

Case Report*Open Access, Volume 2****Complete Response of Gefitinib in Pulmonary Recurrence after Pneumonectomy in Patient with NSCLC: A Case Report*****Marah F Ibrahim¹; Alissar Y Almahayni¹; Faizeh Alquobaili^{1,2}; Maher S Saifo^{1,3*}**¹Faculty of Pharmacy, Al-Sham Private University, Damascus, Syria.²Faculty of Pharmacy, Damascus University, Damascus, Syria.³Department of Oncology, Al-Bairouni University Hospital, Faculty of Medicine, Damascus University, Damascus, Syria.**Abstract**

The prognosis of advanced non-small cell lung cancer (NSCLC) has significantly improved for certain patients with the development of epidermal growth factor receptor tyrosine kinase inhibitors (EGFR-TKIs).

In this study, we report a case of a patient with EGFR-mutated lung adenocarcinoma, who achieved complete response with gefitinib treatment. The patient is a 47-year-old non-smoker woman who had undergone a left pneumonectomy according to standard procedures and then received adjuvant chemotherapy. After one year, PET scan showed multiple metastases in the right lung. The patient underwent a new biopsy of these lung metastases and her tumor was positive for EGFR mutation. After 3 months of the initial treatment of Gefitinib, the PET scan showed a complete response. After one year of continued oral treatment and telemedicine during the Covid-19 pandemic, patient was doing well with no severe adverse events.

Keywords: NSCLC; EGFR mutation; Gefitinib; Complete response; Metastases; Telemedicine.**Introduction**

Lung cancer is the world's leading cause of cancer death [1]. Lung cancer is classified into two types: small cell lung cancers (SCLC) and non-small cell lung cancers (NSCLC). NSCLC is the most common lung cancer, accounting for 85% of all cases. NSCLC has three main types designated by the type of cells found in the tumor: Adenocarcinomas are the most common type of NSCLC (40% of all lung cancer cases), Squamous cell carcinomas (25% to 30% of all lung cancer cases) and large cell carcinomas accounting for 10%-15% of all lung cancers [2].

Metastatic lung adenocarcinoma can be treated with chemotherapy, immunotherapy, and target therapy such as tyrosine kinase inhibitors (TKIs). The three main generations of TKIs are composed as the following: first-generation erlotinib and gefitinib, second-generation Afatinib and dacomitinib, and third-generation Osimertinib [3,4].

In 2015, Gefitinib was approved as first-line therapy for metastatic NSCLC positive EGFR exon 19 deletion (19del) and exon 21 L858R [5].

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This case report describes a patient with mutated-EGFR NSCLC treated with Gefitinib, achieving complete response. This therapy provided better results with less toxicity while maintaining the quality of life compared to chemotherapy. Furthermore, during the Covid-19 pandemic, home care and telemedicine was used in treating this high risk patient.

Case presentation

A 47-year-old non-smoker Syrian woman with no history of illness or medication presented with fatigue, loss of appetite and mild hemoptysis. On March 2020, a left pulmonary mass measuring approximately 45 mm was detected by PET-scan with (4-8 SUV) (Figure 1). After Radiologic and histologic examinations, the patient was diagnosed with left lung adenocarcinoma stage IIB. On March 2020, the patient underwent a complete pneumonectomy. After receiving 6 cycles of adjuvant chemotherapy (Carboplatin/Vinorelbine), she was on follow-up every 3 months.

On January 2021, the patient was referred to Al-Bairouni University Hospital with a complaint of shortness of breath and cough. PET-scan showed many irregular scattered right lung densities with a metabolic activity SUV ranging between 2-5 (Figure 2).

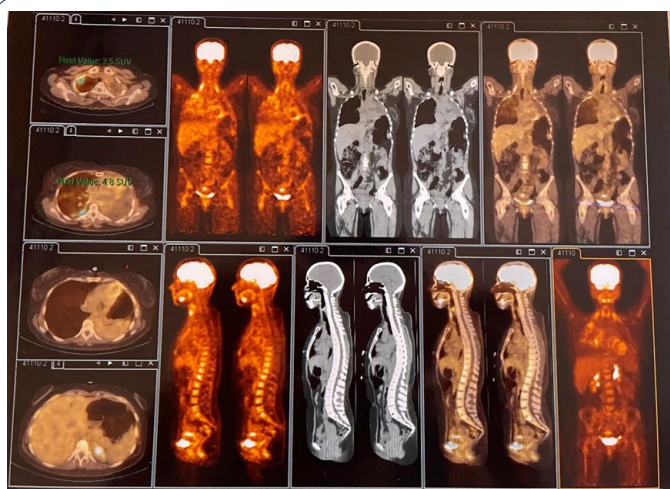


Figure 2: PET-CT Multi Slice showing many irregular scattered right lung densities with a metabolic activity SUV ranging between 2-5.

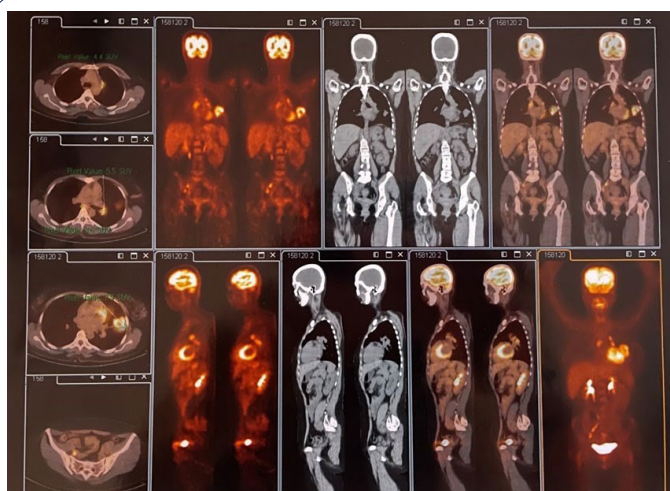


Figure 1: PET-scan showing a left pulmonary mass measuring 45 mm with (4-8) SUV with lymph nodes not exceeding more than 15 mm with installation values of (4-6) SUV.



