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Case Report
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A Long Time Surviving Patients with Diagnosis of Advanced Small Cell Lung Cancer

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Abstract

Background: Small cell lung cancer (SCLC) is a poor prognosis tumor characterized by neuroendocrine histology, arising from the lung. It often is diagnoses as advanced disease and its prognosis is grim. Standard therapy options are represented by chemoradiation in case of intrathoracic disease or chemotherapy alone if the disease is diagnosed as metastatic. Platinum derived compounds associated with etoposide represent the standard of therapy in patients with SCLC, but albeit a good overall response rate (the sum of partial and complete clinical responses) which reaches the 80%, almost all patients relapse within 1 year.

5-Year overall survival is anecdotal and no targeted therapies demonstrated to be valid in clinical trials.

Case Report: We described the case of a 58-year old male patients suffering for an advanced SCLC treated with six cycles of cisplatin-etoposide chemotherapy, followed by thorax and brain radiation therapy, who obtained a complete response lasting for 3 years.

Conclusions: SCLC remains a poor prognosis disease and standard treatment options have not significantly changed in the last decades. Targeted therapy has not a role at present, but in the next future, immunotherapy can ameliorate the prognosis of these patients.

Keywords: SCLC; Chemotherapy; Long survival; Radiotherapy

Background

Small cell lung cancer (SCLC), which accounts for 10% to 15% of lung cancer cases, is an aggressive disease characterized by rapid growth and early widespread metastasis. Although up to 80% of patients respond to first-line chemotherapy, nearly 100% of them relapse and there are only a few approved agents beyond the second line. SCLC development is strongly related to cigarette smoking and it is a poorly differentiated, high-grade carcinoma originating from neuroendocrine cell precursor within the bronchi [1,2].

Staging system of SCLC comprises only two stages, namely limited disease (LD) and extensive disease (ED).

At the time of diagnosis, approximately 70% of patients have extensive-stage disease (ED), defined as the presence of overt metastatic disease by imaging or physical examination; the remaining patients have limited-stage disease (LD), defined as tumors confined to the hemithorax that can be encompassed in a tolerable radiation port.

Patients with LD SCLC are commonly treated with chemoradiation (sequential or concomitant), associated with prophilactic whole brain irradiation; on the other hand, patients affected by ED SCLC are approached with upfront chemotherapy. Standard systemic therapy has not significantly changed in the last three decades and the first-line chemotherapy scheme is the association of cisplatin or carboplatin with etoposide [3,4].

Although up to 80% of patients respond to upfront chemotherapy, nearly 90% of them relapse (80% with LD and 100% with ED) within the first year of treatment. Subsequent line of chemotherapy options are limited, being only topotecan approved for use in clinic [5].

Patients affected by SCLC have a poor prognosis and the percent of survival at 5-year is very low. We will show, in this report, the clinical history of a patient in which ED-SCLC has been diagnosed and after standard therapy options, he is still alive and disease free at a follow-up of 36 months.

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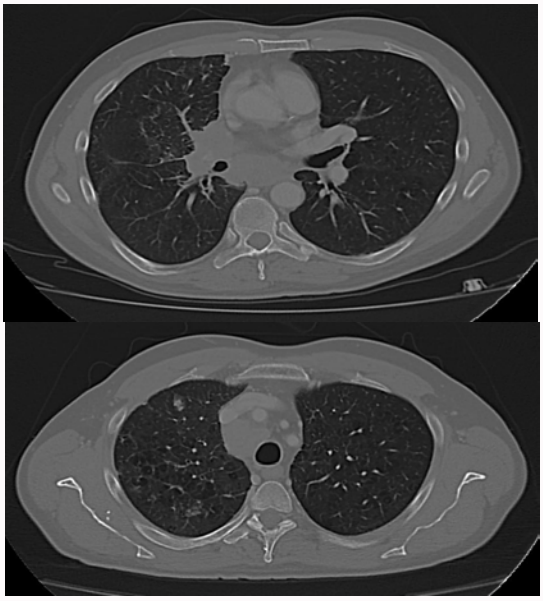

Figure 1: Initial disease extension (wide hilar right lesion with associated lung parenchimal spreads September 2014).

