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# Identification and Resolution of Asymptomatic COVID-19 Pneumonitis and Colitis: Serial Assessment of Fluorodeoxyglucose Positron Emission Tomography-Computed Tomography for Evaluation of Lung Cancer



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## Case Report

A 67-year-old man with no smoking history had a chest radiograph for dyspnea, which identified a right lung nodule. The patient subsequently had a computed tomography (CT) chest which confirmed a spiculated lung nodule suggestive of lung cancer and nothing else. This initiated a diagnostic and staging workup for lung cancer; the time between first CT and positron emission tomography (PET)/CT was 4 weeks. He traveled to Egypt and Jordan after the first CT and 3 weeks before the fluorodeoxyglucose PET/CT. He had no fever or respiratory symptoms. He reported mild gastrointestinal symptoms while traveling, attributed to traveler's diarrhea. The diarrhea resolved rapidly, 3 weeks before the PET/CT.

His initial PET/CT (Figs. 1A, 2, and 3A) revealed mild-to-moderate uptake in the pulmonary nodule (maximum standardized uptake value: 4.1; blood glucose 4.5 mmol/liter). There was bilateral parenchymal fluorodeoxyglucose activity corresponding to ground-glass opacities (GGOs), with hypermetabolic hilar and mediastinal lymphadenopathy. There was also intense colonic hypermetabolism. He was neither diabetic nor on metformin. As he was asymptomatic, he did not meet the criteria for coronavirus testing.

When the patient had CT-guided biopsy of the lung mass a week after, he still had GGOs. The biopsy was performed on the day coronavirus disease 2019 (COVID-19) was declared a pandemic. Because of the pulmonary opacities, he was tested for the coronavirus and was found positive. Owing to his asymptomatic status, he did

not receive any COVID-19 treatment other than self-isolation. His biopsy confirmed lung adenocarcinoma.

The patient returned for repeat PET/CT staging 32 days after the initial study (Figs. 1B and 3B). The nodule now had a maximum standardized uptake value of 6.1 (blood glucose 4.8 mmol/liter). Although some GGOs persisted, none had abnormal activity. The hypermetabolic lymphadenopathy had resolved, as had bowel activity. Because of the cancellation of elective surgeries, the patient underwent stereotactic body radiation therapy (48 Gy in four fractions).

## Discussion

This report highlights several important issues. The appearance of COVID-19–related pan-colitis on PET/CT has not been previously reported. The primary symptoms of COVID-19 are that of a respiratory flu-like illness.<sup>1</sup> COVID-19 may induce a persistent, intense inflammatory reaction in the respiratory system despite an asymptomatic respiratory state. PET/CT has revealed

