Annals of Hematology & Oncology

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Austin Publishing Group

Clinical Image

Many Faces of COVID-19 Pneumonia in Male Cancer Patients

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Received: August 25, 2020; **Accepted:** September 10, 2020; **Published:** September 17, 2020

Abstract

Patients with metastatic cancer may be more prone to severe COVID-19 infection and complications compared to non-cancer patients, and men more than women. Two male patients diagnosed with COVID-19 pneumonia and different primaries (anterior mediastinal non-seminomatous germ cell tumor and prostate cancer, respectively) are presented. The patients' different radiographic features and outcomes are discussed in the context of their clinical characteristics and oncologic treatments received prior to infection.

Keywords: COVID-19 pneumonia; SARS-CoV-2; Prostate cancer; Androgen deprivation therapy; Immunotherapy

Clinical Image

A 33 year old man was admitted for progressive shortness of breath and non-productive cough of 2 months duration. He was found to have a large anterior mediastinal mass on chest CT, measuring 7.1 x 15.8 x 16.5 cm and a large pericardial effusion which was drained. His serum AFP level was 9990.9 ng/mL and a CT-guided biopsy of the mass confirmed a diagnosis of non-seminomatous germ cell tumor with extensive necrosis. His symptoms resolved after initiation of systemic chemotherapy with VIP (etoposide, ifosfamide, cisplatin); however, 2 weeks later he experienced a recurrence of dry cough, and fever. Repeat scans showed a new nodular opacity 1.5 x 1.1 cm within the right middle lobe (Figure 1A). He tested positive for SARS-CoV-2 by Reverse Transcription Polymerase Chain Reaction (RT-PCR) and was started on hydroxychloroquine and azithromycin, in addition to broad spectrum antibiotic coverage. However, he rapidly deteriorated, developed hypoxemic respiratory failure requiring intubation and unfortunately expired four days later.

A 73 year old man with a known history of diabetes mellitus, hypertension, obesity and castration- resistant prostate cancer with osseous metastases on continuous Androgen Deprivation Therapy (ADT) with LHRH agonist underwent an outpatient restaging CT of chest, abdomen and pelvis after recent completion of autologous dendritic cell vaccine (sipuleucel-T) administered biweekly. CT chest disclosed bilateral upper lobe, right middle lobe, and bilateral lower lobe peribronchovascular interstitial infiltrates with a mild groundglass component (Figure 1B). Despite testing positive for SARS-CoV-2, the patient remains asymptomatic and home-quarantined two weeks later.

Emerging evidence suggests that patients with metastatic cancer may be more prone to severe COVID-19 infection and complications compared to non-cancer patients, and men more than women [1-4]. However, radiographic features and outcomes may significantly differ within this population. Besides obvious risk factors such as lung primary or metastatic disease, and recent chemotherapy [3,4], others like older age and comorbidities (e.g. diabetes, hypertension, obesity) may not be major determinants. Importantly, not all types of immunotherapy (e.g. autologous vaccines) may have detrimental effects as recently reported for Programmed Death-1 (PD-1) immune checkpoint inhibitors [3]. A key enzyme enabling cellular infection by coronaviruses, Transmembrane Protease, Serine 2 (TMPRSS2) has been implicated as a potential target via use of androgen-receptor inhibitory therapies, which are already in use for patients with prostate cancer [5]. Whether use of ADT might explain the different radiographic presentation and clinical outcomes between the two male cancer patients presented here is unclear, but tempting to speculate. Large studies are warranted to elucidate predictive and prognostic factors, and enable tailoring of both antiviral and oncologic treatments in these patients.

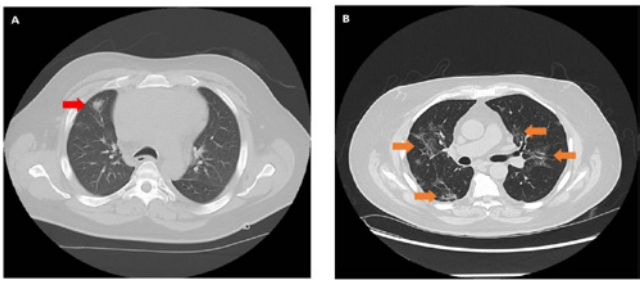

Figure 1: (A) CT chest (patient 1) showing a large anterior mediastinal mass and a new nodular opacity 1.5 x 1.1 cm within the right middle lobe. **(B)** CT chest (patient 2) showing bilateral upper lobe, right middle lobe, and bilateral lower lobe peribronchovascular interstitial infiltrates with a mild ground glass component.

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Citation: Vlachostergios PJ. Many Faces of COVID-19 Pneumonia in Male Cancer Patients. Ann Hematol Oncol. 2020; 7(7): 1312.

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