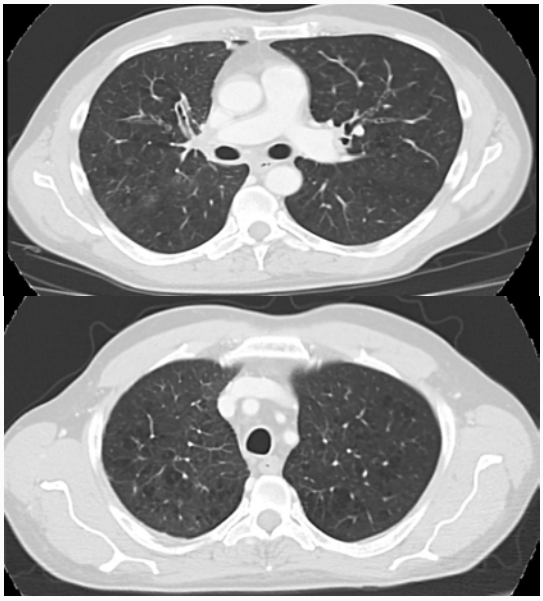

Figure 2: CT scan after 3 cycles of chemotherapy.

Case Report

On the 25th September of 2014, a 58 years old male patient heavy smoker came to our attention, suffering for chest-wall pain and cough since a month. He performed a thorax computed tomography (CT scan) under medical recommendation. CT scan showed (Figure 1) the presence of a wide lesion arising from pulmonary hilum of the right lung, extended until thracheal carina, infiltrating the superior vena cava and the right pulmonary artery. Secondary lymph nodes were present in the right mediastinum, particularly in pre-carinal area, showing a maximun diameter of 3 cm, 5 cm. Several lung metastases having a maximum extension of 1 cm were present in both the lung parenchyma. A trans-thracheal biopsy of mediastinal lymph nodes was performed and the histopatologic examination was for "small cells lung cancer". The tumor showed a high proliferating nuclear index (Ki-67: 95%) and strong positivity for enolase neurone specific (NSE) and synaptofisin.

The patients performed a CT scan of the abdomen which showed no further metastases, a brain MRI which resulted negative for brain lesions and a total bone scan which showed no bone spreading.

On the 21th October of 2014, he was evaluated by a multidisciplinary team, comprising the oncologist, the radiation oncologist, the pathologist and the radiologist. The shared therapeutic decision was to perform the first line of chemotherapy, being the patients considered to have an ED.

From the 27th October of 2014 the patients started chemotherapy consisting in the association of cisplatin at a dose of 90 mg for square meter of body surface (on day 1 of the cycle) and etoposide at a dose of 100 mg for square meter of body surface (on days 1 to 3 of the cycle), to be repeated every 21 days.

The patient suffered for a grade 3 neutropenia after the first cycle, treated with antibiotics and prophylactic GM-CSF during the following cycles of chemotherapy. He experienced also grade 2 mucositis, faced with oral irrigations and antifungal drugs.

On 18th December of 2014 he performed a restaging CT scan (Figure 2) which documented a significant reduction of the largest target lesion localized in the right pulmonary hilum which resulted 1.5 centimeters in the widest diameter. A total disappearance of lung metastases was described. Also mediastinal lymph nodes appeared to be reduced in diameter, measuring 1.6 cm (versus 3.5 cm at the first evaluation).

A>60% partial response was calculated after 3 cycles of chemotherapy. The multidisciplinary team decided to perform further 3 cycles of the same chemotherapy.

On 25th February of 2015, the patients completed the sixth and last cycle of chemotherapy.

The dose of chemoterapic drugs has not been reduced due to the toxicity, with the aim to maintain the dose intensity.

On 12th March of 2015 he performed a restaging CT scan (Figure 3) which documented a further, albeit small, reduction of both lung and lymph nodal target lesions.

On 30th March of 2015 the patient underwent a whole brain prophylactic irradiation reaching a total dose of 30 Gy on the target volume in 10 fractionating doses of 3 Gy.

On 14th April of 2015 the patients undervent to Chest and mediastinum exclusive radiotherapy, reaching a total dose of 50 Gy in 25 fractionating doses of 2 Gy at which a further dose (boost) of 10 Gy on primitive hilar lung lesion was added.

On 19th June of 2015 a total body CT scan was performed with the aim to perform a restaging after the entire program of therapy. As result, a further reduction of the lung hilar lesion was documented which measured 1.2 cm and in addition, a reduction of mediastinal lymph nodes was seen (7 mm versus previous 10 mm).

On 8th September of 2015 a Positron emission tomography (PET/TC) was performed and as result, no pathologic uptake areas were documented.

