



# Remarkable Breakthrough: Unleashing the Power of Paclitaxel and Carboplatin in Defeating Squamous Cell Carcinoma (SCC) of the Lungs - A Compelling Case Report

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**Submitted:** March 28<sup>th</sup>, 2023

**Accepted:** July 18<sup>th</sup>, 2023

**Published:** October 28<sup>th</sup>, 2023

**Respir Sci. 2023; 4(1): 34-9**

<https://doi.org/10.36497/respirsci.v4i1.88>



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## Abstract

**Background:** This case report focuses on the evaluation of treatment efficacy in a 64-year-old male patient diagnosed with stage IVA lung squamous cell carcinoma (SCC) in the right upper lobe. The patient underwent chemotherapy using paclitaxel and carboplatin, administered in measured doses over six cycles. Close monitoring of patients was conducted throughout the treatment period, taking into account their clinical condition.

**Case:** The patient underwent a computerized tomography (CT) examination before starting treatment, followed by a comparison in the third month of treatment. Encouragingly, significant clinical improvement was observed with respect to the initial complaint. The patient achieved an excellent response, the tumor appearance disappeared and the previous size was assessed by Partial Response (PR) based on RECIST criteria.

**Discussions:** The administration of paclitaxel and carboplatin in patients with SCC gave positive results. Metered doses and scheduled administration allow for effective disease management, leading to substantial clinical improvement. The case studies highlight the potential of this treatment regimen in treating SCC, emphasizing the importance of close monitoring during therapy.

**Conclusion:** This case report underscores the promising results obtained with paclitaxel and carboplatin in the treatment of lung SCC. The patient's notable response, marked by clinical improvement and achieving a partial response based on RECIST criteria, exemplifies the potential of this therapeutic approach. Further investigations and clinical trials are warranted to explore the broader applicability and efficacy of this regimen.

**Keywords:** carboplatin, paclitaxel, squamous cell carcinoma

## INTRODUCTION

Lung cancer is the leading cause of cancer death worldwide and its incidence is intrinsically linked to smoking. Most lung

cancers are non-small cell lung cancers (NSCLC) which are divided into squamous and non-squamous histology. The NSCLC accounts for 85% of all lung cancers.<sup>1</sup>

Adenocarcinoma and squamous cell carcinoma (SCC) are the most frequent histologic subtypes, accounting for 50% and 30% of NSCLC cases, respectively.<sup>2</sup>

Although the incidence of lung SCC is decreasing as a consequence of changes in tobacco consumption habits, SCC is still a major health issue.<sup>3</sup> Patients with advanced or metastatic NSCLC have a poor prognosis. Chemotherapy with doublet platinum-based compounds is recommended as the first-line treatment for advanced NSCLC patients, but the treatment benefit is limited.<sup>4</sup>

The Eastern Cooperative Oncology Group (ECOG) conducted a randomized study to compare the efficacy and safety of four common platinum-based treatments (cisplatin and gemcitabine, cisplatin and docetaxel, paclitaxel and carboplatin, or paclitaxel and cisplatin). No significant difference in overall survival was found.<sup>5</sup>

## CASE

A 64-year-old man with complaint of occasional shortness of breath since the last 2 months, which has worsened in the last week, visited our hospital in June 2022. The current patient, a smoker (1 pack/day for 42 years), was diagnosed with stage IVA lung SCC. Computed tomography (CT) of the chest revealed a tumor in the right upper lobe of the lung with mediastinal invasion and SVC narrowing. A transbronchial lung biopsy confirmed the presence of SCC. In order to treat the disease, the patient underwent

chemotherapy with carboplatin (747 mg) and paclitaxel (318 mg) for six cycles.