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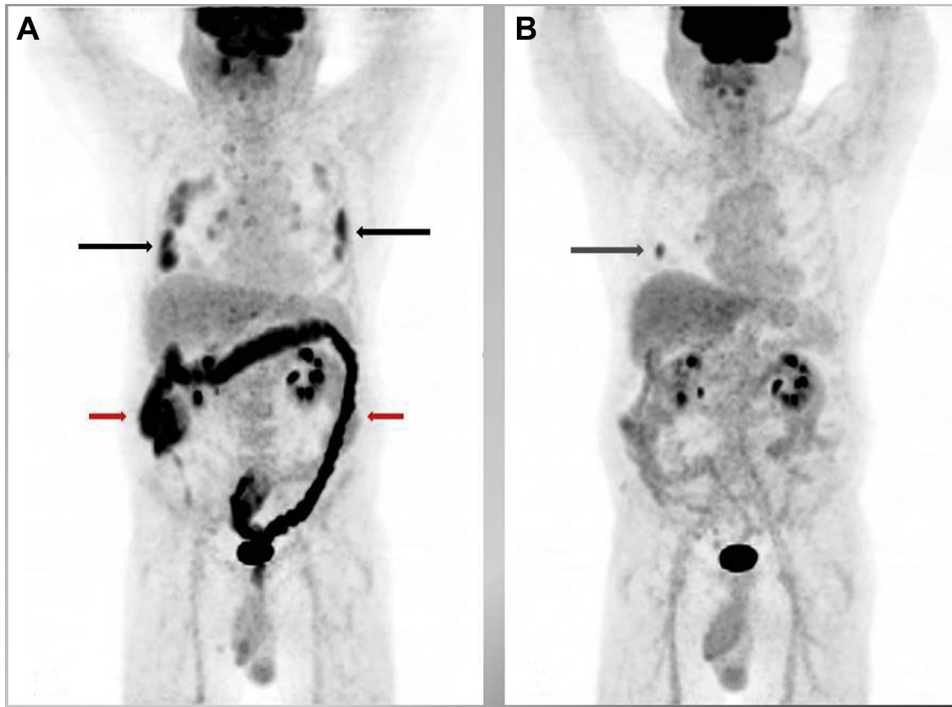
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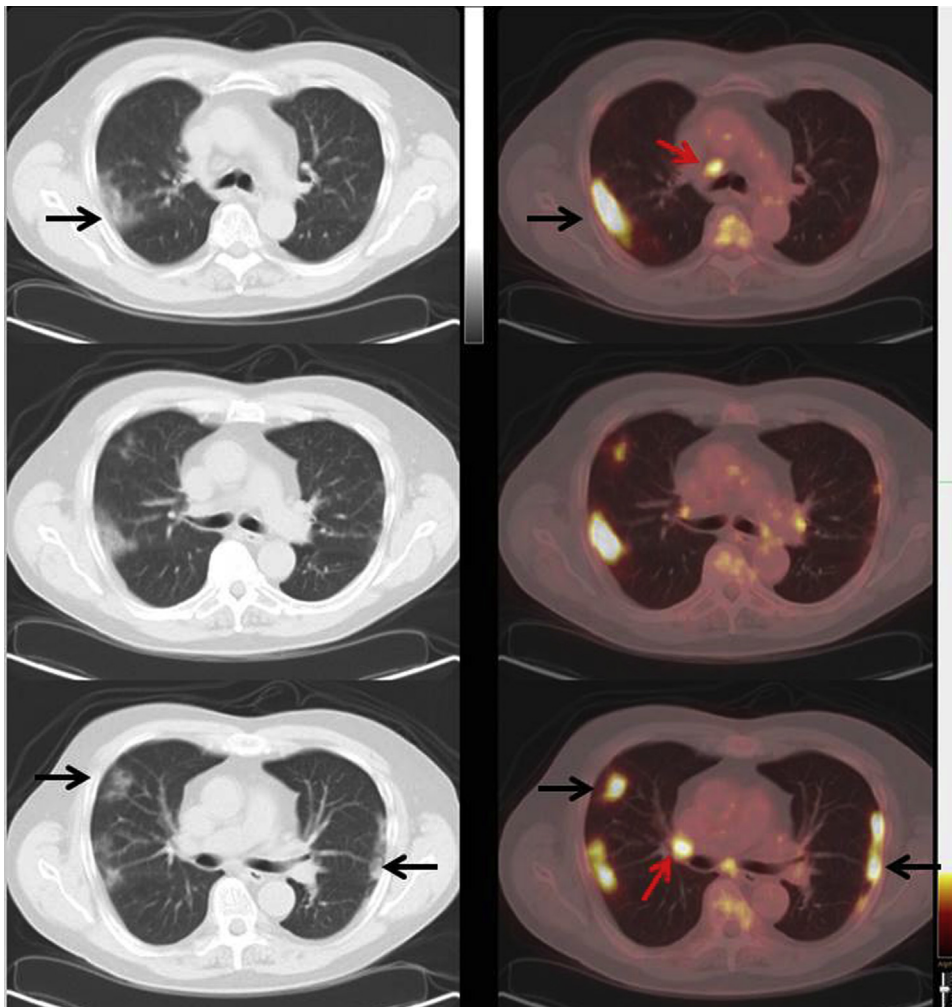
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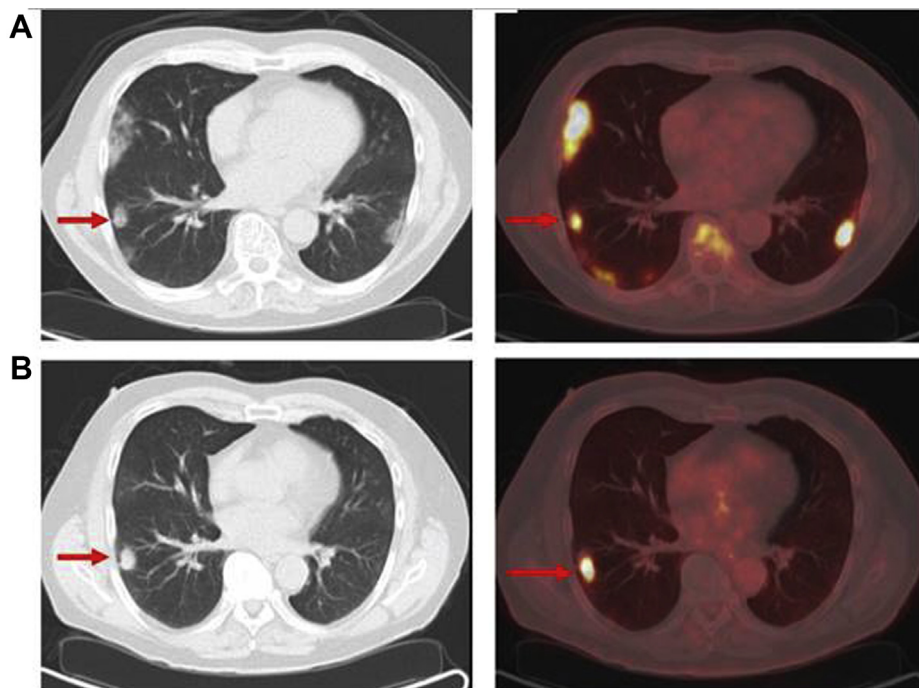
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**Figure 1.** (A) The initial PET/CT study reveals metabolically active lung infiltrates (black arrows), hypermetabolic hilar and mediastinal lymphadenopathy, and intense colonic activity (red arrows). The pulmonary nodule is not easily identified as it is obscured by the inflammatory reaction. (B) Follow-up PET/CT with resolution of lung and GI activity, leaving the nodule more visible (arrow). CT, computed tomography; GI, gastrointestinal; PET, positron emission tomography.





