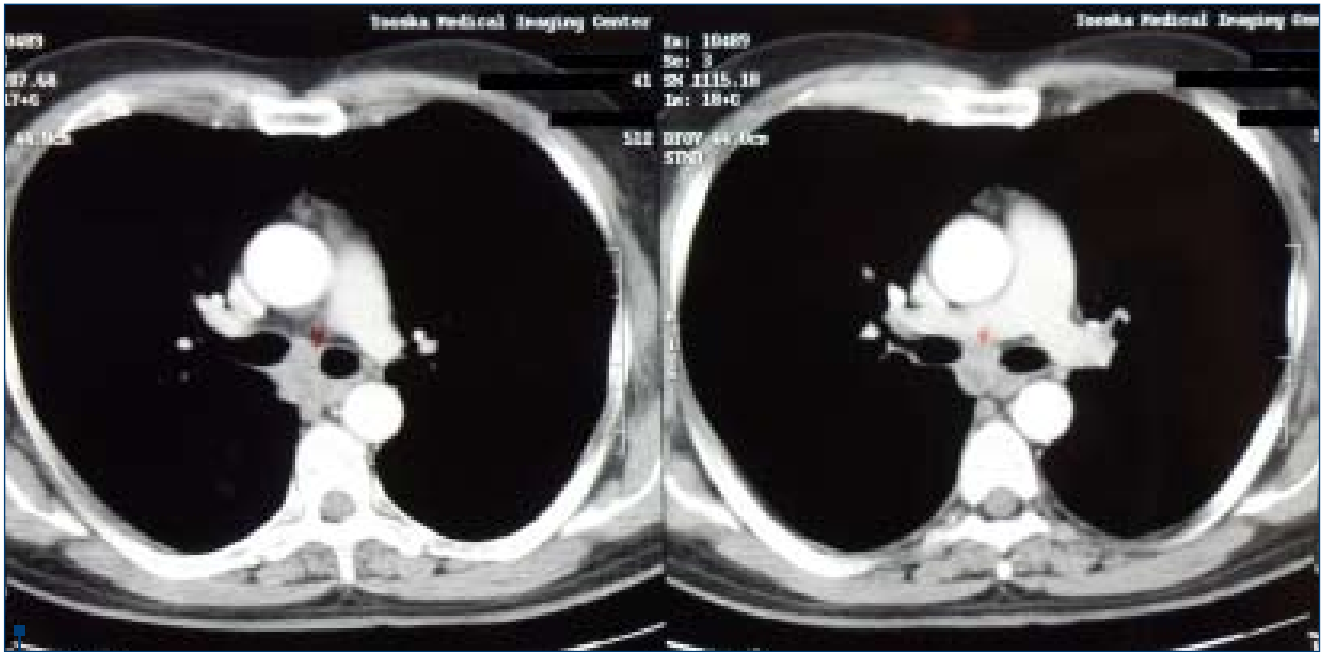


Figure 2. Close view of the involved airways in CT

and they had been permanent and progressive. The patient reported no chest pain, no sweating and orthopnea. He had no history of smoking and no family history of malignancy and pulmonary diseases. He took no medications.

On the day of first admission to our center, he was afebrile, with a normal blood pressure, a pulse rate of 83 beat per minute, and respiratory rate of 19 per minute. Other examinations showed no abnormality.

Paraclinical evaluations revealed a normal ECG. Chest X-ray (CXR) showed no consolidation or atypical finding (figure 1). A spiral computed tomography (CT) scan of the lung and mediastinum with contrast was done and recognized

a mediastinal lobulated soft tissue mass in the region of carina; subcarina; right paraesophageal and azigoesophageal recess with involvement of distal end of trachea and carina (figures 2 and 3). Fiberoptic bronchoscopy showed presence of a tumoral mass with a diameter of 1.5/2 cm in inlet of right main bronchus. Carina was also involved with tumoral infiltration. A proper specimen was taken from endobronchial mass by conventional forceps bronchoscopy. In the pathologic assessment, neoplastic cells were positive for Cytokeratin and focally for Chromogranin and Synaptophysin. Cytologic findings determined poorly differentiated neuroendocrine carcinoma, small cell type as diagnosis.