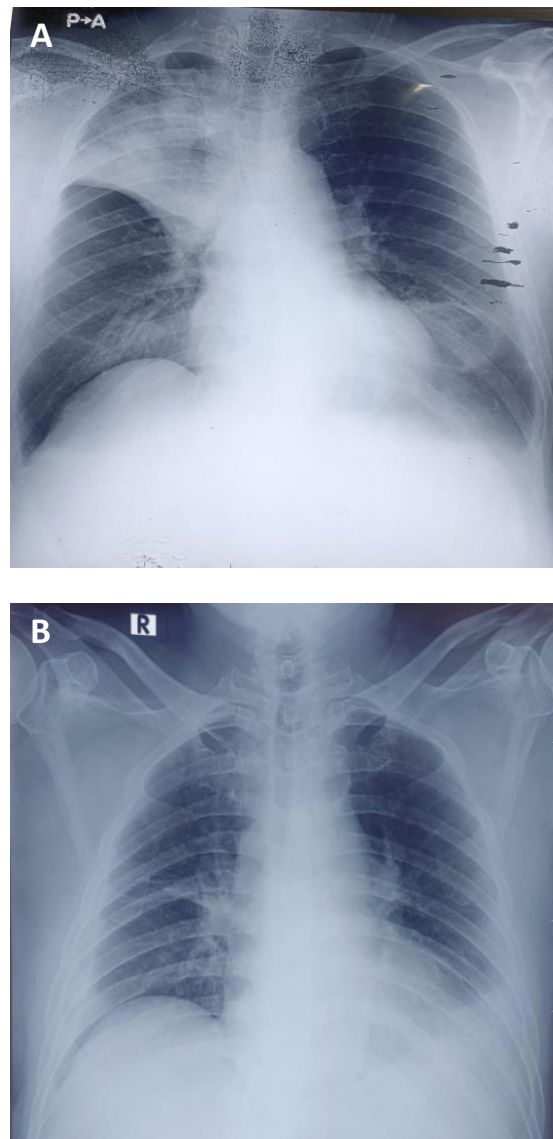


Figure 1. A) Chest X-ray at the start of chemotherapy, demonstrating a shadow in the right upper field, left pleural effusion, and an enlarged cardiac silhouette; B) Chest X-ray, four months after chemotherapy, showing improvement in the right upper lung but persistent left pleural effusion.

Upon first admission to the hospital, the patient's vital signs were as follows: heart rate 111 bpm, blood pressure 149/95 mmHg, and body temperature 36.2 °C. Percutaneous arterial blood oxygen saturation was 90% in ambient air and the patient had a respiratory rate of 24 breaths per minute. The patient could be concluded

to have ECOG Performance Status 2, based on the ECOG Performance Status Scale.

