ONCOLOGÍA roe-solca.ec CLINICAL CASE

Extended survival with pembrolizumab in a patient with stage IV non-small cell lung cancer: A case report.

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Abstract

Introduction: Immunotherapy with pembrolizumab has improved the prognosis of patients with metastatic lung cancer. The patient's extended survival and progression are presented in the present case.

Clinical patient: A 66-year-old man who was a smoker. A lung mass in the left lower lobe measuring 9 × 8 cm was diagnosed, with supra- and infratentorial intra-axial metastases.

Diagnostic workshop: To establish a stage IVc lung neoplasm, 80% of the lung mass sample was confirmed to be positive for PDL1.

Evolution: Immunotherapy was started with Pembrolizumab, which was maintained until the presence of a side effect attributed to pembrolizumab, completing 30 months of survival until the closure of this observation, the patient's death was not reported.

Conclusions: In the present report, the determination of the positive histological biomarker PDL1 in lung cancer patients aided in the prescription of targeted immunotherapy, which was shown to increase survival beyond conventional treatment with chemotherapy.

MeSH: Case Reports; Survivorship; Mortality Registries; Lung Neoplasms; Programmed Cell Death 1 Ligand 2 Protein.

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Introduction

The prognosis of lung cancer has changed radically in the last ten years due to the introduction of innovative treatment schemes, including immunotherapy with pembrolizumab, an IgG4 antibody directed against the PD-1 protein, indicated in the first line of non-small cell lung cancer (NSCLC) in monotherapy if they express PD-L1 ≥50% without EGFR or ALK mutations or in combination with pemetrexed and platinum-based chemotherapy if they express PDL1 between 0-50%. Additionally, it is used as monotherapy for the treatment of metastatic NSCLC in adults with PD-L1 expression ≥1% with or without target mutations (EGFR or ALK) [1– 5].

In patients with lung cancer, compared to 14.2%, patients treated with pembrolizumab had an overall survival of 30 months [6, 7]. In this clinical case, we wanted to show the extended disease-free survival of patients with lung cancer treated with monotherapy plus pembrolizumab.

Clinical case

A 66-year-old man, weighing 67 kg at diagnosis, was a smoker with a pack-year index of 50. The patient had a history of dyslipidemia and deep vein thrombosis of the lower limbs five years previously. His usual treatment consisted of 100 mg of acetylsalicylic acid and 40 mg of atorvastatin per day.

The patient was admitted to the emergency service of Fuenlabrada Hospital in May 2020 due to vertigo and instability for five days. In the emergency room, the following procedures were performed:

A chest X-ray showed a lung mass in the left lower lobe measuring 9 × 8 cm.

- Cranial CT: supra- and infratentorial intra-axial metastases, with a compressive lesion in the vermis causing proper cerebellar tonsil descent.

The extension study was completed with whole-body tomography, which confirmed a diagnosis of stage IVc lung neoplasia (T4, N1, M1c).