The patients were considered in Complete Remission (CR) and

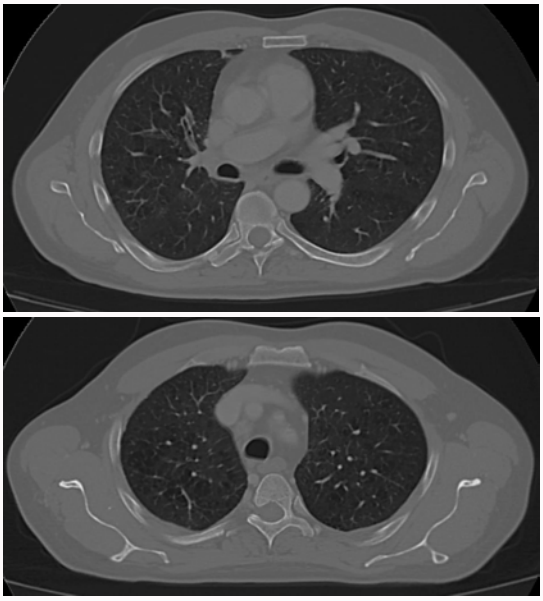

Figure 3: 3rd restaging with CT scan on March 2015.

he entered in a close follow-up program.

On 7th December of 2015 he performed a whole body CT scan which documented a substantial stability of both pulmonary and mediastinal lesions.

For a year, the patient did not respect the follow-up program and he performed a PET/TC on 23th December of 2016 which did not show presence of pathologic uptake areas.

On 11th April of 2016, a new whole body CT scan was performed and no changes were seen if compared with the previous exam.

The last diagnostic exam was a PET/TC which was performed on 10th October of 2017 and it has not documented suspect lesions.

Conclusions

SCLC, a malignancy with high aggressiveness and poor differentiation, shows a poor prognosis and a 5-year overall survival (OS) lower than 5%, despite standard treatment. Patients with ED have a particularly poor prognosis with a very low 2-year OS. Initial overall response rate (ORR, namely the sub between the complete and partial responses) to the standard chemotherapy regimen (platin derived drug plus etoposide) can reach the 80%, probably due to the high proliferating index typical of the tumor which corresponds also to an higher percentage of cycling tumor cells, but the disease relapse within the first year represents the rule [6,7].

Despite the high incidence of mutations in SCLC (especially the mutations interesting the MYC oncogene), to date no targeted therapy has shown a benefit for this patients population and, as said before, chemoradiation has not significantly changed in the last decades [8].

Given its high mutation burden, SCLC may be considered an attractive target for immunotherapy. In fact, drugs able to modulate the immune response are particularly efficient in tumor characterized by an high number of mutations, which often correspond to a large number of the so called tumor associated antigens (TAA). Immune response against cancer is strongly oriented versus these TAA. A number of studies are experimented PD-1 inhibitors (Programmed death 1), such as Nivolumab and pembrolizumab, in patients with ED SCLC (9-10).

Our case report describes the history of a patient with diagnosis of advanced SCLC treated with the standard therapy options who experienced a particularly favorable prognosis.

Such a case can be considered anecdotal, if we take into account the grim prognosis of patients with ED SCLC.

We are not able to explain the cause of a so good prognosis in some patients, but in the future, the translational research could help us in the aim.

Translational research is able to study the pathophysiology of the disease, identifying the intracellular pathways which may be inhibited obtaining a significant clinical benefit.

The road is very long, but immunotherapy role may become very important for these poor prognosis patients.

References

1. Herbst RS, Heymach JV, Lippman SM. Lung Cancer. N Engl J Med. 2008;359(13):1367-80.
2. Altan M, Chiang AC. Management of small cell lung cancer: Progress and updates. Cancer J. 2015;21(5):425-33.
3. Almquist D, Mosalpuria K, Ganti AK. Multimodality therapy for limited-stage small-cell lung cancer. J Oncol Pract. 2016;12(2):111-7.
4. Ramirez RA, Chauhan A, Gimenez J, Thomas KEH, Kokodis I, Voros BA. Management of pulmonary neuroendocrine tumors. Rev Endocr Metab Disord. 2017;18(4):433-442.
5. Pourel N. Radiotherapy for small cell lung carcinoma. Cancer Radiother. 2016;20(6-7):547-57.
6. Chan BA, Coward JI. Chemotherapy advances in small-cell lung cancer. J Thorac Dis. 2013;5 Suppl 5:S565-78.
7. von Pawel J, Schiller JH, Shepherd FA, Fields SZ, Kleisbauer JP, Chrysson NG, et al. Topotecan versus cyclophosphamide, doxorubicin, and vincristine for the treatment of recurrent small-cell lung cancer. J Clin Oncol. 1999;17(2):658-67.
8. Mutation Load Offers Predictive Biomarker in SCLC. Cancer Discov. 2017;7(12):1361.
9. Horn L, Reck M, Spigel DR. The future of immunotherapy in the treatment of small cell lung cancer. Oncologist. 2016;21(8):910-21.
10. Chae YK, Pan A, Davis AA, Mohindra N, Matsangou M, Villaflor V, Giles F. Recent advances and future strategies for immune-checkpoint inhibition in small-cell lung cancer. Clin Lung Cancer. 2017;18(2):132-140.