

Lung Scintigraphy the Tool for New Approach of Covid 19 Pulmonary Embolism: A Case Report

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Abstract

The coronavirus disease 2019 have spread across the globe causing the declaration of a pandemic. Although most patient present mild symptoms, 30% of confirmed patients develop significant complications from which pulmonary embolism is the main cause of sudden respiratory distress.

So, as Lung scintigraphy is a well-established test for pulmonary embolism (PE) diagnosis, through the column of this article, Given the limited number of clinical cases reported about lung scintigraphy in COVID -19 patients, would like to report a case and share some experiences.

Introduction

The coronavirus disease (COVID-19) has caused a global public health emergency. In December 2019, an outbreak of this respiratory disease was first detected in China and has now spread to every country [1]. This new type of respiratory illness is characterized by rapid human-to-human transmission, having achieved pandemic spread [2-3].

One complication associated with COVID-19 disease is pulmonary embolism (PE) in which Lung scintigraphy could be of significant help.

Case Report

we report a history that goes back to 25/09/20 of a 70 years old man, with a history of hypertension, starting by the appearance of a flu-like syndrome followed by the

appearance of a dry cough and dyspnea of progressive aggravation. The thoracic CT showed an aspect suggestive of viral infection, supplemented by a positive COVID PCR. patient was admitted to the dedicated COVID-19 ICU.

Examination on admission shows a conscious patient, his blood pressure was at 160/100 mmHg and his heart rate was at HR 98 pulses per minute. His respiratory rate at 35c /min and arterial oxygen saturation at 80% at room air without fever (body temperature at 36°.9C), However, we noticed bilateral humming groans on pleuropulmonary auscultation, without any other particular cardio-vascular signs.

The chest-CT revealed air bronchogram associated with ranges of diffuse ground glass opacities at the level of the two pulmonary fields, the viral origin of which is very likely with severe parenchyma involvement (80%).

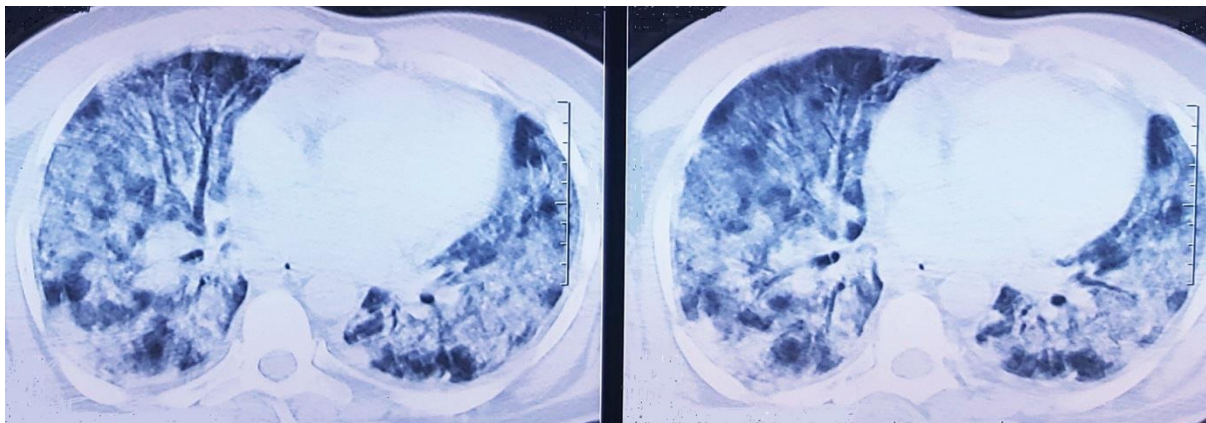


Figure 1: Chest-CT scan revealing air bronchogram associated with ranges of diffuse ground glass opacities.

The ECG shows regular sinus rhythm at 98bpm, PR fixed at 0.18, fine QRS without repolarization disorder, QT corrected at 340 ms.

The transthoracic ultrasound showed no left ventricle dysfunction, an ejection fraction estimated at 65%, no

valvular leakage or stenosis, a good right ventricle systolic function.

Perfusion scintigraphy showed in left lung a sub-segmental hypo perfusion zone, non-conclusive to the diagnosis of pulmonary embolism.

