Antineoplastics/granulocyte colony-stimulating factors

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Febrile neutropenia, COVID-19, and aggravation of COVID-19 pneumonia and post-COVID-19 organising pneumonia: case report

A 44-year-old man developed febrile neutropenia and COVID-19 during chemotherapy with carboplatin, paclitaxel and pembrolizumab for non-small cell lung cancer (NSCLC). Additionally, he experienced worsening of COVID-19 pneumonia and post-COVID-19 organising pneumonia during treatment with pembrolizumab for NSCLC and unspecified granulocyte colony-stimulating factors for febrile neutropenia [*routes and times to reaction onsets not stated*].

The man, who had been diagnosed with NSCLC with intrapulmonary metastases, started receiving carboplatin area under the curve 5 and paclitaxel 200 mg/m^3 every 3 weeks for 3 courses. Following partial response, pembrolizumab 200 mg/body was added at the time of the fourth course. One month later, he was hospitalised with a body temperature of 36.8°C. He subsequently received fifth course of immunochemotherapy. The following day, his body temperature rose to 38°C. Blood tests revealed neutropenia, and a thoracic CT scan on day 4 revealed ground-glass opacities in the right lung. PCR for SARS-CoV-2 RNA was found to be positive. He was diagnosed with febrile neutropenia and COVID-19 secondary to carboplatin, paclitaxel and pembrolizumab.

The man started receiving unspecified granulocyte colony-stimulating factors and cefepime for febrile neutropenia. On day 9, he developed high fever, mild hypoxaemia, neutropenia and thrombocytopenia, and bilateral lung opacities. Hence, he started receiving off-label treatment with inhaled ciclesonide and favipiravir for COVID-19. He also received supplemental oxygen. Later, on day 19, his condition deteriorated. He experienced high fever, tachypnoea, tachycardia, hypotension and severe hypoxaemia. Laboratory analyses revealed neutrophilia, elevated levels of CRP and D-dimer, and liver and renal dysfunctions. A thoracic CT scan demonstrated consolidation in the right upper lobe and bilateral lower lobes of the lungs. These findings were attributed to late-onset respiratory and circulatory failure with systemic inflammation. Hence, a diagnosis of worsening of COVID-19 pneumonia and post-COVID-19 organising pneumonia secondary to pembrolizumab and the unspecified granulocyte colony-stimulating factors was made. He required intermittent mandatory ventilation, and he was treated with meropenem, hydrocortisone, norepinephrine [noradrenaline], heparin [unfractionated heparin] and edoxaban [edoxaban tosilate hydrate]. His condition promptly improved: the fever and opacities rapidly subsided. The febrile neutropenia, COVID-19, and exacerbated COVID-19 pneumonia and post-COVID-19 organising pneumonia eventually resolved. He was weaned off the ventilator on day 29 and discharged on day 52. The immunochemotherapy for lung cancer was discontinued.

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