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## Case Report

# 18-FDG PSEUDOTUMORAL LESION WITH QUICK FLOWERING TO A TYPICAL LUNG CT COVID-19 ☆,☆☆,★

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## ABSTRACT

As coronavirus pandemic continues to spread over the world, physicians have to be aware of atypical features of COVID-19 pneumonia. We report the case of a 78-year-old man presenting with pseudo-tumoral focal lesion of the left lung which switched shortly to severe and diffuse COVID-19 induced pneumonia. Nuclear medicine physicians and radiologists should be careful of some misleading hypermetabolic aspects mostly in asymptomatic patients.

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## Introduction

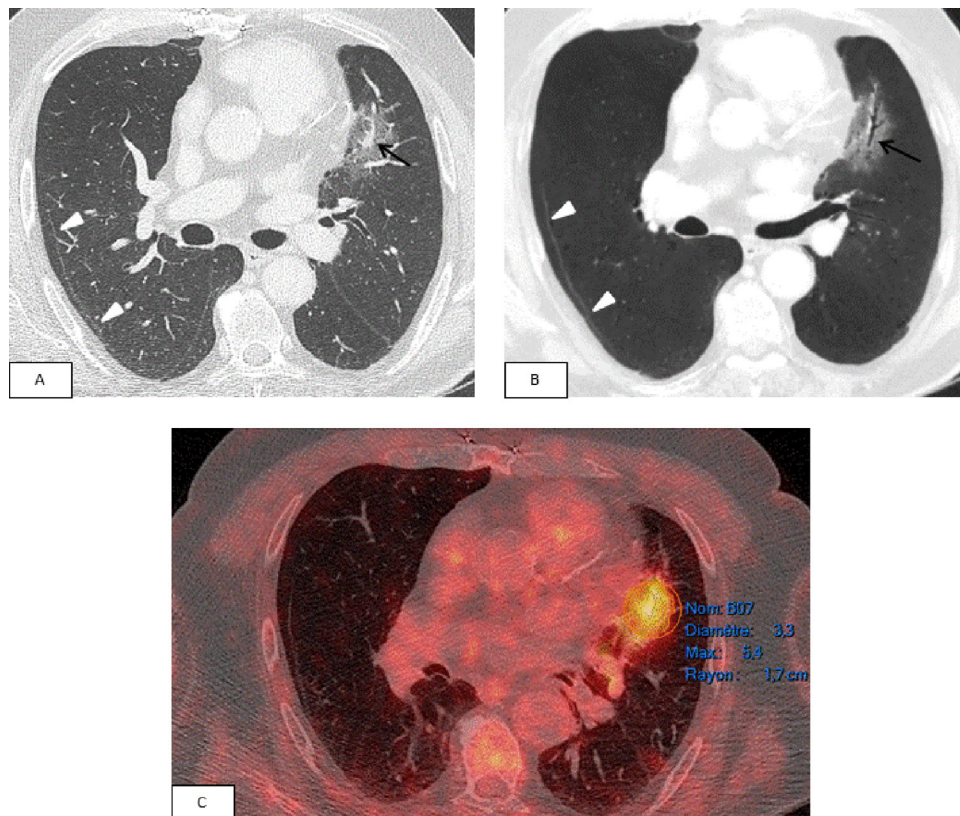
Coronavirus disease (COVID-19), a highly infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was first reported in Wuhan, Hubei Province, China, and rapidly spread to other domestic cities and many countries beyond China. In the midst of a COVID-19 pandemic, physicians have to be aware of multiple potential misleading features that the disease can mimic, without forgetting basics and frequent diagnoses. We report the imaging features of a pseudo-tumoral lesion with quick flowering to a typical aspect of COVID-19 pneumonia in a 78-year-old patient.

## Clinical and radiological observation

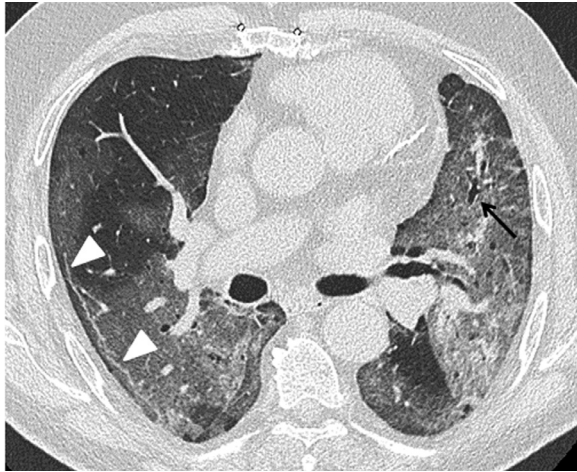
A 78-year-old man, obese, (BMI: 30), with a history of active smoking (48 pack-year weaned 38 years ago), cardiovascular surgery for coronary grafts and chronic renal failure, was initially admitted in the rheumatology department for disabling

