*Interesting Image*
*Mol Imaging Radionucl Ther 2022;31:231-233 DOI:10.4274/mirt.galenos.2021.19480*

# COVID-19 Pneumonia was Incidentally Detected on $^{18}$F-Fluorocholine PET/CT in a Work-up for Prostate Cancer

## *COVID-19 Pnömonisinin Prostat Kanseri Çalışmasında $^{18}$F-Florokolin PET/BT'de Tesadüfen Tespit Edilmesi*

***Omar Ait Sahel, Yassir Benameur, Salah Oueriagli Nabih, Abderrahim Doudouh***

*Mohammed V University of Rabat, Mohammed V Military Teaching Hospital, Departments of Nuclear Medicine, Rabat, Morocco*

**Abstract**

This is a presentation of the case of a patient who underwent $^{18}$F-fluorocholine positron emission/computed tomography to stage a prostate cancer with incidentally found bilateral pneumonia. A high prevalence of incidental pneumonia is very probable under the current circumstance of coronavirus disease-2019 (COVID-19) pandemic, and oncological patients are at increased risk of COVID-19 with poorer outcome. The lung inflammatory burden in the case of COVID-19 infection can be demonstrated by $^{18}$F-fluorocholine.

**Keywords:** COVID-19, pneumonia, prostate cancer, $^{18}$F-fluorocholine, PET/CT

**Öz**

Bu çalışmada, prostat kanseri evrelemesi için $^{18}$F-florokolin pozitron emisyon tomografisi/bilgisayarlı tomografi çekilen ve tesadüfen bilateral pnömoni tespit edilen bir hasta sunulmaktadır. Koronavirüs hastalığı-2019 (COVID-19) pandemisinin mevcut koşullarında yüksek insidental pnömoni prevalansı çok olasıdır ve onkolojik hastalar daha kötü sonuçlarla birlikte COVID-19 açısından yüksek risk altındadır. COVID-19 enfeksiyonu durumunda akciğer enflamatuvar yükü, $^{18}$F-florokolin ile gösterilebilir.

**Anahtar kelimeler:** COVID-19, pnömoni, prostat kanseri, $^{18}$F-florokolin, PET/BT

**Address for Correspondence:** Omar Ait Sahel PhD, Mohammed V University of Rabat, Mohammed V Military Teaching Hospital, Departments of Nuclear Medicine, Rabat, Morocco
**Phone:** +90 212 662 84 17 84 **E-mail:** omaraitsahel85@gmail.com ORCID ID: orcid.org/0000-0002-5294-9731
**Received:** 11.06.2021 **Accepted:** 06.07.2021

