

An uncommon adversity, a true key or double edge?

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Introduction:

Pembrolizumab is a selective anti-programmed cell death-(PD-1) humanized monoclonal antibody which inhibits (PD-1) activity through interacting with PD-1 receptor on T-cells blocking its interaction with PD-1 ligands. Antagonising the PD-1 pathway inhibits the negative immune regulation caused by PD-1 receptor signaling; therefore, it induces anti tumor response via reversing T-cell suppression. Pneumonitis is a rare side effect of PD-1 Inhibitors commonly misdiagnosed as pulmonary infection.

Case presentation:

We present a case of 60-year-old woman with stage 4 adenocarcinoma of the lung which was diagnosed on May 2018 presented with 2 day history of shortness of breath. She was treated with chemotherapy (carboplatin and pemetrexed) and radiotherapy. Several months later a biopsy of the left adrenal gland metastasis was positive for over-expression of PD-1 by 95%. She was subsequently started on pembrolizumab 200 mg intravenous treatment every 3 weeks with total of 4 treatments. Her last dose was 2 weeks prior presentation. The patient was admitted with shortness of breath, productive cough, hemoptysis and pleuritic chest pain.

Initial blood tests demonstrated white blood cell count of $13.7 \times 10^9/L$ and hemoglobin 9.9 g/L. Liver and renal function tests were normal. Lactic acid 1.4 mmol/L, procalcitonin 0.28 ng/ml and C- Reactive protein, 180 mg/L. An arterial blood gas in the room air showed pH of 7.45, pCO₂ 31, pO₂ 78 and HCO₃ 21. ECG was evident of sinus tachycardia. Blood and sputum cultures, influenza antigen, urine legionella, MRSA culture from nasal swab, and respiratory syncytial virus antigen were negative. Chest X-Ray showed bilateral opacities. CT of the chest was remarkable for signs of remission, however, a new diffusely scattered ground-glass opacities and attenuation with interlobular septal thickening was evident of severe pneumonitis. Patient was diagnosed with Grade 2 anti- PD1 (Pembrolizumab) induced pneumonitis.

She was then admitted to the Intensive Care Unit, started on conservative management that included BiPAP, IV antibiotics and systemic steroids. The patient showed gradual improvement back to her baseline upon discharge.

Discussion:

Pneumonitis is a rare but severe side effect associated with PD-1 inhibitors, it is imperative to have a high index of suspicion, as early diagnosis and treatment with systemic steroids will prevent an otherwise fatal disease. The diagnosis is usually delayed due to lack of similar published reported cases. We report this case in order to raise awareness about a rare but commonly fatal side effect of PD-1 inhibitors.