rheumatic pain and asthenia evolving over the previous 2 months. The patient was free of any other symptom or any immunosuppressive drug. Blood tests revealed no sign of infection or inflammation (low C-reactive protein (4mg/L), no anemia, normal leucocytes, but slight lymphopenia (1300/mm<sup>3</sup>). The diagnosis of rheumatic polymyalgia was evoked. The patient underwent an 18 FDG-PET which displayed, beside an osteo-articular involvement (shoulders and left carp), a fortuitously hypermetabolic ground glass opacity of the lingula with SUVmax of 5.4 - considering a SUVmax of 2.1 in the ascending aorta (Fig. 1).

Four days later, the medical condition of the patient worsened leading to mechanical ventilation. Blood tests showed an increase in inflammatory factors such as C-reactive protein (139mg/L) and fibrinogen (5,6g/L), an acute renal insufficiency (creatininemia: 225μmol/L) and persisting lymphopenia (380/mm<sup>3</sup>). A new chest CT-scan showed a huge and bilateral extension of ground glass opacities (> 75% of lung parenchyma) in which the initial lesion was totally merged (Fig. 2). COVID-19 induced pneumonia with critical extent was confirmed by positive nasopharynx PCR for SARS-Cov-2.



**Fig. 1 – Atypical COVID-19 lung lesion. A-B: Baseline Chest CT-scan in axial view with slice thickness of 1.3mm (A) and minimum intensity projection (mIP) with slice thickness of 5mm (B): Atypical, unique ground glass opacity of the lingula with a consolidated part (thin black arrow) and early sign of focal fibrosis (discrete irregular appearance of the bronchus). Nonspecific right subpleural curvilinear line was also seen (white arrowheads). C: Fusion image between chest CT and 18-FDG-PET displayed a hypermetabolic lesion of the lingula with SUVmax of 5.4 (considering a SUVmax of 2.1 in ascending aorta).**



**Fig. 2 – Rapid course of COVID-19 induced pneumonia at day 4. Follow-up chest CT-scan in axial view with slice thickness of 1.3mm showing a rapid and bilateral extension of COVID-19 induced pneumonia with diffuse ground glass opacities where the initial lesion is embedded. Only the irregular bronchus is seen (thin black arrow). Subpleural curvilinear lines become irregular and highly suggestive of COVID-19 (white arrowheads).**

## Discussion

Typical CT features of COVID-19 pneumonia, are well known and widely dominated by extensive ground glass opacities (GGO) associated with consolidation [1]. Atypical forms are seldom encountered and may present as a unique GGO opacity [2,3], as subpleural lines (20% of cases) [4,5] or early bronchiectasis in 1% of cases [6]. Like radiological aspects, clinical symptoms can be wide and misleading, including dyspnea, dry cough, fatigue, abdominal pain, myalgia, arthralgia and headache [7-8]. Sometimes patients may be free of symptoms despite CT lesions [9]. Asymptomatic rate of COVID-19 patients is controversial and vary from 1.2% to 17.9% [10-12]. Moreover, as reported by Xia et al., CT-scan lesions may precede symptoms [3].

Regarding metabolic imaging features, COVID-19 pneumonia have a hypermetabolic shape [13], even in an initially asymptomatic patient [13-14]. This high FDG uptake can be explained by the inflammatory cascade leading to a high recruitment of activated neutrophils requiring increased glucose during infection [15]. A similar behavior was observed in the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) infection [16] but, to the best of our knowledge, not with Influenza.

CT follow-up of COVID-19 pneumonia mentioned rapid course of fibrosis in some patients [17-20]. In our case, fibrotic lesions were already observed at the early stage. We didn't learn about any use of 18 FDG-PET during COVID-19 follow-up.

Main differential diagnosis in front of this unique GGO opacity is of course neoplastic lesions including minimally invasive lung adenocarcinoma, lymphoma, but also atypical

bacterial, viral or organized pneumonia. In our patient, considering the rapid course of the disease, an infectious mechanism seemed more likely than neoplasia and was confirmed by positive nasopharynx PCR for SARS-Cov-2.

## Conclusion

Nuclear medicine physicians and radiologists should be aware of atypical features of COVID-19 induced pneumonia and be careful of some misleading hypermetabolic behavior. These incidental findings can also be disclosed in asymptomatic patients who will undergo nuclear medicine procedures especially in the coming months as lockdown of COVID-19 is gradually lifted around the globe.

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