CASE REPORT
Olgu Sunumu

Yazışma Adresi
Correspondence Address
Hulya DIROL
Akdeniz University, Faculty of Medicine,
Chest Diseases Department,
Antalya,Turkey
hulyadirol@akdeniz.edu.tr

Geliş Tarihi : July 28, 2021
Received
Kabul Tarihi : September 11, 2021
Accepted
E Yayın Tarihi : September 01, 2023
Online published

Bu makalede yapılacak atıf
Cite this article as

Dirol H, Aksu Yalcinkaya I.
Pneumomediastinum in an Asthmatic Patient with COVID-19
Akd Med J 2023; 9(3): 351-353

Hulya DIROL
Akdeniz University,
Faculty of Medicine,
Chest Diseases Department,
Antalya,Turkey
ORCID ID: 0000-0002-7712-6467

Ilknur AKSU YALCINKAYA
Pursaklar State Hospital,
Physical Medicine and Rehabilitation Clinic,
Ankara, Turkey
ORCID ID: 0000-0002-4550-7310

DOI: 10.53394/akd.975554

Pneumomediastinum in an Asthmatic Patient with COVID-19

Astımlı COVID-19 Hastasında Pnömomediastinum

ABSTRACT
Spontaneous pneumomediastinum is a rare disease that develops due to alveolar rupture. Many cases with pneumomediastinum, related to Corona Virus Disease-19 (COVID-19) have been reported so far, but most of these patients had severe disease and extensive parenchymal damage. Pneumomediastinum with such a small lung infiltration is extremely rare in COVID-19 and may arise as a result of increased alveolar pressure caused by excessive coughing. Here, we present a patient with asthma and typical symptoms of COVID-19 and focal ground-glass opacity and pneumomediastinum on chest computerized tomography (CT).

Key Words:
COVID-19, Pneumomediastinum, Cough, Alveolus

ÖZ
Spontan pnömomediastinum alveol rüptürene bağlı gelişen nadir bir hastalıktır. Şimdiye kadar COVID-19 ile ilgili birçok pnömomediastinum vakası bildirilmiştir, ancak bu hastaların çoğunda ciddi hastalık ve yaygın parankim hasarı vardı. Pnömomediastinum, bu kadar küçük bir akciğer infiltrasyonu ile COVID-19'da oldukça nadirdir ve aşırı öksürüğün neden olduğu alveoler basıncın artması sonucu oluşabilir. Burada, tipik COVID-19 semptomları olan ve göğüs bilgisayarlı tomografisinde (BT) fokal buzlu cam opasitesi ve pnömomediastinumu olan astımlı bir hastayı sunuyoruz.

Anahtar Kelimeler:
COVID-19, Pnömomediastinum, Öksürük, Alveol

INTRODUCTION
Pneumomediastinum is a rare and life-threatening disease, defined as the presence of air in the mediastinum. The main cause of pneumomediastinum is the barotrauma arising during mechanical ventilation. Many COVID-19 patients with pneumomediastinum, following tracheal intubation have been reported so far (1-3). Besides the barotrauma provoked by mechanical ventilation, pneumomediastinum may also arise due to the barotrauma induced by persistent cough (2,3). Here, we present an asthmatic patient with typical symptoms of COVID-19 and pneumomediastinum with limited ground-glass opacity in the chest CT.

Case
A 36-year-old male patient presented with cough, sore throat, fever, chest and muscle pain for about a week. The most disturbing symptom was the cough, and the patient had never had such an intractable cough before. He had intermittent asthma that was under control and he was using a short-acting bronchodilator as he needed. There was no feature in his medical history other than asthma. He was an active smoker with a 10 packet year cigarette consumption history.

He did not either contact a COVID-19 positive patient or traveled to another country recently.

The patient's vital signs (heart rate was 98 beats/min, blood pressure was 110/55mmHg and respiratory rate was 20/min) were normal. He did not need oxygen supplementation (SpO2 was 98% at room air) either. Lung sounds were normal and there was no crackle or ronchus. The most prominent finding during the physical examination was the persistent cough, repeating with every breath. Leukocytosis (12400/µl) and mild thrombocytosis (378000/µl) were present in the complete blood count. All biochemical tests including serum electrolytes, kidney, and liver function tests, ferritin, d-dimer, troponin, C-Reactive Protein were normal, except there was a slight elevation in creatinine kinase (183 IU/L). In chest CT, there was a mild and limited ground-glass opacity in the right upper lobe and a pneumomediastinum (Figure 1).

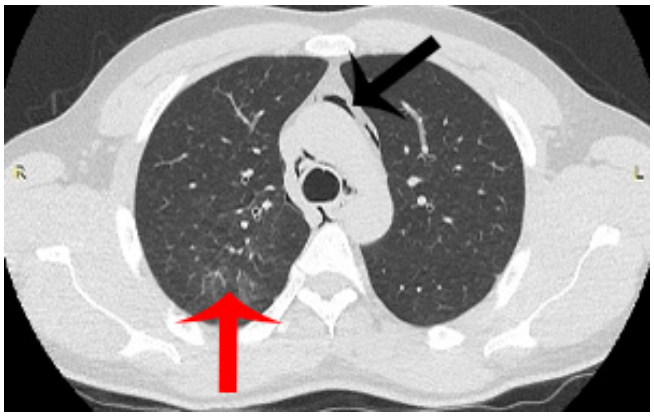

Figure 1: Chest CT showing a focal ground glass opacity (red arrow) and air in the mediastinum (black arrow).

