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Case Report

A Promising Response of Pembrolizumab in Metastatic Lung Cancer

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Abstract

Lung cancer is the most commonly diagnosed cancer in both men and women and has the highest incidence and mortality rate among all cancers in the world. In recent years immunotherapy has become a game-changer in the treatment of cancer. Here, we present a patient with metastatic Non-Small Cell right lung carcinoma who was treated with pembrolizumab and achieved a very good response. This case highlights the efficacy of neoadjuvant pembrolizumab on metastatic lung carcinoma which provides a clinically meaningful therapeutic option for the future.

Keywords: Pembrolizumab, immunotherapy, metastatic lung cancer, case report, complete response.

INTRODUCTION

Lung cancer is the most common type of cancer diagnosed and is one of the leading causes of death worldwide [1, 2]. In recent years immunotherapy has become a game-changer in the treatment of cancer. Pembrolizumab is an anti-PD-1 antibody approved by US food and drug administration for the treatment of lung cancer, which exhibits potent anti-tumor activity in many previous clinical studies [3-5].

CASE REPORT

A 70-year-old male patient who was a known case of COPD and a non-smoker presented with the complaints of cough, breathlessness even at rest, and expectoration and was taken to the emergency department of the hospital on 28/07/2019. On systemic examination decreased breath sounds on the right side, NVBS left side positive, coarse creps positive, left ISA, and IAA was found. The patient was on O_2 4L/hr. CT scan of the thorax was done.

CT scan of thorax shows obliterated possibly carcinoma lung. Possibly metastatic lymph nodes.

On whole-body FDG PET CT scan on 17/08/2019 shows a case of lung adenocarcinoma for staging (Fig 1). Imaging features are in favour of primary bronchogenic malignancy with lymph nodal, pleural, and suspected left adrenal metastasis. The clinical impression of histopathology was RUL mass with thick-walled cavity suspected carcinoma.

Taking into account his advanced age, stage of cancer and following opinions of the patient and his family the patient was initiated with pembrolizumab 200mg IV in August 2019. From August 2019 to August 2021 he underwent 14 cycles of pembrolizumab, however, he discontinued treatment due to financial circumstances.

Written informed consent was obtained from the patient to publish the case report including the images.

