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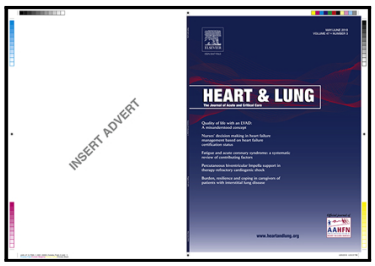

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Case Report

Early manifestation of ARDS in COVID-19 infection in a 51- year-old man affected by Mounier-Kuhn Syndrome

Running head: ARDS in COVID-19 infection and Mounier-Kuhn Syndrome

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Abstract

We present the first patient of a 51-year-old man with fever, dyspnea and deterioration of his chronic coughs, who was referred to the Mounier-Kuhn syndrome (MKS). Chest computed tomography (CT) scan revealed increased diameter of his trachea (39 mm), right (30 mm) and left (26 mm) main bronchi, because of MKS. Then, COIVD-19 infection was eventually confirmed by RT-PCR. To our knowledge, COIVD-19 has not been reported in patients with the MKS.

Keywords: COIVD-19, Mounier-Kuhn syndrome,Lung, Computed tomography

Introduction

COVID-19 as an emerging situation of the human respiratory system, a vast range of mutability in virus severity is seen from asymptomatic to critical,which indicates notable threats to international health [1-3].Severe COVID-19 can develop quickly to critical illness, with acute respiratory distress (ARDS) , septic shock ,pleural effusion ,and other organ dysfunction or failure as early threatens or complications between humans [2,4-6]. On the other hand, Mounier–Kuhn Syndrome (MKS,or tracheobronchomegaly), is a clinical disorder extremely rare with idiopathic etiology,which distinguished by abnormal dilatation of the trachea and main bronchi due to atrophy or lack of elastic fibers and smooth muscle cells. MKS is regularly related to recurrent lower respiratory infection. Therefore, this point is substantial for recognizing MKS, as the primary identification because it can lead to superior management and

prevention of complications [7-10]. To our knowledge this is the first case reporting ARDS,COVID19 and Mounier-Kuhn syndrome in Iran

Case presentation

We report a case of a 51-year-old man, known to be affected by Mounier-Kuhn Syndrome (MKS), admitted to our accident & emergency (A&E) service of the Baqiyatallah hospital in Tehran (Iran), with a new onset of fever, dyspnea and deterioration of his chronic coughs. On physical examination the patient was ill, febrile, tachycardic, hypoxic with O_2 saturation of about 80% and diffuse rhonchi at chest auscultation. The most significant laboratory finding was a notable leukopenia.

Chest CT scans revealed increased diameter of his trachea (39 mm), right (30 mm) and left (26 mm) main bronchi, due to MKS. Furthermore, the CT scan showed ground-glass opacities (GGO) and bronchiectasis in the mid and lower zones of both lungs, with small air cysts in the lower zone of the right lung at coronal reconstruction view (Fig1A). It also presented ill-defined bilateral GGO and bronchial dilatation within GGO areas bilaterally as well as a small air cyst in the right middle lung lobe at axial images (Fig1B), compatible with an early stage ARDS.

In a few hours the patient became cyanotic, with altered mental status, shortage of breath and drop in O_2 saturation to about 45%. He was therefore promptly intubated and transferred to the intensive care unit (ICU) for further diagnostic and therapeutic procedures, his clinical and radiological pattern being compatible with ARDS.

Although the patient condition was unusual for an early stage of the disease, COVID-19 was still our first differential diagnosis, given we were in the middle of the COIVD-19 epidemic. COIVD-19 infection was eventually confirmed by real time reversed polymerase chain reaction (RT-PCR).

A severe form of COVID-19 could occur even in the early stages, in the presence of an underlying condition as MKS, increasing the susceptibility of the patient to more recurrent and severe respiratory infections.

Discussion

MKS is a condition more common in men and a rare congenital disorder manifesting with tracheo-bronchial dilation. Although the exact etiology of MKS is unknown,but familial susceptibility and genetic predisposition seem to play a role. MKS is supposedly sustained by lack of musculo-elastic tissue at different levels of the trachea and main bronchi, causing diverticular structures and sacculationar outpouchings especially in the posterior membranous trachea [7,9-12].

The clinical presentations of MKS are not specific and include a wide spectrum of clinical features ranging from asymptomatic or minimal disease with progressive manifestations leading to respiratory failure [13]. Common presentations are chronic productive cough, dyspnea and recurrent respiratory infection due to of mucociliary dysfunction and accumulation of secretions. MKS can also mimic some other cadio-pulmunary diseases such as coronary artery disease, congenital heart disease, congestive heart failure, obstructive airway disease, pneumoconiosis, bronchiectasia and even trombo-embolsim [11,14,15].

COVID-19 can present with mild, moderate and severe symptoms. Whilst most patients develop a mild disease, underlying conditions such as diabetes, hypertension, cardiovascular disorders and malignancies

can significantly increase the risk of developing a severe form of COVID-19, especially among patients older than 50 [16,17].

Conclusion

All possible underlying co-morbidities, even rare conditions as MKS, should be therefore carefully considered when managing a COIVD-19 patient, because they can significantly influence the course of the disease.