The patient was started on hydroxychloroquine (2x200mg/day) and azithromycin (1x500mg/day) and he continued the asthma medication that he had been using. Both of the COVID-19 Polymerase Chain Reaction (PCR) tests performed two days apart, were negative. We completed the COVID-19 treatment regimen, as recommended by our medical science committee (hydroxychloroquine for 5 days and azithromycin for 3 days). We administered low molecular weight heparin and pain reliever (paracetamol, dexketoprofen) throughout the hospital stay. The patient was discharged on day 5. He had no cough by the 4th week of the diagnosis and pneumomediastinum had regressed spontaneously without causing any respiratory and circulatory complications.

DISCUSSION

Although many different symptoms have been reported in COVID 19 infection, the most common symptoms are fever, weakness, and extensive muscle pain. Especially during the pandemic, the patients with these symptoms should definitely be examined in terms of COVID-19. The reverse transcriptase-PCR test, used frequently for detection of the viral nucleic acid, has high specificity. However, false-negative test results may occur in up to 30% of the patients with COVID-19 (4). According to the results obtained from studies on PCR sensitivity, the sensitivity of PCR test ranges from 28% to 88% (5). In case of high clinical suspicion but a negative PCR test result, it is possible to benefit from chest CT findings of which the sensitivity was even higher than PCR (4).

Classical chest CT findings of COVID-19 pneumonia are bilateral, multifocal, basal, interstitial, and/or alveolar opacities (6). Extrapulmonary findings such as lymph node enlargement, pleural and pericardial effusion, are also possible. Although not often, spontaneous pneumomediastinum is one of the extrapulmonary complications of COVID-19 infection (1). The pathogenesis is not certain and it is thought to result from extensive alveolar damage or increased alveolar pressure. Most of the patients with pneumomediastinum related to COVID-19 had diffuse parenchymal changes. The patients with COVID-19 previously reported having pneumomediastinum were usually the ones with severe COVID pneumonia. So, the presence of pneumomediastinum has been suggested to be a poor prognostic factor (1,2). However, we have seen via this case that not all patients with pneumomediastinum developing during COVID-19 might have a bad prognosis. To our acknowledge, there is no such a report about pneumomediastinum in a patient with such a little parenchymal damage. The reason for pneumomediastinum in our patient was probably the persistent cough, increasing the alveolar pressure. We suppose that the most important factor in spontaneous and rapid recovery was the absence of severe parenchymal damage.

CONCLUSION

This case is important in two aspects. First of all, in this case, the diagnosis of COVID-19 was made clinically and radiologically despite PCR was negative. A negative PCR test result can't exclude the diagnosis in proper clinical and radiological findings. Second, pneumomediastinum developed in this case without serious parenchymal damage. Spontaneous pneumomediastinum, may arise in some patients with COVID-19, especially if they have severe parenchymal damage. Thus, it is presumed as a poor prognostic factor. However, it can also arise as a result of increased alveolar pressure induced by a persistent cough, in asthmatic patients without widespread parenchymal damage. Therefore the prognosis was better in this case than in patients with severe parenchymal damage.

Conflict of Interest:
There is no conflict of interest.

Patient Informed Consent:
Patient Informed consent was obtained.

Financial Disclosure:
The authors declared that this study has received no financial support.

REFERENCES

1. Wali A, Rizzo V, Bille A, Routledge T, Chambers AJ. Pneumomediastinum following intubation in COVID-19 patients: a case series. Anaesthesia. 2020;75(8):1076-81.

2. Kolani S, Houari N, Haloua M, Alaoui Lamrani Y, Boubbou M, Serraj M, Aamara B, Maaroufi M, Alami B. Spontaneous pneumomediastinum occurring in the SARS-COV-2 infection. IDCases. 2020;21:e00806.

3. Zhou C, Gao C, Xie Y, Xu M. COVID-19 with spontaneous pneumomediastinum. Lancet Infect Dis. 2020;20(4):510.

4. Fang Y, Zhang H, Xie J, Lin M, Ying L, Pang P, Ji W. Sensitivity of Chest CT for COVID-19: Comparison to RT-PCR. Radiology. 2020;296(2):E115-E117.

5. Li Y, Yao L, Li J, Chen L, Song Y, Cai Z, Yang C. Stability issues of RT-PCR testing of SARS-CoV-2 for hospitalized patients clinically diagnosed with COVID-19. J Med Virol. 2020 ;92(7):903-8.

6. Onigbinde SO, Ojo AS, Fleary L, Hage R. Chest Computed Tomography Findings in COVID-19 and Influenza: A Narrative Review. Biomed Res Int. 2020;2020: 6928368.