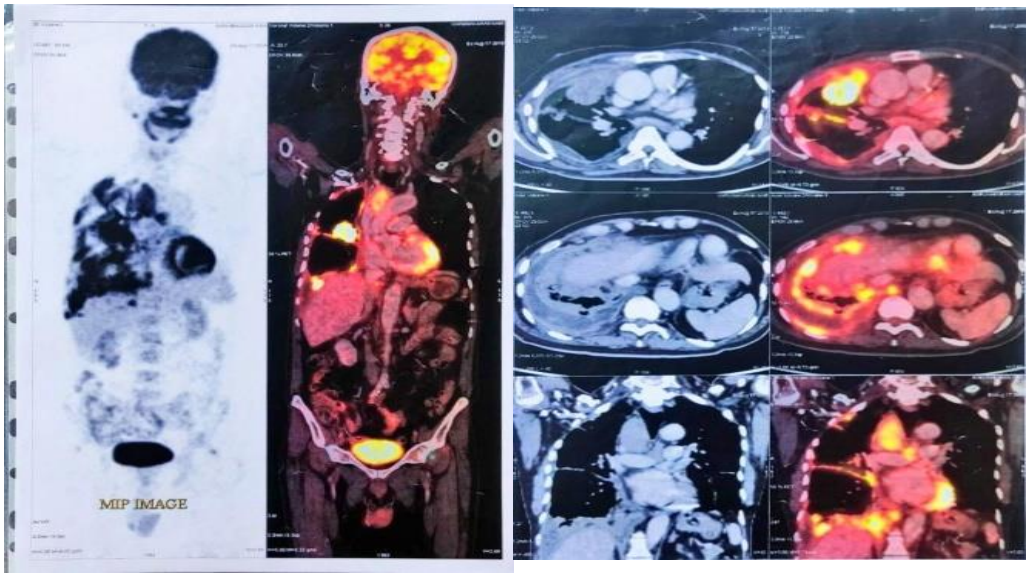


Fig 1: PET scan image before starting the treatment

DISCUSSION

Pembrolizumab is a highly specific, fully-humanized monoclonal antibody that binds to the PD-1 receptor, inhibiting the interaction between PD-1 and its ligands and activating autoimmunity during T-cell activation, limiting tumor avoidance of immunologic surveillance [5, 6]. It is approved by the FDA to use alone as the first-line treatment in advanced NSCLC and the tumor tests show positive for PD-L1 and which does not have an abnormal EGFR and ALK gene. Feeling fatigued, pain, including rash, diarrhoea, fever, cough, decreased appetite, shortness of breath, bones or joints, abdominal pain, and low thyroid hormone levels are all common adverse effects of Pembrolizumab when used alone [7, 8].

A clinical trial in which patients with advanced non–small cell lung cancer who received Pembrolizumab were compared to those who received platinum-based chemotherapy l. All of the participants in the study had never been treated with medication before and did not have an aberrant EGFR or ALK gene. Pembrolizumab 200 mg was given to 154 patients every three weeks, and chemotherapy was given to 151 individuals. In this clinical trial, all patients tested positive for the biomarker PD-L1 at a level of 50% or above. When compared to chemotherapy, Pembrolizumab lowered the chance of cancer spreading, growing, or worsening by 50%. At 10.3 months, half of the patients on Pembrolizumab were alive without their cancer spreading, developing, or worsening, compared to 6 months for chemotherapy patients. Cancer did not advance in 53% of patients who received Pembrolizumab versus 23% of patients who received chemotherapy [9, 10].

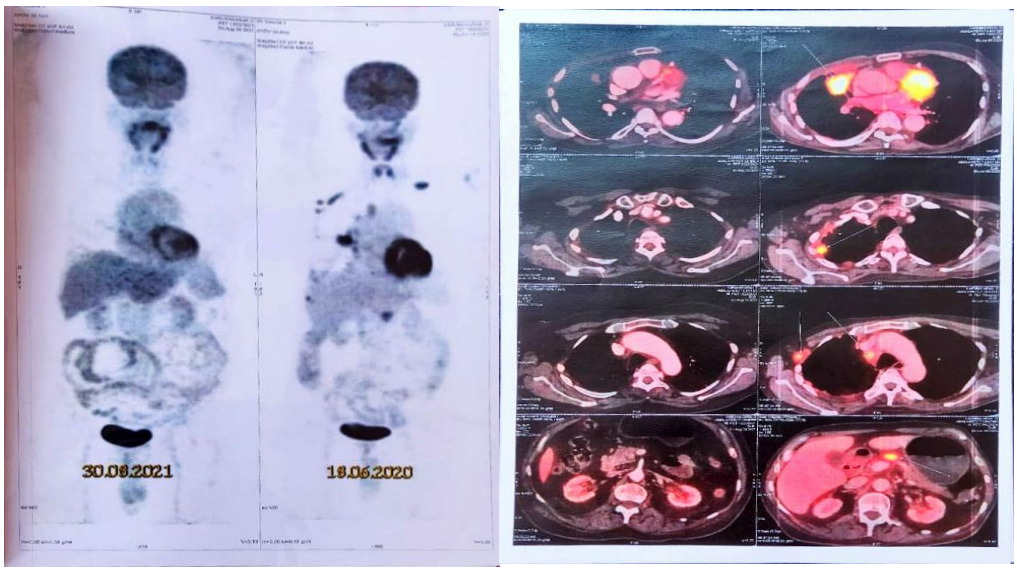


Fig 2: Comparison of PET scan images during the Treatment shows the tumor was significantly reduced by 70-80%

