LONG TERM SURVIVAL OF PATIENT WITH LATE-STAGE NON-SMALL CELL CARCINOMA OF LUNG: A CASE REPORT

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ABSTRACT Lung cancer is the most common cause of cancer death with limited survival. Most of the lung cancer cases are non-small cell variety, and most of the patients are in an advanced stage. After histopathological diagnosis, the next step is to document the presence of actionable mutations like EGFR. When positive, EGFR portends sensitivity of the tumour to EGFR TKIs and a better prognosis. We report a case of advanced NSCLC with protracted survival of almost 10 years from the diagnosis of metastatic disease. The patient presented with progressions multiple times but was found non-compliant with Erlotinib. Compliance was reinforced every time, followed by the response on surveillance.

KEYWORDS Non-Small Cell Lung Cancer, Epidermal Growth Factor Receptor, Erlotinib

Background

Lung cancer is the most common cause of cancer death worldwide, causing approximately 25% of all cancer deaths. The world health organization (WHO) reported the global incidence of lung cancer at 1.8 million new cases in 2012. The overall mortality to incidence is high, with a 5-year survival rate in the united states still only 18%. Non-small cell lung cancer (NSCLC) is the more common type, accounting for around 85% of lung cancer cases overall. Surgical resection remains the single most consistent and successful option for the cure of patients, however, close to 70% of patients with lung cancer present with locally advanced or metastatic disease at the time of diagnosis. Treatment options for advanced or metastatic NSCLC depend upon the tumour’s molecular profile to evaluate the presence of actionable mutations such as mutation in the epidermal growth factor receptor (EGFR) gene or rearrangement in anaplastic lymphoma kinase (ALK) gene. So, the next step after morphological diagnosis is therapy-predictive biomarker testing.

The discovery of somatic mutations in the NSCLC subset of lung tumours is the most significant shift in treating lung cancer. In addition, NSCLC frequently expresses EGFR and targeting this pathway is of great interest, especially in advanced NSCLC, where it portends a favourable prognosis and sensitivity of the tumour to any generation of EGFR tyrosine kinase inhibitors. Erlotinib is an orally administered, 1st generation small molecule inhibitor of EGFR tyrosine kinase. It is approved as a single agent in advanced, metastatic NSCLC in first-line settings and maintenance therapy after platinum-based doublets. Shepherd et al. reported a median duration of response of around 8 months, progression-free survival of 2.2 months and overall survival was 6.7 months when compared to placebo, with a higher likelihood of response in women, non-smokers, and those suffering from adenocarcinoma and patients of Asian ancestry. We herein report a case of NSCLC with protracted survival on single-agent Erlotinib.

Case report

Our patient is a 66 years old woman diagnosed with stage IV bronchoalveolar carcinoma (BAC) of the lung. She was diagnosed in 2007 when she underwent lobectomy followed by adjuvant chemotherapy in Qatar. She relapsed in 2011 with bilateral lung nodules and left pericardiac mass and underwent right-sided video-assisted thoracoscopy in July 2011, which was positive for BAC. EGFR Exon 19 deletion was positive. No treatment was given then, as the disease was at a low pace. However, there
was a disease progression on follow-up scans in 2013 (Figure 1).

After that, she commenced on Erlotinib 150mg once daily with stable disease on periodic surveillance scans. In July 2017, a CT scan of the chest and abdomen showed disease progression in terms of an increase in the size of pulmonary nodules. It was, however, found that the patient was non-compliant with Erlotinib. Compliance was reinforced, and a CT scan was advised after 3 months. Follow up CT scan (Figure 2) showed a reduction in the size of pulmonary nodules, so she was advised to continue Erlotinib with periodic radiologic monitoring. Scans in December 2017 showed progression in the size of pulmonary nodules. Upon further inquiry, it was found that the patient was again non-compliant with medication. Compliance was reinforced again with a follow-up CT scan in March 2018, showing stable disease. In August of 2018, a CT scan showed progression in terms of the development of a new lesion in the right lung base and increase in the size of the pulmonary nodules. We considered switching to osimertinib, but the patient revealed her non-compliance with Erlotinib. After reinforcing compliance and starting Erlotinib again, a follow-up CT scan in January 2019 showed stable disease. She remained stable till August of 2020 when a CT scan showed progression in the size of pulmonary nodularity and new development of left-sided pleural effusion. It has been reported that the patient is non-compliant with medication again.

Discussion
Briefly, our patient is an elderly lady with bronchoalveolar lung carcinoma, diagnosed and treated with lobectomy followed by adjuvant chemotherapy in 2007. She relapsed in 2011 with stage IV disease restricted to lungs and mediastinum, managed with resection with video-assisted thoracoscopy followed by surveillance. 2 years down the course, she was found to have clinical and radiological progression and was trialled with Erlotinib. For around 7 years, she has been taking Erlotinib on and off with clinical and radiological responses during the ‘On’ period and deterioration following the ‘Off’ period.

Erlotinib was first approved for metastatic NSCLC in November 2004 as an option for treatment after failure of at least one prior treatment regimen. The approval was extended to the first-line option for metastatic patients in 2012. As detailed above, 5-year progression-free survival (PFS) in patients with NSCLC, harbouring EGFR-mutation and treated with an EGFR-TKI is 14.6% when compared to <5% in unselected patients with distant-stage NSCLC.

On searching the literature, we found case reports on prolonged survival of EGFR mutation-positive NSCLC with one 59 years old patient reported from California, who, after being diagnosed with metastatic NSCLC in 2005, was trialled with Erlotinib after failing to respond to chemotherapy. This gentleman was surveilled till 2015 with no evident disease on PET CT. There is another case report on locally advanced, irresectable adenocarcinoma lung, diagnosed in 2012 and trialled with Erlotinib, has been in remission since. A female patient has been reported to survive 10 years since diagnosis of EGFR mutation-positive NSCLC. However, she received multiple different treatments during this period, including chemotherapy, surgery and TKIs. One gentleman survived for more than 11 years with a diagnosis of metastatic lung cancer, treated with chemotherapy followed by Erlotinib, which was switched to Osimertinib due to intolerable skin toxicity.

Conclusion
Our patient seems to be one of the long-term survivors of EGFR mutation-positive NSCLC. Therefore, the patient is periodically monitored for disease progression, clinically as well as radiologically, every 3-6 months; however, it is very necessary to take proper history regarding compliance to medications before labelling disease progression.

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Conflict of interest
There are no conflicts of interest to declare by any of the authors of this study.

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