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COVID-19 Rapid Letter

Radiotherapy imaging: An unexpected ally in fighting COVID 19 pandemic^{*}

To the Editor

The spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)-COVID 19 has rapidly taken on pandemic proportions, with nearly 2.400.000 people infected and 165.000 dead, at the time writing (<https://www.ecdc.europa.eu/>).

It has become evident that fragile patients are at enhanced risk of hospitalization, general complications and death. In such a harsh scenario, cancer patients are at significant risk and need particular care in order to prevent, reduce and avoid all the possible contagion occasions [1].

Several Authors have suggested an optimization of patients access to radiotherapy (RT), proposing the reinterpretation of treatments priority and intents; the modification of dose fractionations and concurrent chemotherapy regimens; and the introduction of procedures aimed to reduce patients and personnel exposure to biological risks. Various strategies have been adopted to face the risk of infection during RT course for the different anatomical sites reducing the numbers of treatments, introducing safety procedures such as scanning body temperature before each fraction, properly using personal protective equipment (PPE) or admitting the most frail patients in hospitals [2–10].

Especially during the first most pacy weeks, the different RT centers have adopted inhomogeneous strategies with regards to radiotherapy treatment delivery and screening solutions: some centers systematically excluded patients with fever and airways symptoms from treatments; other decided to perform thorough

diagnostic investigation with nasopharyngeal swabs for each patient undergoing therapy; other preferred to administer RT only to admitted patients.

In this context, the known imaging techniques used for simulation (CT) or IGRT monitoring, may represent a significant tool to detect early signs of SARS-Cov-2 pneumonia in patients undergoing radiotherapy. More specifically, Cone Beam CT (CBCT) is one of the best known IGRT solutions, being a reliable tool for setup verification, especially in high precision treatments. Its scanning resolution, slice thickness and speed of acquisition have been improved during last years and have already been used as a monitoring tool during treatment on thoracic malignancies in the past, with interesting results [11].

Furthermore, the recent introduction of Magnetic Resonance Imaging as IGRT support, may also allow to identify still unknown early diagnostic patterns for this disease, opening brand new scenarios.

An aware use of radiotherapy imaging in the SARS-CoV-2 epidemic setting could potentially allow early diagnosis of pneumonia, especially when patients are still in the asymptomatic phase, addressing patients to protected SARS-CoV-2 diagnostic or therapeutic paths, in order to prevent worse evolution of clinical conditions due to the still unknown lung disease progress and limiting the risk of contagion among the other patients in common areas (i.e. waiting rooms) and for the Radiation Therapy Technologists attending the treatment [12].

We here report the case of a 60 years old, HIV positive, male patient currently in home care and candidate for palliative RT for thoracic and lumbar bone metastases of hepatocarcinoma.

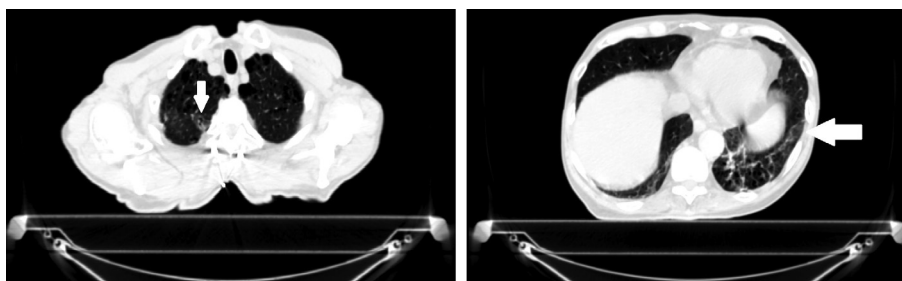


Fig. 1. Simulation CT with two suspicious areas of opacity: right lung apex (left) and left lung inferior lobe (right).

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Fig. 2. First CBCT: only the suspicious left inferior lobe opacity is encompassed in the field of view.

Suspicious findings were observed in the Simulation CT (Fig. 1) and first positioning CBCT (Fig. 2) and the patient was referred to the infectious diseases path of care for SARS-CoV-2 diagnostic procedures start.

The patient developed cough and fever two days after image acquisition and pain is currently treated with medical approach, postponing the start of RT when all the diagnostic and quarantine procedures will be completed.

We encourage therefore all the radiation oncology community to be on alert about this potential screening opportunity and train the Simulation and Linac teams accordingly (i.e. RTTs), so that all the figures involved in treatment delivery will pay great attention to IGRT images, referring suspicious cases to the diagnostic department for standard CT acquisition or infectious disease monitoring, contributing in the early diagnosis for our frail patients.

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