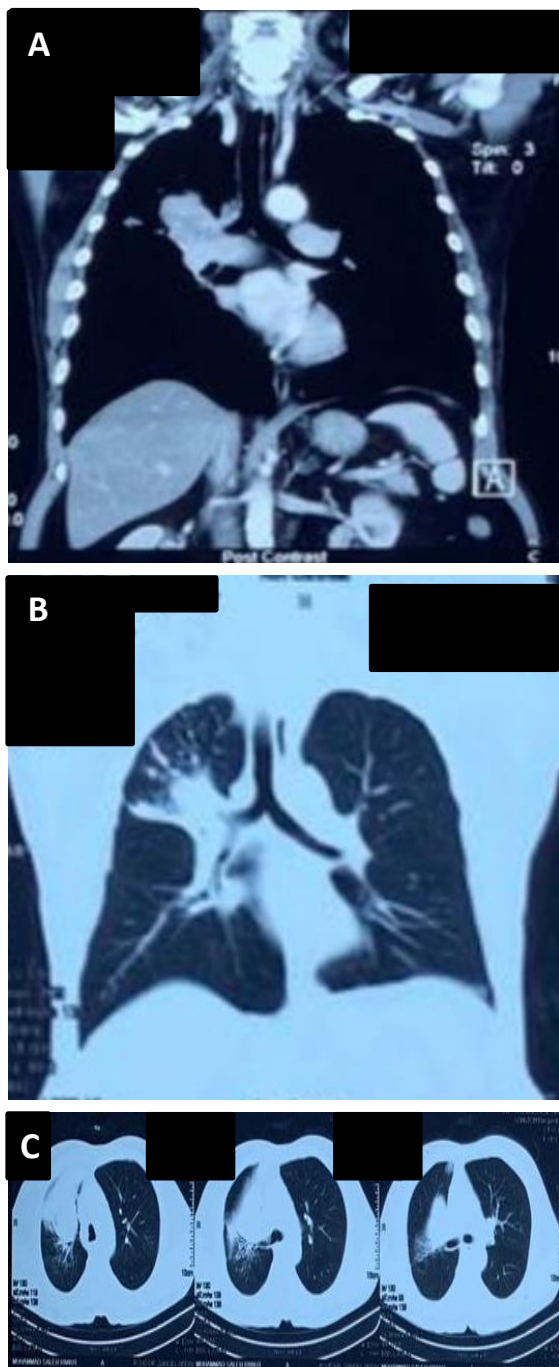


Figure 2. The initial CT scan shows a lobulated heterogeneous mass measuring 5.72 x 4.45 x 3.9 cm in the superior segment of the apical anterior lobe, with partial lung collapse and surrounding infiltrates, enlarged paratracheal and multiple subcarina lymph nodes, non-thickened pleura, and bilateral pleural effusions

After undergoing 4 cycles of chemotherapy, the patient's vital sign examination revealed a heart rate of 87

bpm, a blood pressure of 123/85 mmHg, and a body temperature of 36.4°C. Percutaneous arterial blood oxygen saturation was 97% in ambient air, while the respiratory rate was 20 breaths per minute. The patient could be concluded to have ECOG Performance Status 1, based on the ECOG Performance Status Scale.

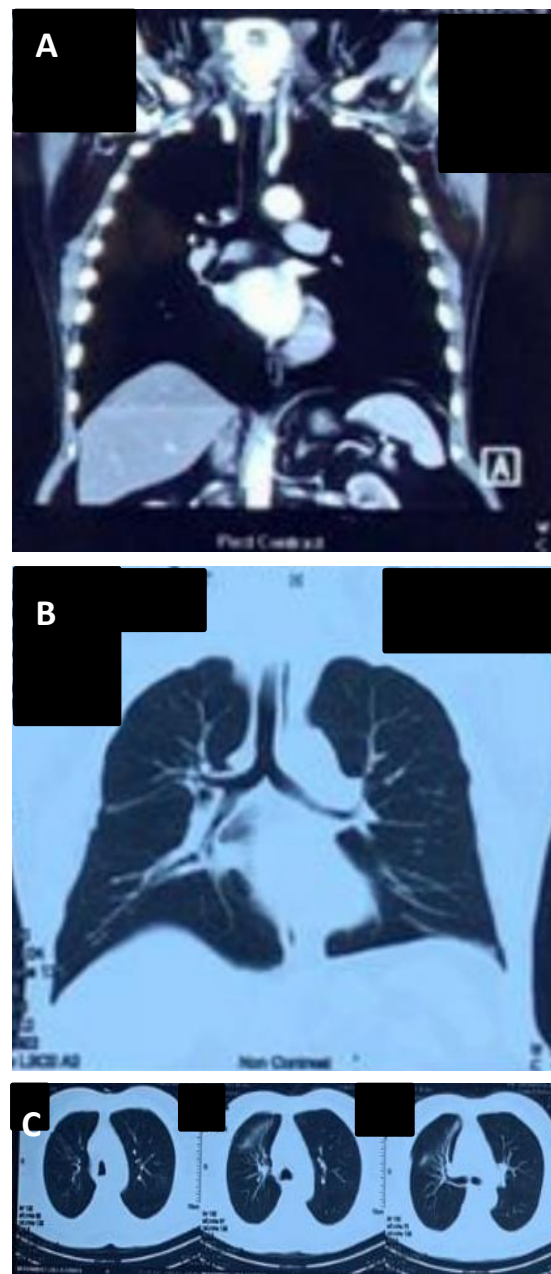


Figure 3. The second CT scan, performed 3 months after chemotherapy, does not show any lung mass, minimal fluid density in bilateral pleural cavity, fibrosis in the anterior apical segment of the right lung lobe, and lymph nodes <1 cm in the right paratracheal.