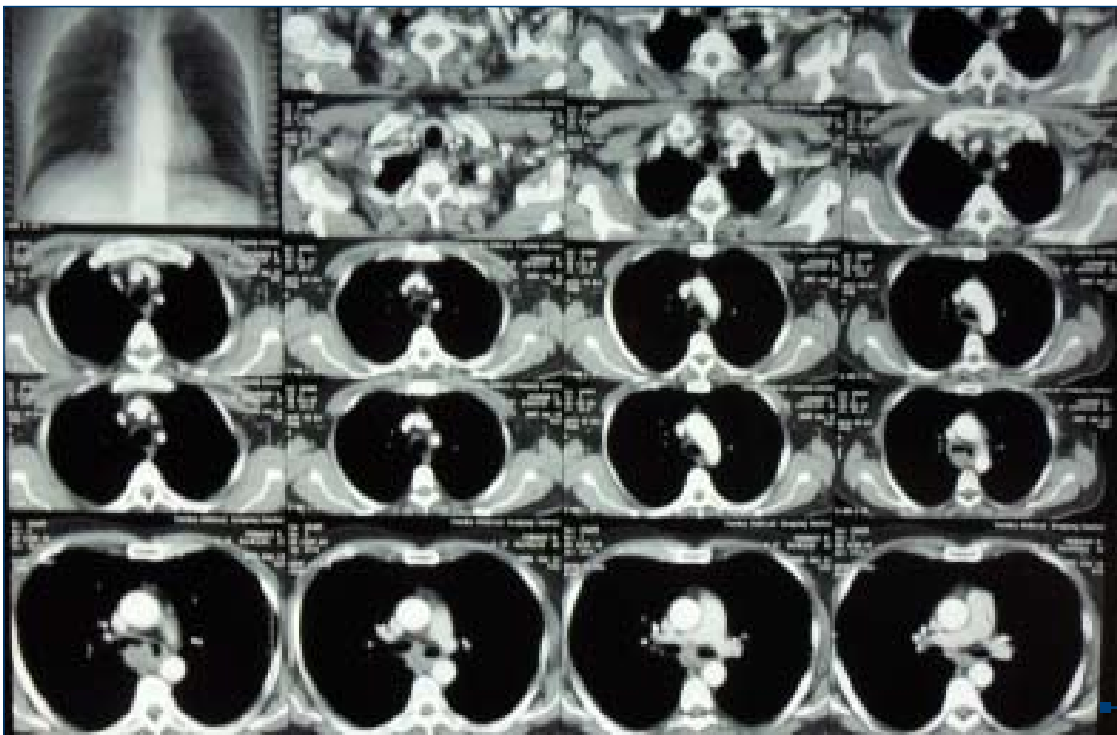


Figure 3. Chest CT after initial sessions of interventions



Figure 4. Brain CT with contrast shows no evident lesion. Due to patient's complaints, an MRI was ordered

A whole-body bone scan for cancer staging was done and patient was diagnosed with metastatic and advanced stage small cell lung cancer.

Because patient suffered from dyspnea, we used bronchoscope interventions to maintain adequate ventilation through the narrowed airways. Multiple sessions of electrocauterization, balloon dilation and argon plasma coagulation (APC) were used to open his airways. Endobronchial electrocauterization was performed under local anesthesia using a fiberoptic bronchoscope. The fiberoptic endoscope was introduced by oral route. High frequency generator was adjusted to automatic control of soft coagulation and direct electro-destruction of the tissues was done. After adequate topical anesthesia and conscious sedation, a fiberoptic bronchoscope with a 2.8 mm channel was passed orally. Through inspection of the airways, the stenosis was identified and a 0.89 mm diameter guide wire was passed through the working channel of the bronchoscope and advanced beyond the stenosis. The bronchoscope was then reinserted and the balloon was inflated with water to exert pressure for approximately one minute. APC as an electro-surgical technique was also used to resect an obstructing lesion and/or to achieve hemostasis during all interventions. When obstruction of proximal bronchus required extensive interventions, rigid bronchoscopy under general anesthesia was used since the rigid bronchoscope's large lumen facilitates suctioning and removal of large debris.