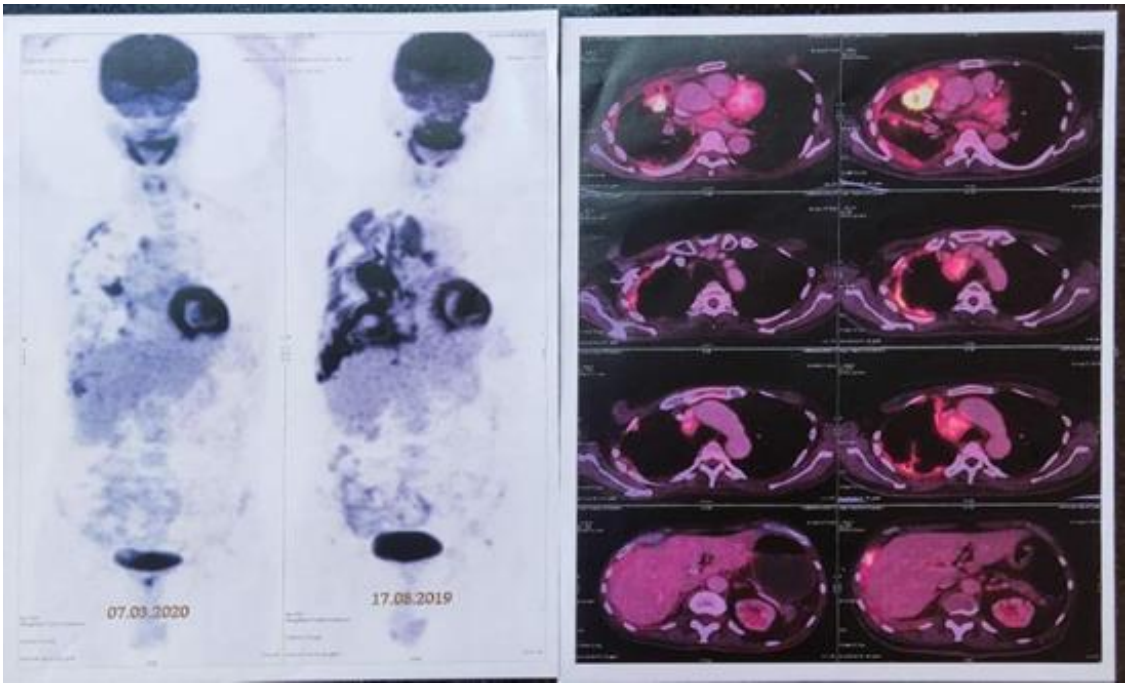


Fig 3: Comparison of PET scan images during the Treatment shows the tumor was significantly reduced by 70-80%