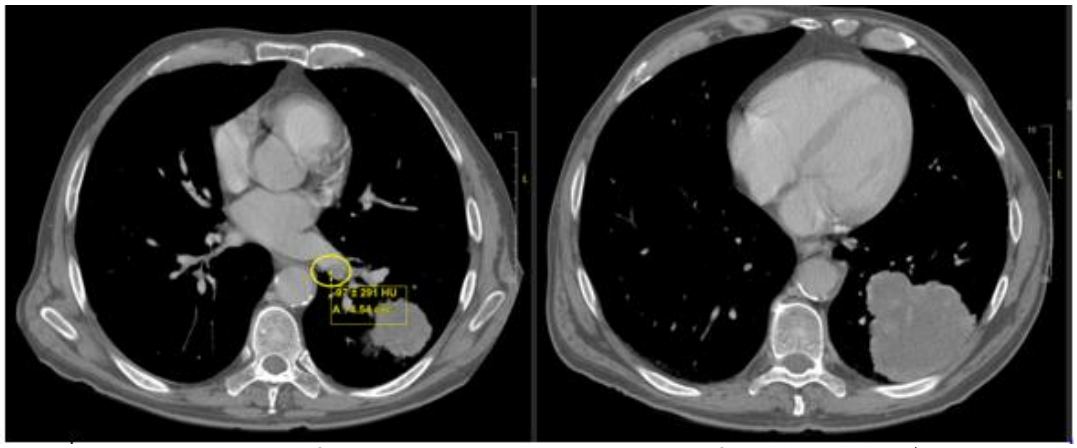
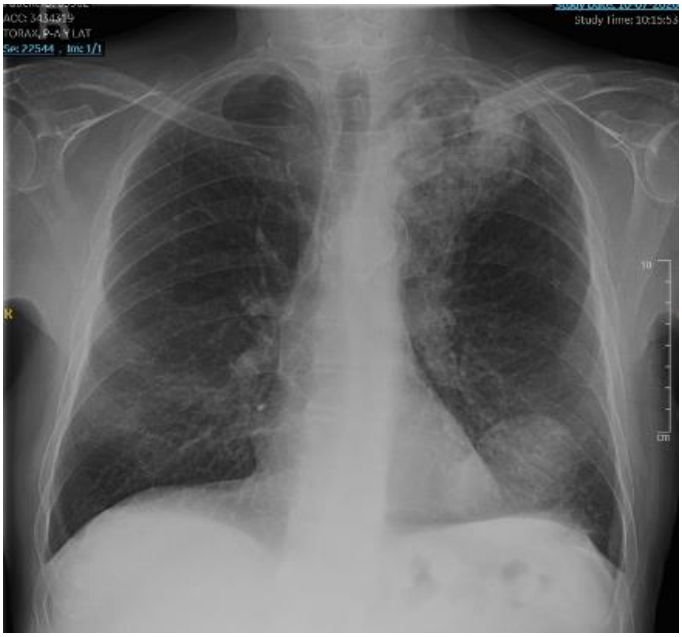


Figure 1. De novo, necrotic left hilar lymphadenopathy, suspicious for malignancy N1). A pulmonary mass of 82x74 mm (APxT) was located in segments 8 and 9 of the LII and was characteristic of malignancy (T4).

Associated lung infections

On 06/26/2020 (16 days after histological diagnosis), the PDL1 status was checked, and the results were 80%. Given the risk of pneumonitis and to assess the status of the tumor mass, a new chest X-ray was performed (07/10/2020), which showed a nodule in the left upper lobe (LSL) with an infectious morphology (suspected TB); therefore, therapy was started with clindamycin + cefixime every 8 hours empirically. In the control, a new sputum analysis was requested in which a gram-negative bacillus Hafnia alvei sensitive to cefixime was cultured, so the initial antibiotic regimen was continued for four weeks. The response was a partial decrease in the size of the pulmonary nodule. The tuberculin skin test or Mantoux test was



performed, the results of which were negative.

Figure 2. In the apicoposterior segment of the LSI, a cavitated mass with irregular edges (9.3 × 9.3 cm) appeared with satellite nodules, one of which was cavitated. It branched centrilobular opacities that formed a sprouted tree pattern. Thickening of the bronchial walls in the LSI. There were also some centrilobular nodules with lower expression in the LSD that were also not present in the May study.

Immunotherapy

On 07/09/2020, the first cycle of pembrolizumab began. A control CT scan was performed, in which the growth of two bilateral adrenal lesions was described. The second session of pembrolizumab was scheduled for 3 weeks. However, the treatment had to be suspended due to elevated liver enzymes (TGO and TGP), asthenia, cough, and difficulty in expectoration. He required a new hospital admission and was started empirically on IV corticosteroids and intravenous piperacillin/tazobactam.

After admission and progressive reduction of corticosteroid therapy without worsening of the liver profile, on 08/20/2020, he received the 2nd cycle of Pembrolizumab and was maintained on 5 mg of oral prednisone. Since then, the patient has continued with three-weekly pembrolizumab with progressive clinical improvement. In January 2021, the patient was admitted for a pertrochanteric fracture that was treated with orthopedic means. The regimen with cycles of pembrolizumab was not interrupted until 04/15/2023. On that date, in a tomographic control, organized pneumonia was diagnosed in the form of multiple lung opacities in ground glass with a reverse halo sign; Prednisone 30 mg/d was started with a descending

regimen for 65 days with clinical and radiological improvement. Until the closing of this observation, the death of the patient was not reported.