Figure 3: Computed tomography (chest, abdomen and pelvis) after three months of initial treatment revealed normal and homogeneous right lung tissue with no nodular enlargement and the left lung is surgically removed.

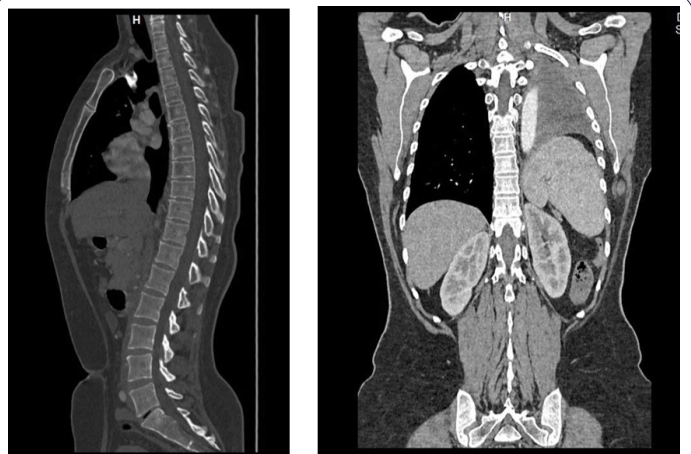


Figure 4: Computed tomography (chest, abdomen) after one year of treatment revealing normal and homogeneous right lung with a pleural effusion filling the left square, with withdrawal of the median elements towards the left.

The tissue for molecular testing using PT-PCR test was positive for an EGFR with exon19 deletion. Based on these results, initial treatment with Gefitinib 250 mg/daily administration for three months was recommended, starting January 2021. After 3 months, a CT scan revealed complete response. The plan was to continue Gefitinib and to get a CT-scan every 3 months for evaluation. The last 3 evaluations confirmed the complete response (Figure 3).

During the treatment, the patient complained of a mild rash on the face and mild diarrhea once a day without any other side effects.

Laboratory results showed GOT, GPT, and CBC levels of liver enzymes were within normal limits without any changes.

On January 2022, she came for a medical examination with a complete response on the recent CT (Figure 4). Hence, it was decided on continued treatment of Gefitinib.

Discussion

We report the case of a 47-year-old female patient with EGFR-mutated lung adenocarcinoma who relapsed in the right lung after left pneumonectomy and adjuvant chemotherapy, and has achieved a complete response since one year on Gefitinib monotherapy with low toxicity and good quality of life. This high-risk patient was treated in homecare facilities and telemedicine during the COVID-19 Pandemic.

In the early 2000s, the EGFR mutation was discovered. Inhibitors of the epidermal growth factor receptor (EGFR) tyrosine kinase have clinical efficacy when compared with the best supportive care [6] or the standard chemotherapy in second-line or third-line therapy for advanced non-small-cell lung cancer. Treatment with EGFR tyrosine kinase inhibitors is most effective in pulmonary adenocarcinomas, females, non-smoker, and Asian origin [7].

Our case is compared to a case report of a 70-year-old non-smoker male, with chronic renal failure undergoing hemodialysis who developed a lung adenocarcinoma of the right middle lobe. Three years after lobectomy, the patient developed vertebral and rib bone metastasis, whereas our reported case developed lung metastases after a short duration of 6 months after surgery. The patient achieved an excellent and long-lasting response with Gefitinib on bone metastases [8].

A study of Gefitinib monotherapy reported that grade 1 acne-like rash developed on the face and back following the start of gefitinib treatment. The rash persisted throughout the treatment period, along with diarrhea, dry skin, pruritus and paronychia [9]. Another study significantly showed more common side-effects in patients when receiving Gefitinib with chemotherapy [10]. In our case, a mild rash developed on the face and back, when Gefitinib treatment started. Other side effects, such as diarrhea, dry skin have also been notable.

The results of the Iressa Pan-Asia Study (IPASS)), which compared Gefitinib with (Carboplatin/Paclitaxel) showed that the median progression-free survival was 5.7 months in the gefitinib group and 5.8 months in chemotherapy group, and the 12-month rates of PFS were 24.9% with Gefitinib vs. 6.7% with carboplatin/Paclitaxel. The incidences of rash or acne, diarrhea, and elevated

liver aminotransferase levels were significantly higher with gefitinib than with carboplatin-paclitaxel, whereas the incidences of neurotoxic effects, nausea, vomiting, and hematologic toxic effects were significantly higher with chemotherapy [11].

Conclusion

Gefitinib is an optimal standard of care and superior to chemotherapy as first line treatment for patients with EGFR mutated metastatic lung adenocarcinoma. Patients with metastatic NSCLC who previously underwent a pneumonectomy have only one lung, making them high risk patients during the Covid-19 pandemic. Collectively, oral TKIs (Gefitinib) treatment is associated with a very good response, lower toxicity and better quality of life due to home care and telemedicine.

Declarations

Competing interests: The authors declare that they have no conflicts of interest.

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