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A Call for Rapid Submission of Data for Aggregate Review: Can Daily Radiotherapy Imaging Be Used as a Potential Screen for Coronavirus Disease 2019?



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The coronavirus disease 2019 (COVID-19) caused by the severe acute respiratory syndrome coronavirus 2 is an ongoing pandemic that is increasingly changing society and medical care as a whole. The general population is becoming more subject to contact restrictions, and clinical providers are now faced with a situation in which they are trying to adapt clinical care patterns to the risk of COVID-19. Exemplifying careful consideration of how cancer care and COVID-19 interact, Suppli et al.¹ and McGinnis et al.² present very interesting, timely, and potentially impactful case reports exemplifying how some care patterns may need to change during this pandemic.

Suppli et al.¹ present the case of a new COVID-19 diagnosis in a patient during radiotherapy (RT). The patient was a 74-year-old man receiving treatment with concurrent chemoradiotherapy for stage III NSCLC. Within the first 2 weeks of treatment, the patient started manifesting COVID-19–like symptoms of fever, cough, fatigue, and myalgia. Unfortunately, infection with the severe acute respiratory syndrome coronavirus 2 was confirmed; the patient's symptoms progressed, and he ultimately died from the disease. In a parallel report by McGinnis et al.² a 63-year-old woman with recurrent lung cancer was being treated with stereotactic ablative RT, also usually referred to as stereotactic body RT. The patient was screened for COVID-19 symptoms with no presenting signs of infection. However, in both cases, a review of image guidance scans supported infection.

As a part of standard RT and to ensure accurate treatment for conventional RT or stereotactic ablative RT or stereotactic body RT, patients often receive daily computed tomography (CT) scans of the chest. Although image guidance CT scans may not have the diagnostic quality of conventional CT scans from radiology departments, CT scans during RT provide sufficient detail to accurately align patients for daily RT and to see mild to severe pulmonary opacification, atelectasis, effusions,

and fiducial markers used to guide treatment. A review of daily imaging by Suppli et al.¹ revealed multiple new pulmonary infiltrates between CT on days 7 and 8. More importantly, infiltrates were noted 36 hours before the symptoms, but the interval between sequential cone beam CTs (CBCTs) was 3 days over the weekend. The case report by McGinnis et al.² revealed new bilateral ground-glass opacities after a 20-day interval, but this was in a patient who was ultimately asymptomatic and required at-home observation. In the case report of Suppli et al.¹ the patient's symptoms were used to guide COVID-19 screening, and scans were retrospectively reviewed after COVID-19 was confirmed. In contrast, McGinnis et al.² noted changes on CT scan initially, which then prompted COVID-19 testing. In both cases, the authors proposed the utility of CBCTs for potential early detection.

Findings from both case reports exemplify how careful consideration and review of patient factors could be useful in aiding the diagnosis and management of patients during the COVID-19 pandemic. Although it is critical to note that these reports are for just two patients, the cases also present an opportunity for oncologists, and radiation oncologists in particular, to revise their daily review of patient treatment. For most

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radiation oncologists who review daily CBCTs for localization, it can be very easy and quick to review images for new spotty pulmonary infiltrates or ground-glass opacities during RT. This is by no means diagnostic at this time, and infiltrates could represent other causes of infection or chemotherapy-associated pneumonitis. However, infiltrates associated with radiation pneumonitis typically occur weeks or months after completion of RT. New infiltrates that develop from 1 day to the next or between subsequent treatments during RT are worthy of investigation. Because infiltrates between sequential CTs developed between Friday 2 and Monday for Suppli et al.,¹ there is a possibility that new infiltrates could have been noted more than 36 hours before the onset of symptoms. The interval of 20 days reported by McGinnis et al.² did not help narrow the window of observation. However, it is important to note that changes were observed in both, a patient who was asymptomatic and a patient who progressed to severe disease and died. This suggests that new findings on image-guided CT scans during RT could be useful in assisting COVID-19 screening and detection.

These case reports are limited by all of the standard issues associated with single-patient case reports, including random chance. More data are needed to clarify the clinical utility of these observations. However, in line with suggestions by Suppli et al.¹ and McGinnis et al.,² the following are suggested for consideration:

1. Oncologists should immediately consider adding a review of daily CT image guidance for new infiltrates in patients with cancer for whom CT of the chest is being performed. This will require little time and will not add any risk to the patients or staff;
2. When new infiltrates are identified in cases, the clinical staff should consider the possibility of a new COVID-19 diagnosis, including consideration for immediate screening questions for the patient, referral for COVID-19 testing, and appropriate protective equipment. Although this may seem an overabundance of caution, it may also help minimize exposure and spread for patients with cancer; and
3. For patients in whom new infiltrates are noted, there is insufficient data to make any recommendations on stopping cancer treatment, which could cause harm by reducing tumor control. The findings in both case reports do not yet support changes in the management of the patient. There are currently no evidence-based recommendations for continuing versus stopping cancer treatment in patients who develop COVID-19. Currently, clinicians must still consider cancer treatment for each patient in the context of COVID-19 risk, diagnosis, and management.

Recognizing the potentially important clinical utility of observing new infiltrates in patients before the development of COVID-19 symptoms, *The Journal of Thoracic Oncology* is requesting rapid submission of deidentified data by clinicians and researchers for patients who developed biochemically confirmed COVID-19 during RT (between the first and final treatment with RT), and who have daily chest imaging data leading up to a COVID-19 diagnosis. Data should include the following:

1. Patient's sex
2. Age
3. Cancer diagnosis
4. Histologic evaluation
5. Cancer stage
6. Chemotherapy agent
7. Planned RT dose
8. Completed RT dose
9. Coplanar serial representative scans revealing infiltrates or confirmation that no infiltrates were noted
10. Method of COVID-19 diagnosis
11. Date of COVID-19 diagnosis relative to the start of RT
12. Date of COVID-19 symptoms relative to the start of RT
13. Any COVID-19 symptoms
14. Other optional data, which can include whether patients were hospitalized, received intensive care, received ventilation, and overall outcome, if known (insert secure digital memory card here).

However, the primary objective of this request is to rapidly determine whether there is a correlation between the onset of new pulmonary infiltrates seen during RT and COVID-19. It is not expected that analyses will be delayed for optional items once sufficient data have been aggregated to review for correlation. Analyses and authorship will be shared for all contributors who submit data.

Data should be submitted to this link: [COVID-19 and Radiotherapy](#).

References

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