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Case report

Typical Covid-19 case with primary pneumomediastinum in a 37 year old male

Ramezan Jafari, PhD[a], *Luca Cegolon, MD, MSc, PhD*[b], *Fatemeh Dehghanpoor, PhD*[a], *Mohammad Javanbakht, PhD*[c,*], *Seyed Mohammad Hossein Tabatabaei, PhD*[d]

[a] *Department of Radiology, Baqiyatallah University of Medical Sciences, Tehran, Iran*
[b] *Public Health Department, Local Health Unit N. 2 "Marca Trevigiana", Treviso, Italy*
[c] *Nephrology and Urology Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran*
[d] *Department of Orthopedics, Isfahan University of Medical Sciences, Isfahan, Iran*

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ABSTRACT

We report the case of a 37-year-old man who was admitted to Baqiyatallah hospital in Tehran (Iran) for retrosternal pain, fever, fatigue, dyspnoea and severe non-productive cough. The patient was subsequently confirmed as positive for COVID-19 at real-time polymerase chain reaction (RT-PCR) test. Chest computed tomography (CT) revealed also the presence of pneumomediastinum. This case highlights the importance of chest CT imaging for COVID-19 pneumonia to detect co-existing conditions as pneumomediastinum.

Introduction

The COVID-19 pandemic has rapidly spread across the globe [1]. Chest computerized tomography (CT) scan is important to detect COIVD-19 pneumonia and manage patients affected by severe form of the disease [1,2]. The most common imagings of COVID-19 pneumonia at chest CT scan include lung consolidation, interlobular thickening and multiple patchy ground glass opacities (GGO) [2–5].

Pneumomediastinum is a rare condition of unknown etiology, usually presenting in young patients aged 15 to 41 years [6–8]. The diagnosis of pneumomediastinum requires a chest X-ray or a CT scan.

Case presentation

A 37-year-old man was admitted to our accident & emergency (A&E) service at Baqiyatallah hospital in Tehran (Iran), com-

* Corresponding authors: M.Javanbakht
E-mail address: mhmjvbt81@gmail.com (M. Javanbakht).
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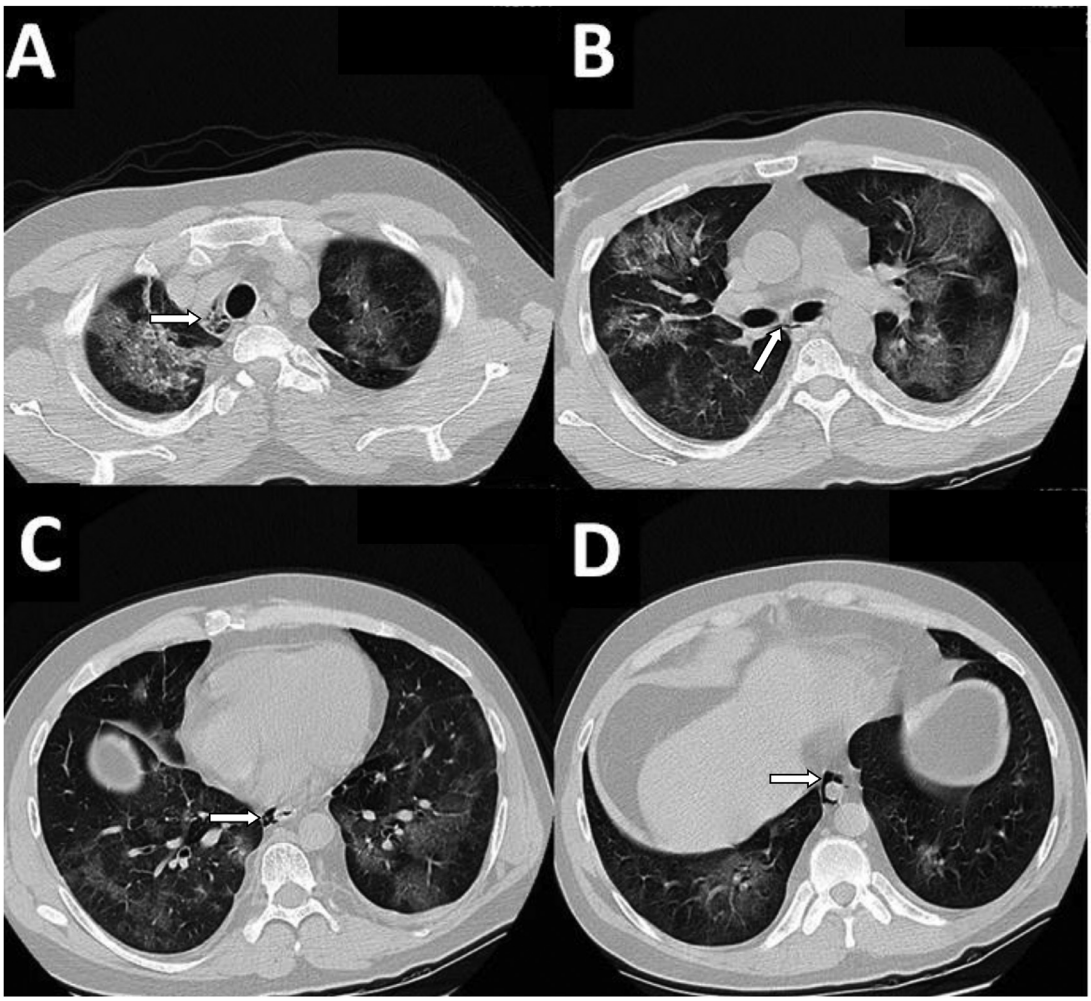