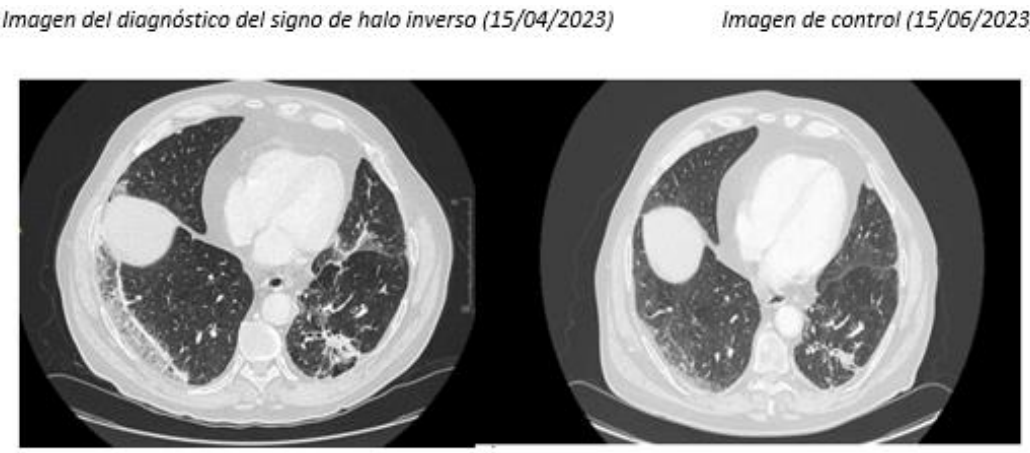


Figure 3. Tomography showing the side effects of pembrolizumab.

Discussion

Chemotherapy is one of the classic treatments for metastatic lung cancer, and patients with metastatic lung cancer have a progression-free survival of approximately six months. However, regarding overall survival, the figures doubled with immunotherapy, ranging from 14.2 months (with chemotherapy) to 30 months with pembrolizumab. With the present clinical case, we want to determine the importance of deciding biomarkers after the histological diagnosis of PDL1-positivity in 80% of patients since the response to immunotherapy with pembrolizumab doubles the survival compared to treatment with chemotherapy in this specific histological type [8- 10].

The reviewed literature proposes suspending pembrolizumab after two years of treatment [3, 5, 6, 11]. In the present case, immunotherapy was continued longer than the recommended time due to the clinical profile at disease onset, which was aggressive, with brain metastases and possibly adrenal metastases. Additionally, a complete radiological response of the lung tumor was not obtained. However, even though pembrolizumab had to be suspended due to toxicity, the disease status remained stable after the suspension of immunotherapy; thus, disease-free survival has been prolonged beyond what was recorded in the literature [6, 8, 9, 12, 13] at 35 months. The patient has been kept in stable condition.

Conclusions

In the present report, the determination of the positive histological biomarker PDL1 in lung cancer helped to prescribe treatment with targeted immunotherapy, which was shown to increase survival beyond conventional treatment with chemotherapy.

Abbreviations

PDL1: programmed death-ligand 1 (PD-L1).

Administrative information

Additional Files
None declared by the authors.

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Author contributions
Conceptualization: Isabel Santana Gómez.
Methodology: Isabel Santana Gómez.
Project administration: Isabel Santana Gómez.
Supervision: Beatriz Losada Vila; Juan Antonio Guerra Martínez; David Gutiérrez Abad.
Writing-draft/original: Isabel Santana Gómez.
Writing-review and editing: Ana Manuela Martin Fernández de Soignie; Irene Solana López; Carlos de Zea Luque; Fatima Escalona Martin.
All the authors read and approved the final version of the manuscript.

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Availability of data and materials
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Statements

Ethics committee approval
Clinical cases were not needed.

Consent for publication
The authors have consented to publication from the patient described in this case.

Conflicts of interest
The authors declare that they have no conflicts of interest.

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