On examination, normal heart sounds were heard, but there were decreased breath sounds at the base of the left lung. The patient showed swelling of the superficial chest veins but no edema of the face or upper extremities. During treatment, the patient received 3 liters per minute (lpm) of nasal oxygen through a cannula, and therapy was adjusted according to the patient's clinical condition.

Encouragingly, clinical improvement was observed within the first week of treatment. As a result, the patient was allowed to continue treatment on an outpatient basis and scheduled routine checks at the pulmonary clinic according to the chemotherapy schedule.

### **Recist Evaluation**

1. Subjective Evaluation. The patient admits an improvement in the symptoms before chemotherapy is started, such as improved shortness of breath, improved chest pain, improved complaints of weakness, and cough that disappears.
2. Semi-Objective Evaluation. Clinical improvement was found in these patients, with improvement in pain complained of from Numeric Rating Scale (NRS) 7-8 to NRS 3-4. Likewise, complaints of shortness of breath decreased from 24 times per minute to 20 times per minute, and also improvements in blood saturation levels started from 90% of room air to 99% of room air.
3. Objective Evaluation. In this case, the evaluation includes the initial chest X-

ray, which shows a right upper field shadow, left pleural effusion, and an enlarged cardiac silhouette. The follow-up chest X-ray, four months after chemotherapy, indicates improvement in the right upper lung but persistent left pleural effusion. Additionally, the initial CT scan reveals a lobulated heterogeneous mass measuring 5.72x4.45x3.9 cm in the superior segment of the apical anterior lobe. The second CT scan does not show any lung masses.

4. Side Effects. During the administration of therapy, the patient claimed to be nauseous in the first few hours after chemotherapy, but these complaints improved after some time.

### **DISCUSSION**

In organs other than the lungs, such as head and neck SCC, weekly carboplatin and paclitaxel are also good options as first-line therapy for recurrent/metastatic SCC.<sup>4</sup> The different responses to carboplatin treatment depend on individual factors and resistance mechanisms. During chemotherapy, dexamethasone is applied as an antiemetic. Evaluation was carried out after 3 cycles of chemotherapy in this patient, and many changes occurred, starting from the loss of mass in the affected lung to clinical improvement in this patient, so that it was considered a partial response (PR) according to RECIST criteria.<sup>6</sup> In this case, the potential efficacy and side effects of chemotherapy as a



treatment for lung cancer in this patient can be seen

While recent studies have suggested a poor prognosis for lung cancer patients, this patient showed significant improvement in symptoms and overall condition after receiving chemotherapy. It is important to highlight the benefits of chemotherapy in this case as well as the potential challenges that patients may face in managing side effects.<sup>7,8</sup>

Additionally, future research may explore alternative treatment options or combination therapies that could further improve outcomes for lung cancer patients. Overall, this case provides valuable insights into the management of lung cancer and the potential for positive outcomes with appropriate treatment.<sup>7,8</sup>

It should be noted that although the patient showed improvement in symptoms, reduced mass size, reduced number of nodules and less effusion, further evaluation is still required in the remaining few cycles to determine if the response to therapy is truly present and improving. This evaluation is crucial to understanding the extent of the disease and adapting the treatment strategy to the patient's specific needs in the future.

## CONCLUSION

Further research is still required to gain a comprehensive understanding of the long-term efficacy and potential side effects associated with the combination therapy of paclitaxel and carboplatin. Continued investigation will help refine

treatment strategies and improve outcomes for patients with pulmonary SCC.

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