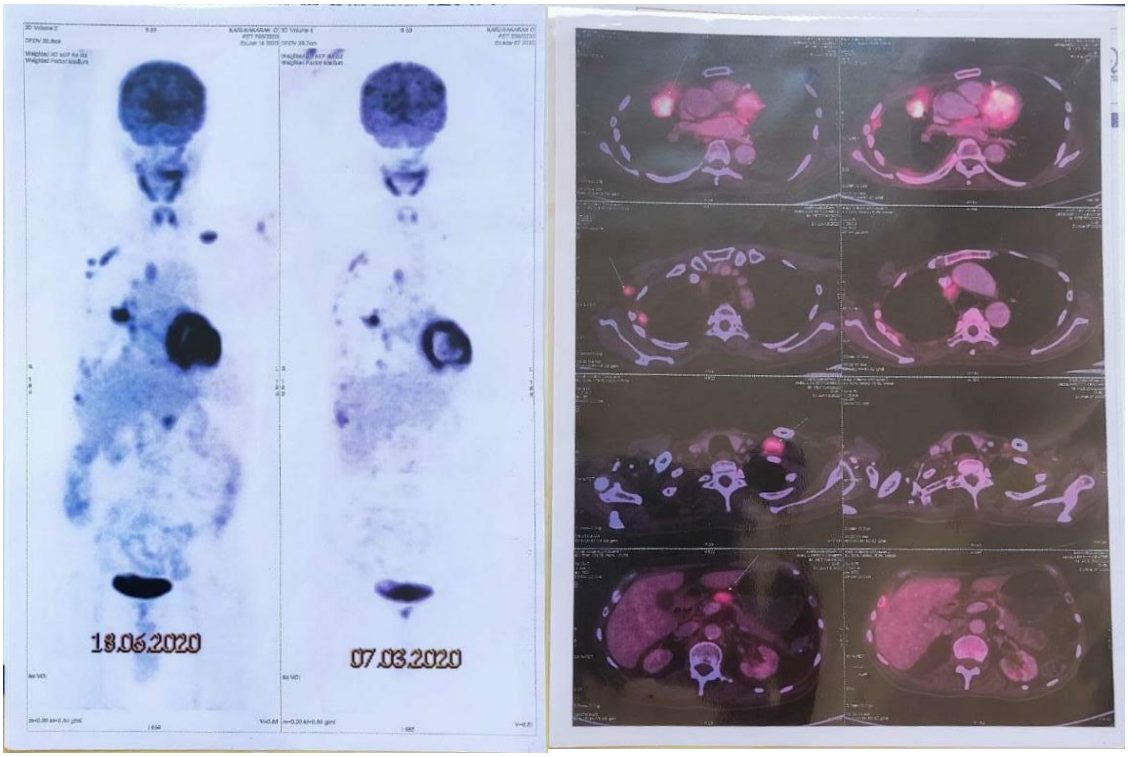
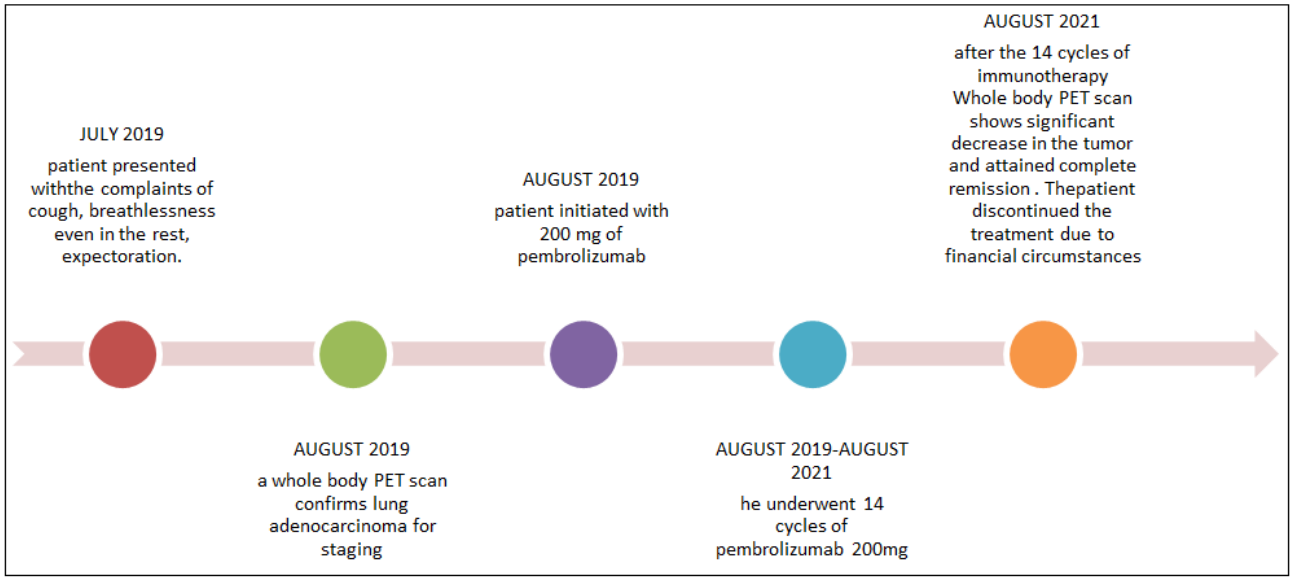


Fig 4: Comparison of PET scan images during the Treatment shows the tumor was significantly reduced by 70-80%

Given the evidence mentioned above the use of Pembrolizumab as the first-line treatment in advanced lung cancer proves significant progress in the condition of the patients with increased quality of life and decreased tumor development and worsening. When comparing Fig1 and the images during and after the treatment Fig 2, 3 and 4 show the patient had shown a very good response with malignancy in a better response state.

CONCLUSION

In conclusion, pembrolizumab has demonstrated a promising Anti-tumor activity when used as a first-line agent in patient diagnosed with metastatic lung cancer.



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