Case Report

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Acute Pulmonary Embolism Mimicking Covid-19 Pneumonia

N Benslimi*, M Kacimi, S. Berrada, MR Cherkaoui Jaouad, M Mahi and N Dini

Avenue Taib Naciri, Hay Hassani, Casablanca, Morocco

ABSTRACT

We report the case of a 21 years old male patient, with a history of asthma since the age of 8 months, without follow-up, presenting a severe respiratory distress appeared suddenly, associated with a right basithoracic pain, and moderate hemoptysis. The non-contrast CT-chest scan showed a basal ground-glass opacity of the right lung leading to suspicion of Covid 19s' pneumonia. Laboratory tests reveal an elevated levels of D-dimers (D-D), a thrombocytopenia, a neutrophilic leukocytosis and a hyper eosinophilia. The molecular test RT-PCR is negative. With the persistence of the right-side basithoracic pain and the presence of a hyper eosinophilia and increased levels of D-Dimers. A thoracic CT angiography was indicated that shows a bilateral distal pulmonary embolism with a right-sided basal sub segmental ischemia. We discuss a fortuitous discovery of an idiopathic pulmonary embolism associated to peripheral basal ground-glass opacities similar to the radiological findings found in the case of a SARS-Cov-2 pneumonia.

*Corresponding author

Benslimi Najwa, Avenue Taib Naciri, Hay Hassani, Casablanca, Morocco, 20000 E-mail : najwabenslimi@gmail.com

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Clinical presentation

A 21 years old patient, with a history of asthma and allergic diseases without specific treatment.

There is no notion of drug intoxication. He was admitted in our institution for brutal dyspnea with a basithoracic pain in the right side, associated with a hemoptysis of mild abundance and fever. We suspected a viral pulmonary infection (SARS COV-2) considering the clinical presentation and the actual pandemic. He was admitted to an isolation ward while biological and radiological investigations were realized.

Investigations

A biology report showed a high level of leukocytosis at 14000/mm³ which 23% of eosinophils, an high level of D-Dimer (5000 u/ml), a thrombocytopenia (124000/mm³), a low level of blood ferritinemia, C-reactive-protein (90mg/l).

The molecular RT-PCR test for Covid-19, as well as serology were negative. A CT-chest scan without contrast was realized at the admission. A CT chest angiography was realized after 24 hours. A doppler Ultrasound of the lower limbs and an echocardiography were realized during his hospitalization.

Imaging findings

A non-enhanced chest CT scan has shown a peripheral sub pleural ground-glass opacity in the right lower segment (figure 1). There wasn't any other anomalies. The initially diagnosis was a pneumonia caused by Covid-19.

Figure 1: an axial (a) et coronal (b) non enhanced Chest CT shows a peripheral subpleural ground-glass opacity in the right lower segment

With the persistence of the right basithoracic pain and hemoptysis and the fact that the molecular test RT-PCR and serology of Covid-19 were negative, CT chest angiography showed total occlusion of the posterior branch of the right inferior pulmonary artery and a partial occlusion of the inferior branch of the left pulmonary artery (figure 2). We also noticed a condensation and extension of the pre-existing ground-glass opacity, associated with low pleural effusion (figure 3).

Figure 2: CT chest angiography shows total occlusion of the posterior branch of the right inferior pulmonary artery (yellow arrowhead)

arrow) with ischemia of lung (blue arrow) and a partial occlusion of the inferior branch of the left pulmonary artery (red arrow).

Figure 3: CT chest angiography shows a condensation and extension of the pre-existing ground-glass opacity

The diagnosis of bilateral peripheral pulmonary embolism causing a right postero-basal pulmonary infarction was retained. The patient received a curative dose of anticoagulants and corticotherapy.

The thoracic CT angiography after 1 month showed a repermeabilization of the pulmonary artery that was initially occluded and decreased of right basal condensation (figure 4).

Figure 4: CT chest angiography shows repermeabilization of the inferior right pulmonary artery (a) and decrease of the condensation of low right lung one month later (b).

Differential diagnosis

Aground-glass types of alveolar consolidation are non-specific and could lead to many etiologies, depending on their type (centrilobular or panlobular), there distribution (peripheral, central, upper or lower lobes) and whether it is isolated or associated with other anomalies (nodes, bronchiectasis, pleural effusion, mediastinals' adenopathy) [1].

It can therefore be a filling of the alveolar spaces with edema (of cardiogenic origin or acute respiratory distress syndrome (ARDS)), an hemorrhage (pulmonary trauma, arterial rupture, embolic infarction), an inflammation (fibrosis, hypersensitivity, acute or chronic eosinophilia), an attack by toxic inhalation with « paraquat » or an invasion by tumor cells (Broncho-alveolar carcinoma, lymphoma) [2,3].

In the present case, the main differential diagnoses were: bacterial or viral pneumonia due to Covid-19, alveolar hemorrhage given the context of hemoptysis.

Discussion

The criteria for suspicion of a viral acute respiratory syndrome due to Covid 19 were established by the world wide health organization (WHO). They collect anamnestic, epidemiologic, biological and radiological data [4].

This is initially about an attack on the alveolus by the virus and then spreads to the interstitium causing more dense condensation

[5]. During the pandemic, the non-contrast chest CT scan was used for the diagnosis and mass screening especially for patients who initially had a negative RT-PCR test. Indeed, the detection of viral nucleic acid in the airways, the sputum, presents a low sensitivity but a high specificity, with a rate of 30% of false negatives. However, the chest scanner only represents 35-65% specificity and a sensitivity of 95%. However, the thoracic scan represent 35 to 65% of specificity and a sensibility of 95% [6].

The principal differential diagnosis is made with other types of viral, bacterial and fungal pneumonia. According to studies, the unilaterality, uni or multifocal, peripheral ground-glass opacity predominantly in the lower lobes, was described in 93% of subclinical patients, during the first week after the onset of symptoms [7].

The thrombotic situation is correlated to inflammation caused by a SARS-V2. The coagulopathy associated with Covid-19 is different from conventionnel speiss [8].

In order not to delay the diagnosis of a pulmonary embolism whatever its origin, performing a thoracic CT angiography in advance remains a real challenge for emergency physicians and radiologists [9].

In our case, all biological, molecular, parasitic and serological investigations were strictly normal. The patient improved on anticoagulant and corticosteroid therapy.

Conclusion

The discovery of a ground-glass opacity in a patient presenting respiratory symptoms, especially in this period of pandemic, lead to a probable pneumonia with Covid-19 at the beginning stage, but this should not omit the other causes of the ground glass opacities. Performing a thoracic CT angiography would be more judicious to detect early pulmonary embolism.

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