Fig. 1 – (A-D) four axial Ct scan images show bilateral multifocal patchy ground-glass opacities on both lung fields, compatible with COVID-19 pneumonia. Air density around esophagus and pneumomediastinum (white arrows) can be seen, an extremely rare imaging finding in COVID-19 pneumonia.

plaining retrosternal pain, 2-day history of fever (38.3°C), fatigue, dyspnoea, severe repetitive non-productive cough. At physical examination the patient was febrile, tachycardic, tachypnoeic with O_2 saturation of about 70% and presented diffuse ronchi at chest auscultation. Notable laboratory findings were lymphopenia, increased erythro-sedimentation ratio (ESR) and C-reactive protein (CRP).

A chest CT-scan revealed bilateral multi-focal patchy GGO and air density around the esophagus with pneumomediastinum (Fig. 1). The clinical pattern of the patient and the chest CT scan were highly suggestive of COVID-19 pneumonia, which was subsequently confirmed by Real Time-Polymerase Chain Reaction (RT-PCR).

Despite an increase up to 82% in O_2 saturation thanks to ventilation, the patient was transferred to intensive care unit (ICU), because the O_2 saturation was fluctuating and pneumomediastinum can lead to deterioration of the patients' health status. The patient received treatment in compliance with the COVID-19 therapeutic protocol of Iran and was discharged after 12 days of good general health conditions.

Discussion

CT scan maging play a critical role in the diagnosis and management of COVID-19 pneumonia [9–11], showing a 97% sensitivity in a study on 1,014 patients [12].

The most common chest CT scan features in COVID-19 pneumonia are multifocal, bilateral and usually ill-defined GGO, with lung consolidations and peripheral as well as basal predominancy [13,15]. Further radiological imagings of COVID-19 can be "crazy-paving" appearance in progressive stage of the disease or septal thickening and bronchiectasia in late stage [16,17]. Lymphadenopathy, pleural effusion, cavitation and pulmonary nodules are not typical features of COVID-19 pneumonia, hence usually suggest other diagnoses [13–15].

Despite having an unclear etiology, alveolar rupture is a frequent cause of pneumomediastinum [7,18], whose most common symptom is retrosternal pain [19], reported by 60–100% affected patients [19–21]. 80% patitents with pneumomediastinum can have elevated CRP and leukocytosis [7,19].

The above clinical and laboratory features were shared also by our COVID-19 patient. Nonetheless, the definite diagnosis of pneumomediastinum requires thoracic CT scan, which was performed upon hospital admission in our patient.

Pneumomediatium associated with COVID-19 pneumonia and/or other conditions as pneumothorax have been reported in the literautre [22-25]. However, the peculiarity of the present case report was the presence of para-esophageal emphysema.

Conclusions

The most important aspect of this clinical case was pneumomediastinum, an extremely rare manifestation of an early stage COVID-19 pneumonia. Since the latter condition carries intrinsic health risks for the patient and could negatively influence the course and outcome of COVID-19, suspected pneumomediastinum needs to be diagnosed as early as possible by CT scan and closely monitored thereafter in order to avoid potential complications.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Patient consent statement

The authors obtained written informed consent from the patient for submission of this manuscript for publication.

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