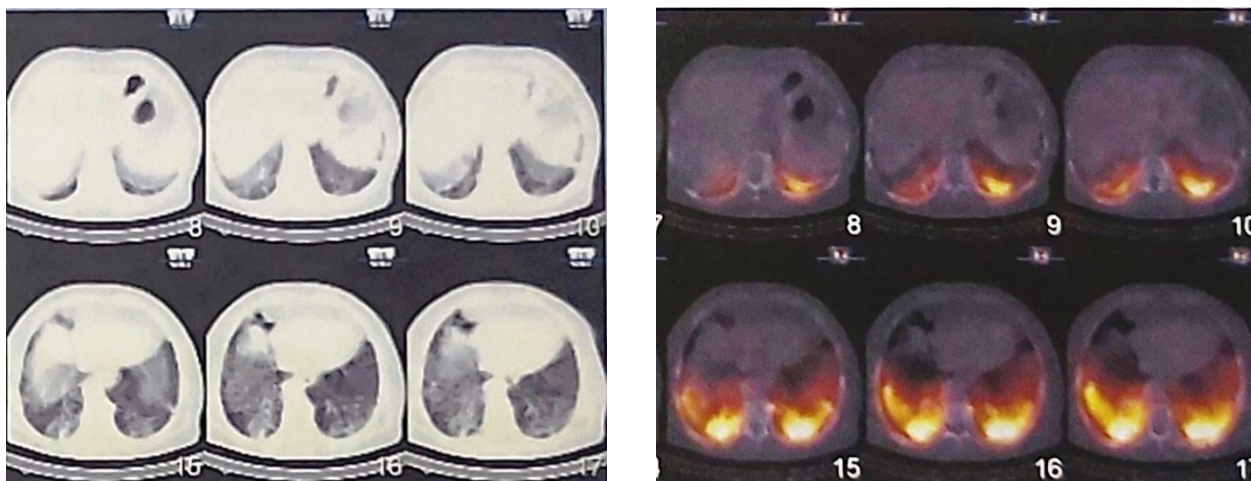


Figure 2: Perfusion scintigraphy revealing in left lung a sub-segmental hypo perfusion zone.

The patient's biological assessment revealed a white blood cell number of 13,160 cells / mm³ (Neutrophils 12020, lymphocytes 380), hemoglobin of 11.8 g / dl, thrombocytes at 245,000 cells / mm³. Prothrombin time and partial thromboplastin time were normal (TP at 110% and TCA at 28s for a witness of 25s).

Natremia:135 mmol / l, kalemia: 3.8mmol / l, correct liver and renal function (urea: 0.52 g / l and creatinine: 12 mg / l, ASAT: 31 IU / l and ALT: 22 IU / l), fasting blood sugar at 1.3 g / l, C-reactive protein at 240 mg / l, Troponin at 16.4 ug / l, ferritin at 3000 ng/ml.

therapeutic management included oxygen therapy, non-invasive ventilation, medical treatment associated, as the national protocol suggested Hydroxychloroquine 200 mg 3 times a day, Azythromycin 500mg the first day then 250mg per day, methylprednisone at 80mg a day for 7 days and curative anticoagulation treatment including enoxaparin 100 UI/kg (1mg/kg) twice a day

Discussion

The COVID-19 pandemic is challenging nuclear medicine facilities around the world. One important complication associated with COVID-19 disease and a potential differential diagnosis is pulmonary embolism (PE) with an increased risk of venous thromboembolism [4] leading transfers to the Intensive Care Unit and could lead to death.[5].

The gold standard to rule out significant pulmonary embolism in patients with COVID-19 pneumonia is a contrast-enhanced CTscan. Several case reports have been published that could confirm PE in patients with typical COVID-19 associated pulmonary changes [6,7].

However, in patients with contraindications for iodinated contrast media, Lung scintigraphy has been validated in several studies [8]

The population of patients suspected of having pulmonary embolism have similar symptoms as individuals who are infected with COVID-19. The typical protocol for lung

scintigraphy entails performance of a low-dose ventilation examination followed by a higher dose perfusion study. Literature has documented a part of radioactive contamination produced by leakage of the aerosol from the closed delivery system into the room [9-10], which may be exposing nuclear medicine workers. Therefore, response would be to equip technologists in the imaging suite with adequate respiratory equipment

However, it has been repeatedly proposed in the nuclear medicine community, and as it was the case in our patient, to omit the ventilation scintigraphy and to only perform a perfusion planar scan or a perfusion SPECT/CT, in patients with suspected acute PE [11-12-13-14]. The rationale for this approach is to minimize potential exposure.

So it were, as in our case, a perfusion scintigraphy without a ventilation lung examination was performed, and therefore wasn't conclusive to the existence or not of a pulmonary embolism, based on EANM criteria (European Association of Nuclear Medicine).

In summary, if a lung scan is required in a patient with suspected PE, we would recommend performing both ventilation and perfusion scintigraphy, with appropriate precautions for technologists, the risk of contamination due to the inhalation procedure exists and must be taken seriously, it can be considerably reduced by appropriate equipment.

Conclusion

Although it is recommended performing both ventilation and perfusion scintigraphy, appropriate aerosol precautions for technologists must be taken to minimize potential exposure of aerosolized secretions to others.

Competing interests

The authors declare no competing interests.

Authors' contribution

All the authors contributed equally in drafting of the manuscript. All the authors read and agreed to the final manuscript

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