

Spontaneous pneumopericardium and pneumomediastinum as atypical complication for SARS-CoV-2

Neumopericardio y neumomediastino espontáneo como complicación atípica de la infección por SARS-CoV-2

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Abstract

SARS-CoV-2 (COVID-19) disease is an infection caused by a new emerging coronavirus, the most common clinical manifestations include fever, dry cough, dyspnea, chest pain, fatigue, and myalgia, sometimes it may present with atypical manifestations such as spontaneous pneumothorax and pneumomediastinum that occur in a minority of patients. We report a case of spontaneous pneumopericardium in a 60-year-old male, without comorbidities or a history of trauma, with pneumonia due to SARS-CoV-2.

Keywords: Pneumomediastinum. COVID-19. SARS-CoV-2. Pneumopericardium.

Resumen

La enfermedad por SARS-CoV-2 (COVID-19) es una infección causada por un nuevo coronavirus emergente. Las manifestaciones clínicas más comunes incluyen fiebre, tos seca, disnea, dolor de pecho, fatiga y mialgias. En ocasiones puede presentarse con manifestaciones atípicas, como neumotórax espontáneo y neumomediastino, que ocurren en una minoría de pacientes. Reportamos un caso de neumopericardio espontáneo en un varón de 60 años, sin comorbilidad ni antecedente de traumatismo, con neumonía por SARS-CoV-2.

Palabras clave: Neumomediastino. COVID-19. SARS-CoV-2. Neumopericardio.

Introduction

SARS-CoV-2 disease (COVID-19) is an infection caused by a new emerging coronavirus first detected in Wuhan, China, in December 2019¹. It has become a global pandemic with uncertain and tragic consequences, causing a serious public health problem for many countries.

The most common clinical manifestations are fever, dry cough, dyspnea, chest pain, fatigue, and myalgia.

Less common symptoms include headache, dizziness, abdominal pain, diarrhea, nausea, and vomiting². On some occasions it can present with atypical manifestations, such as spontaneous pneumothorax and pneumomediastinum, in a minority of patients. Another less common manifestation is pneumopericardium, so we report the case of a patient with SARS-CoV-2 infection who presented pneumomediastinum and pneumopericardium^{3,4}.

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Figure 1. Anteroposterior chest radiograph showing extensive atypical pulmonary infiltrates; the pneumomediastinum cannot be observed.



Figure 3. Image control, after invasive mechanical ventilation, in which the presence of pneumomediastinum and pneumopericardium is observed.



Figure 2. Pulmonary window computed tomography image showing extensive atypical ground-glass infiltrates, as well as the presence of pneumomediastinum and pneumoperitoneum.

Clinical case

60-year-old male with no significant history. He denies smoking. He was admitted to our hospital due to arthralgia, myalgia, sore throat, headache, and dyspnea on exertion for 9 days. Generalized colicky abdominal pain and fever of 38°C. He went to the emergency department with the following vital signs: blood pressure 110/70 mmHg, respiratory rate 22 rpm, heart rate 89 bpm, temperature 37.7°C, and ambient air saturation of 75%. Physical examination of the lungs documented decreased breath sounds and crackles bilaterally in the infrascapular region, without the use

of accessory muscles. His laboratories show ferritin 1304 ng/ml, lactate dehydrogenase 788 IU/l, C-reactive protein 5.65 mg/dl, procalcitonin 0.5 µg/l, D-dimer 520 ng/ml, leukocytes 7100 cells/µl, neutrophils 5800 cells/µl, lymphocytes 900 cells/µl and hemoglobin 16.5 g/dl. The chest radiograph shows atypical pulmonary infiltrates (Fig. 1). Simple chest computed tomography (CT) scan (Fig. 2). The test with a nasopharyngeal sample by polymerase chain reaction for SARS-CoV-2 is reported positive. Oxygen treatment was started with a 10-liter face mask, steroid and antithrombotic treatment, and conservative management for pneumomediastinum. During his clinical evolution, he presented deterioration of respiratory function, which is why high-flow nasal prongs at 30 l/min and 100% FiO₂ were indicated, with no response to management. Mechanical ventilatory support and tomographic control were performed 8 days later, with clinical and tomographic worsening (Figs. 3 and 4), so the patient dies.

Discussion

Spontaneous pneumomediastinum and pneumopericardium are defined as the presence of free air or gas within the mediastinal structures and in the pericardial sac with no apparent precipitating cause. Its incidence is 1 per 12,000 hospitalized patients, and it is higher in young adults⁴. The possible pathophysiology is due to alveolar rupture with air dissection through the perivascular and peribronchial tissue sheaths.



Figure 4. Coronal reconstruction showing atypical pulmonary infiltrates as well as increased air in the mediastinum and pericardium.

It is usually secondary to high-velocity injuries, rarely manifests without prior chest trauma, has a relatively benign evolution, and can sometimes have hemodynamic repercussions and cause respiratory compromise secondary to difficulty in venous return³. Pneumopericardium is usually self-limiting and does not require specific therapy⁵.

The symptoms presented by patients consist of chest pain when coughing or breathing, dyspnea and neck pain⁶. Our patient only presented dyspnea and symptoms associated with SARS-CoV-2 pneumonia; however, he also presented abdominal pain, which could be secondary to pneumopericardium.

Few cases of pneumomediastinum have been reported in the context of SARS-CoV-2 infection, with different outcomes and it is not clear whether it could be a potential indicator of worsening infection^{3,6-8}.

The precise mechanism for the development of pneumomediastinum and pneumopericardium in these patients is currently unknown. Therefore, its occurrence in patients with SARS-CoV-2 should be closely monitored as a possible indicator of disease worsening.

It is concluded that CT is useful as an important diagnostic method for this entity, that the use of mechanical ventilatory support increases the damage, and that the presence of this complication without another cause may lead to suspicion of SARS-CoV-2 infection.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

Ethical disclosures

Protection of people and animals. The authors declare that no experiments were carried out on humans or animals for this research.

Data confidentiality. The authors declare that no patient data appears in this article.

Right to privacy and informed consent. The authors declare that no patient data appears in this article.

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