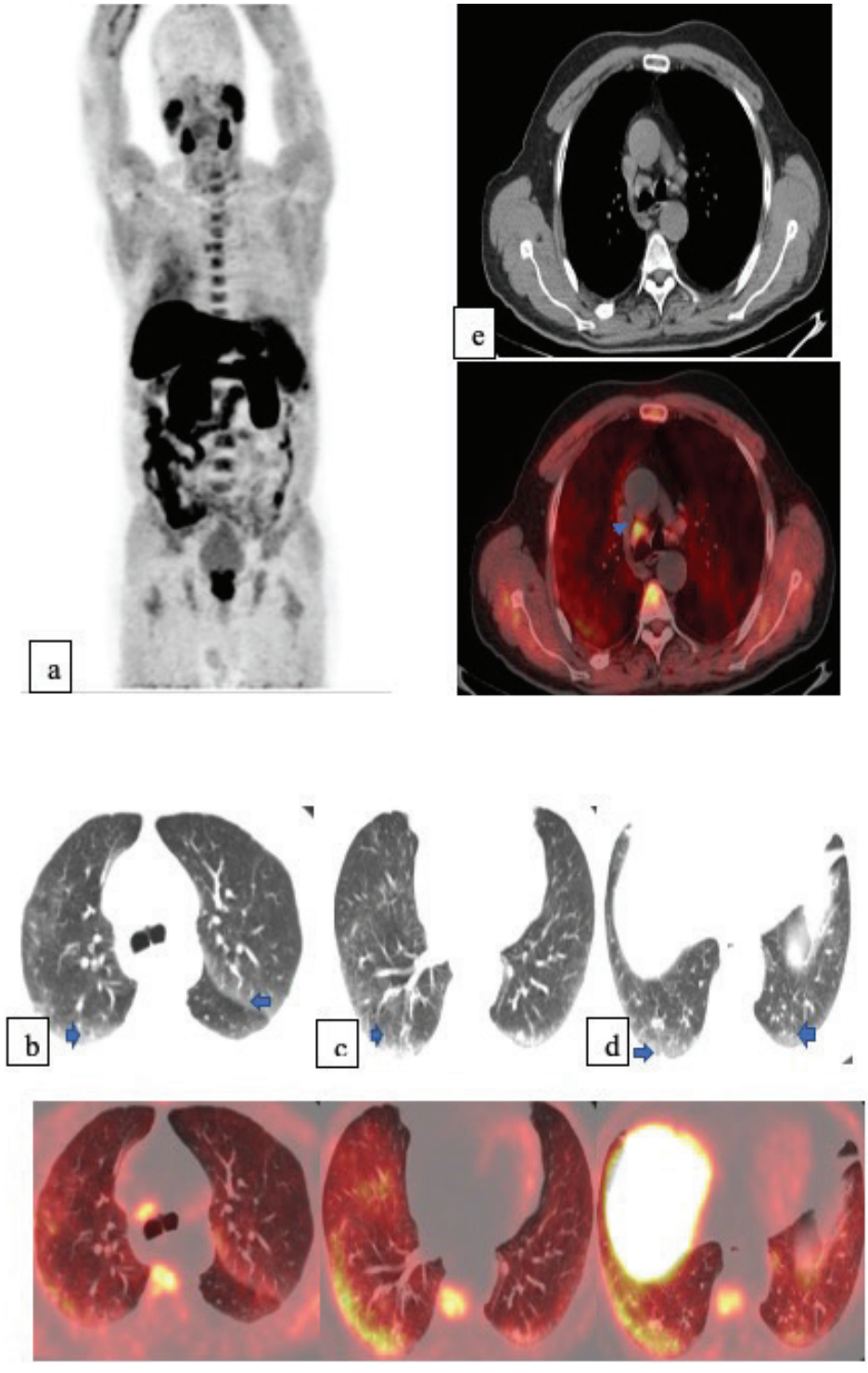


**Figure 1.** A recent diagnosis of a prostate adenocarcinoma has been made out in a 75-year-old man with a Gleason score of 7 (4+3) and a prostate-specific antigen value of 25 ng/mL. We performed a positron emission tomography/computed tomography (PET/CT) scan with $^{18}$F-choline to stage the disease. Immediately after intravenous injection of tracer (255 MBq), we acquired dynamic images of the pelvis. Sixty min after the injection, we performed a whole-body scan from the head to mid-thighs.
Maximum intensity projection showed mild uptake in the right lung, with intense and diffuse uptake of the prostate gland with a standardized uptake value ($SUV_{max}$) of 13.2 (a). Moderate tracer uptake was shown in the subpleural region of both right and left lungs with $SUV_{max}$: 5.0 and $SUV_{max}$:

2.7 respectively. The extent of pneumonia was greater in the right lung, which corresponds to CT findings of ground glass opacities and a reticular pattern, particularly in the posterior segments (b, c, d) (arrows). We also detected a focal uptake of the tracer in the right hilar ($SUV_{max}$: 3.2), and right paratracheal lymph node with $SUV_{max}$: 4.5 (e) due to infection (arrowhead).

The general practitioner was warned to manage the patient and undergo a pharyngeal swab to test for severe acute respiratory syndrome-coronavirus-2 infection. Real-time polymerase chain reaction (RT-PCR), to detect viral nucleotides on pharyngeal swab, was positive for COVID-19. Hydroxychloroquine and azithromycin were administered to treat the patient, who did not need for hospitalization.

Patients with cancer and cardiovascular disease face with increased risk and worse clinical outcomes of COVID-19 infections (1). Nucleic acid testing (RT-PCR) is the standard test for the diagnosing of COVID-19 infection, but with a high false negative rate. The chest CT findings demonstrated high sensitivity for diagnosis and monitoring of COVID-19. Although many reports highlight the usefulness of PET/CT with $^{18}$F-fluorodeoxyglucose in the early detection of asymptomatic patients with COVID-19 (2,3), very few reports demonstrate incidental detection of COVID-19 infection in $^{18}$F-fluorocholine PET/CT examination in patients with malignancy (4,5). The lung inflammatory burden in a COVID-19 infection can be demonstrated by $^{18}$F-fluorocholine. An upregulation of choline kinase in the activated macrophages may explain the accumulation of $^{18}$F-fluorocholine in the inflammatory tissue (6,7).

### Ethics

**Informed Consent:** Written informed consent of the patient was obtained.

**Peer-review:** Externally peer-reviewed.

### Authorship Contributions

Surgical and Medical Practices: O.A.S., A.D., Concept: O.A.S., A.D., Design: O.A.S., A.D., Data Collection or Processing: O.A.S., Y.B., Analysis or Interpretation: O.A.S., Y.B., S.O.N., Literature Search: O.A.S., S.O.N., Writing: O.A.S.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study received no financial support.

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