In addition to monthly follow up of the patient for scheduled intrabronchial management of the airways, patient was asked to come to hospital when his symptoms were worsened. Moreover, standard chemotherapy regimen was used. Six courses of cisplatin-based chemotherapy (cisplatin 80 mg/m² IV in day 1; etoposide 100 mg/m² IV daily days 1, 2, and 3) were applied.

This combined treatment approach (chemotherapy with scheduled airway management) was continued for 4 years and the patient almost remained in a generally good condition (Karnofsky Performance Status 80%). Considering the uncommon course of disease, another diagnostic bronchoscopy in order to obtain another tissue biopsy was done two years after his initial diagnosis. The histopathologic examination

of the specimen confirmed the diagnosis of SCLC once again. In the last year of his follow up, assessment of the airway showed near complete occlusion of left main bronchus and partially obstruction of right main bronchus. Carina had been deformed due to tumoral invasion and trachea had been involved by necrotic tumor at the distal portion. During the chemotherapy period, patient suffered from complications of the drugs, such as grade 1 fatigue and grade 1 anorexia. He also had transient episodes of macrocytic anemia and occasional mild platelet reductions. Despite monthly bronchoscopic interventions, respiratory symptoms (dyspnea) recurred every 3-4 months and hence additional bronchoscopic intervention sessions were scheduled.

Patient was followed for 5 years, but after that, patient presented with headache, dizziness and inability to concentrate. Therefore, brain CT and brain MRI were performed. Brain CT had no apparent abnormality (figure 4), but brain MRI revealed a focal metastatic lesion in the subcortical part of the left parietal lobe. Despite patient's need for brain radiotherapy, he refused further aggressive treatment and radiotherapy. Seven months later, he died of brain metastasis with an episode of sudden loss of consciousness at home.

Discussion

This report presented a 47-year-old male with endobronchial small cell lung cancer who survived 6 years by appropriate management of the disease. SCLC is often regarded as an inoperable cancer due to its tendency for early metastasis¹. This type of cancer is a markedly disease but, most of the patients cannot survive for a long time³. Maximal ability of multidrug chemotherapy to prolong the survival of patients with extensive small cell lung carcinoma is near 1 year and longer survivals happen rarely^{3,4}. Chemotherapy is used for almost all patients, either as subsidiary treatment for the few patients with operable lesions, or as primary therapy for patients with inoperable tumors⁵. In lung cancer, endobronchial involvement is fairly prevalent. In a setting of endobronchial involvement, in addition to chemotherapy, management of obstructed airway is also necessary. Involvement of central airway can be in the form of bulky endobronchial disease, endobronchial extension, or extrinsic compression. This can

cause mild to severe respiratory symptoms in some patients and hence endobronchial management of the lesions might reduce the intensity of symptoms⁶. So far, many studies show improvement in clinical symptoms and quality of life with the appropriate endobronchial management⁷⁻¹². Therefore, endobronchial techniques are one of most important stems of management of lung cancer patients^{13,14}. Although symptoms improvement in patients with endobronchial lesions is a well-documented finding, there is paucity of data with regard to impact of proper intrabronchial interventions on the survival in such population of patients. There are few studies that support an effective role for electrocauterization in management of the endobronchial disease⁶. Balloon dilatation is another adjunctive therapy and is showed to be beneficial for complete management of endobronchial lung cancer¹⁵, though this method should be cautiously used in patients with SCLC because bronchial tearing may occur easily. In this

study, we used multiple sessions of scheduled bronchoscopic interventions such as electrocauterization, balloon dilation and APC with a primary intention to increase patient's quality of life. Interestingly, these interventions not only improved functional status of the patient, but also provided a longer survival. In addition to the intrabronchial interventions, chemotherapy served as the mainstay treatment option to enhance his survival.

Long-term survival of this patient and his death due to extra-pulmonary metastasis shows positive effects of intrabronchial management of SCLC. We suggest that evaluation of intrabronchial involvement of a patient with SCLC and use of proper intraluminal interventions can promote quality of life and prolong survival. Our results open a venue for further research by conducting randomized control trials to understand possible impacts of this therapeutic approach on the survival. ■

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