**Figure 3.** CT (left) and PET/CT (right) transverse slices at the level of the pulmonary nodule (arrows) on the (A) initial and (B) follow-up studies. The nodule has greater activity on the second study, and other metabolic abnormalities have resolved, with minimal residual GGO on CT. CT, computed tomography; GGO, ground-glass opacity; PET, positron emission tomography.

metabolically active GGOs and hilar and mediastinal lymph nodes in patients with COVID-19, even when asymptomatic.<sup>2,3</sup>

Our patient was considered asymptomatic, although diarrhea is not uncommon with COVID-19. A total of 10% to 15% of patients have gastrointestinal symptoms.<sup>4</sup> Thus, diarrhea should be considered an important and not uncommon symptom of coronavirus infection. COVID-19 infection, even in those with minimal symptoms, induces an intense inflammatory state locally; the PET result of this patient revealed colitis several weeks after resolution of mild diarrhea and resolved before the subsequent study.

This report highlights the interplay between lung cancer workup and COVID-19 infection. We must now be cognizant of the impact of asymptomatic COVID-19 infection on the routine workup of lung cancer. The pulmonary inflammatory reaction in this patient was so intense that it created a relative metabolic steal phenomenon: the known cancer appeared to have relatively low activity in the presence of the inflammatory changes, but after the resolution of the inflammation as revealed by repeat PET/CT, the metabolic activity was higher. The initial activity in the hilar and mediastinal nodes prohibited staging of his lung adenocarcinoma. All

metabolically active GGOs and hilar and mediastinal lymph nodes subsequently resolved.

This is the first report of resolution of COVID-19-related abnormalities as revealed on PET/CT, in both lung and bowel. Repeat PET/CT may be necessary in patients with COVID-19 for accurate evaluation and staging of lung cancer, even if the patient is asymptomatic and many weeks past the presumed exposure.

## Acknowledgments

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**Figure 2.** Transverse slices revealing hypermetabolic pulmonary GGOs (black arrows) with hypermetabolic hilar and mediastinal lymphadenopathy (red arrows) on the initial study. GGO, ground-glass opacity.