Authors 'contributions

RJ, LC, MT, MI, SHS ,BK,and BE participated in editing throughout the writing process of case report, assessed the images of radiology and prepared the figures. All authors have read and approved the final manuscript

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Availability of supporting data

All data are available in the manuscript

Ethics approval and consent to participate

This case report has been described in accordance with the ethical standards laid down in the "Declaration of Helsinki 1964".

Consent for publication

Written consent for publication was obtained from the patient.

Competing interests

The authors declare that they have no competing interests

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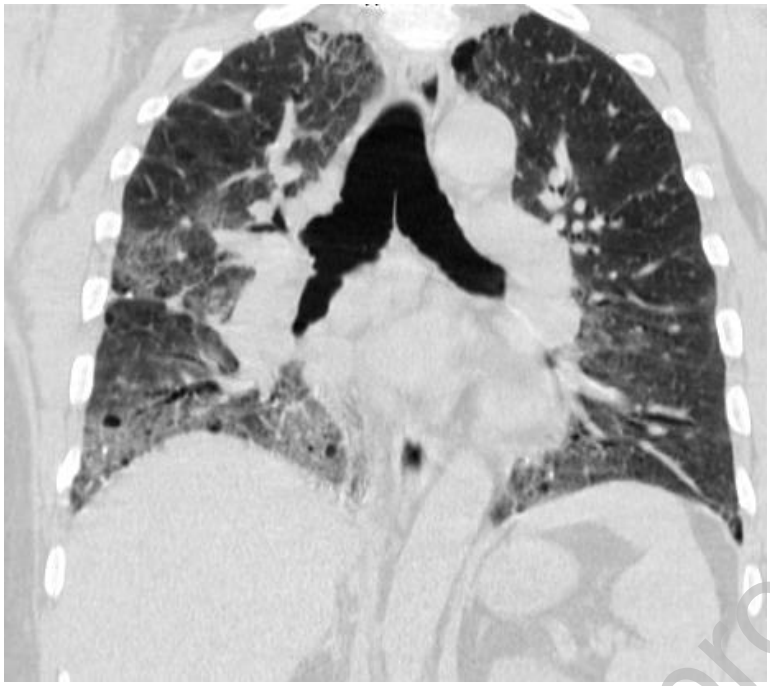

Figure 1: Coronal reconstructed CT scan shows trachea-bronchomegaly (Mounier-Kuhn syndrome . The diameter of trachea measures 39 mm, the right main bronchus 30 mm and the left main bronchus 26 mm. Ground-glass opacities (GGO) and bronchiectasis in the mid and lower zone of both lungs, with small air cysts in the lower zone of the right lung due to early stage ARDS in COVID-19 pneumonia can be noted.

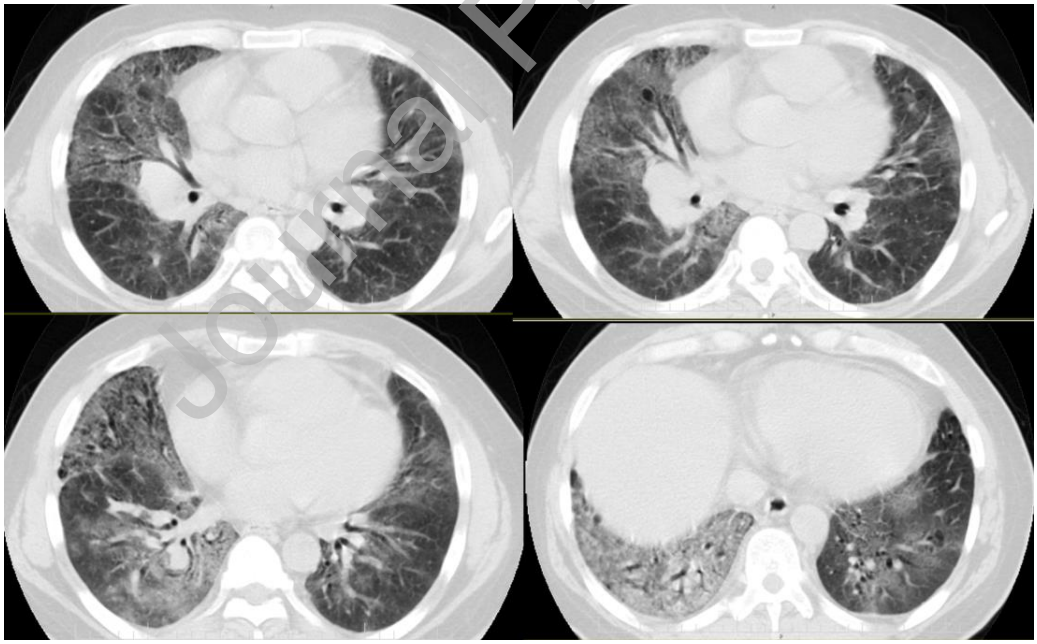

Figure 2: Four axial CT scan show ill--defined bilateral ground-glass opacities (GGO) and bronchial dilatation within areas of GGO bilaterally and a small air cyst in the right middle lung lobe, suggestive of an early stage ARDS due to COVID-19 pneumonia subsequently confirmed by PCR test.

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