



## COVID-19 pneumonia: increased choline uptake with 18F-choline PET/CT

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Even if challenging, early identification of the acute respiratory disease (ARDS) held by the novel coronavirus, SARS-CoV-2, is crucial for patient clinical management.

We report the case of a 59-year-old man with biochemical recurrence of prostate cancer (prostate-specific antigen PSA 12 ng/ml) after radical prostatectomy held in September 2019 (pre-surgery PSA 4 ng/ml, Gleason score 4 + 3, negative bone scan) performing choline-PET (18F-choline positron emission tomography) to assess disease spread.

The patient arrived to our department with no fever, no shortness of breath, no fatigue or myalgia, no cough, or diarrhea. He had no medical history of pulmonary diseases,

normal respiratory rate, and SpO<sub>2</sub>. Choline-PET revealed prostate cancer bone involvement with no pathological lymph nodes in pelvic area. Indeed, the exam showed bilateral subsegmental peripheral areas of ground glass opacities (GGO) in the lungs. All the pulmonary lesions presented an increased choline-PET uptake (SUV max range 3–4) without pleural and mediastinal lymph nodes involvement (Fig. 1). The asymptomatic patient was quarantined and isolated at home as COVID-19 possible case. Within 36 h after the choline-PET, the patient developed dizziness, fatigue, and respiratory failure, leading to hospitalization. SARS-CoV-2 nucleid testing resulted positive on both nasal and pharyngeal swabs.

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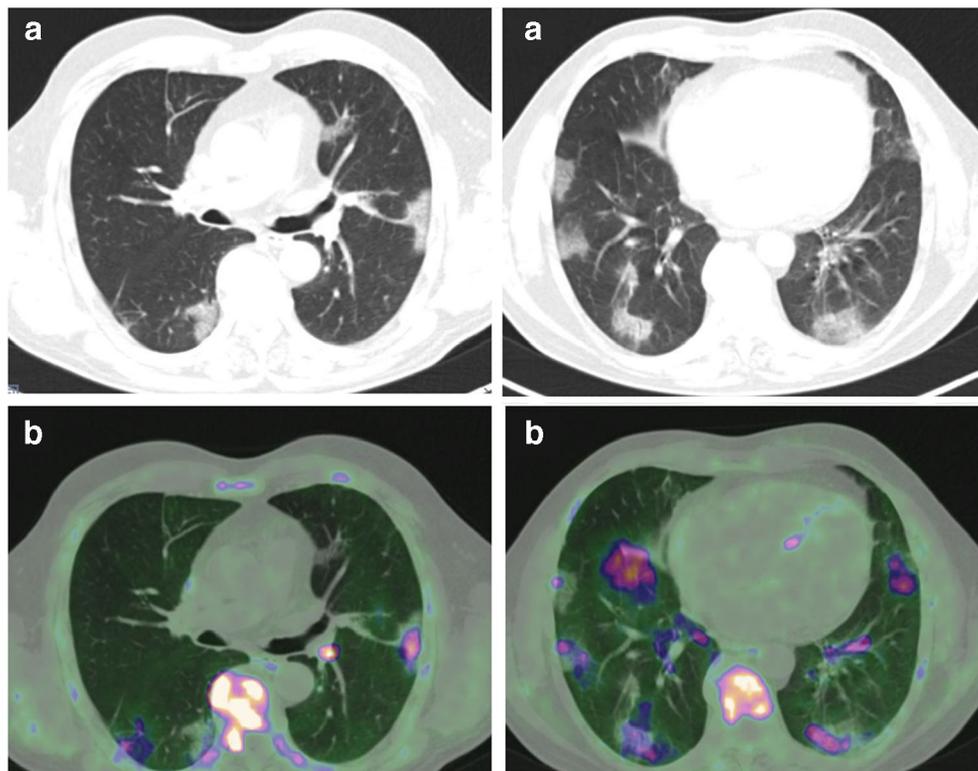
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Co-registered computerized tomography (CT) is more sensible in revealing lung involvement before clinical symptoms' appearance in SARS-CoV-2 disease [1, 2]. A previous study described the potential role of FDG-PET in the evaluation of patients with SARS-CoV-2 infection [3]. Remarkably, in our case, all the pulmonary lesions showed an increased choline uptake reflecting high macrophage inflammatory burden [4]. These findings suggest that pneumonia related to macrophage activation syndrome may be an important feature of SARS-CoV-2 disease [5]. Choline-PET may identify patients about to develop SARS-CoV-2-related ARDS.

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**Data sharing** No datasets were generated or analyzed during the current study.

### Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflicts of interest.

**Ethical approval** This article does not contain any studies with animals performed by any of the authors. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the principles of the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

**Statement of informed consent** Informed consent to assess PET-choline was obtained from the patient included in the study. The patient performed choline-PET to assess disease spread in biochemical recurrence of prostate cancer (PC) after complete prostatectomy. The patient gave a written consent for the case report publication in fully anonymized form.

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