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Hiccups leading to dyspnoea in a patient with Covid-19

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Abstract

In 2020 and 2021, the Covid-19 pandemic caused drastic consequences around the world. The disease causes a flu syndrome with clinical pictures ranging from mild to severe. Since it is a systemic flu syndrome, several clinical manifestations have been described for this disease, but cases of hiccups associated with Covid-19 have rarely been reported. This report describes a rare case in which a patient with Covid-19 developed respiratory discomfort after complaining of persistent hiccups. The patient was treated clinically and experienced a sudden improvement in their dyspnoea immediately after the disappearance of the hiccups crisis. This sudden improvement suggests a very likely cause–effect relationship.

Keywords: Covid-19; Hiccups; Dispnoea.

Introduction

Hiccups are characterized by repeated and involuntary diaphragm spasms, followed by rapid and noisy glottis closures. The anatomy of the hiccups reflex is imprecise but may include the vagus and phrenic nerves, branches of the sympathetic thoracic nervous system, brain stem, respiratory centre and intercostal muscles [1]. They are usually acute and self-limiting, but infrequently, hiccups can last more than two days, called persistent, and cases lasting more than one month are

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characterized as intractable [2]. They are more frequent in male patients [3].

COVID-19 is a highly contagious disease caused by the SARS-COV-2 virus (severe acute respiratory syndrome coronavirus-2) [4], which was initially reported as a severe lung disease in patients in Wuhan, Province of Hubei, China. Cases have been described in which persistent hiccups were associated with COVID-19 [4–7].

Acute hiccups are usually self-limited and harmless [8], but longer-lasting events can lead to complications such as arrhythmias and exhaustion, but rarely, hiccups are related to respiratory failure [9]. This is a case study of a male patient who developed a crisis of persistent hiccups, possibly due to complications associated with Covid-19 infection, and this crisis of hiccups probably triggered acute respiratory failure.

Case report

A 48-year-old ASA 2 (arterial hypertension) man with gastroesophageal reflux was diagnosed with Covid-19 through a positive transcriptase-polymerase chain test (RT-PCR) and a computed tomography scan of the chest showing a typical ground-glass appearance.

At that time, he was treated with dexamethasone 24 mg/day and azithromycin 500 mg/day. He presented with hiccups on the ninth day after diagnosis, and treatment with chlorpromazine began, but he suspended himself, complaining of drowsiness.

On the eleventh day, he sought emergency care because his oxygen saturation began to vary between 92% and 94% in ambient air (monitored by pulse oximetry at home), and because there was no improvement of the hiccups crisis. Upon hospital admission, he complained of hiccups and dyspnoea from minimal exertion and immediately received O_2 support of 4L/min in nasal catheter, which maintained his oxygen saturation between 94% and 95%.

Upon physical examination, the patient presented tachycardia (115 bpm), tachypnoea (30ipm), and crepitations in the middle thirds and bases of both lungs. Chest CT (computed Tomography) identified ground-glass images in 50% of both lung parenchyma (Figure 1).

After anamnesis, physical examination and results of imaging tests, intravenous ceftriaxone 2g was administered every 24h plus intravenous dexamethasone 10mg 12/12h and bromopride 10mg orally every six hours. On the second day of hospitalization, treatment with baclofen solution was started at a dose of 10mg orally every 12 hours.

After 24 hours of treatment with baclofen, there was complete remission of the hiccups and reduction of

dyspnoea with improved oxygen saturation (97%) without the need for supplemental oxygen. After 48 h without hiccups, the baclofen therapy was suspended, and on the fifth day, the patient was discharged from the hospital in good clinical condition.

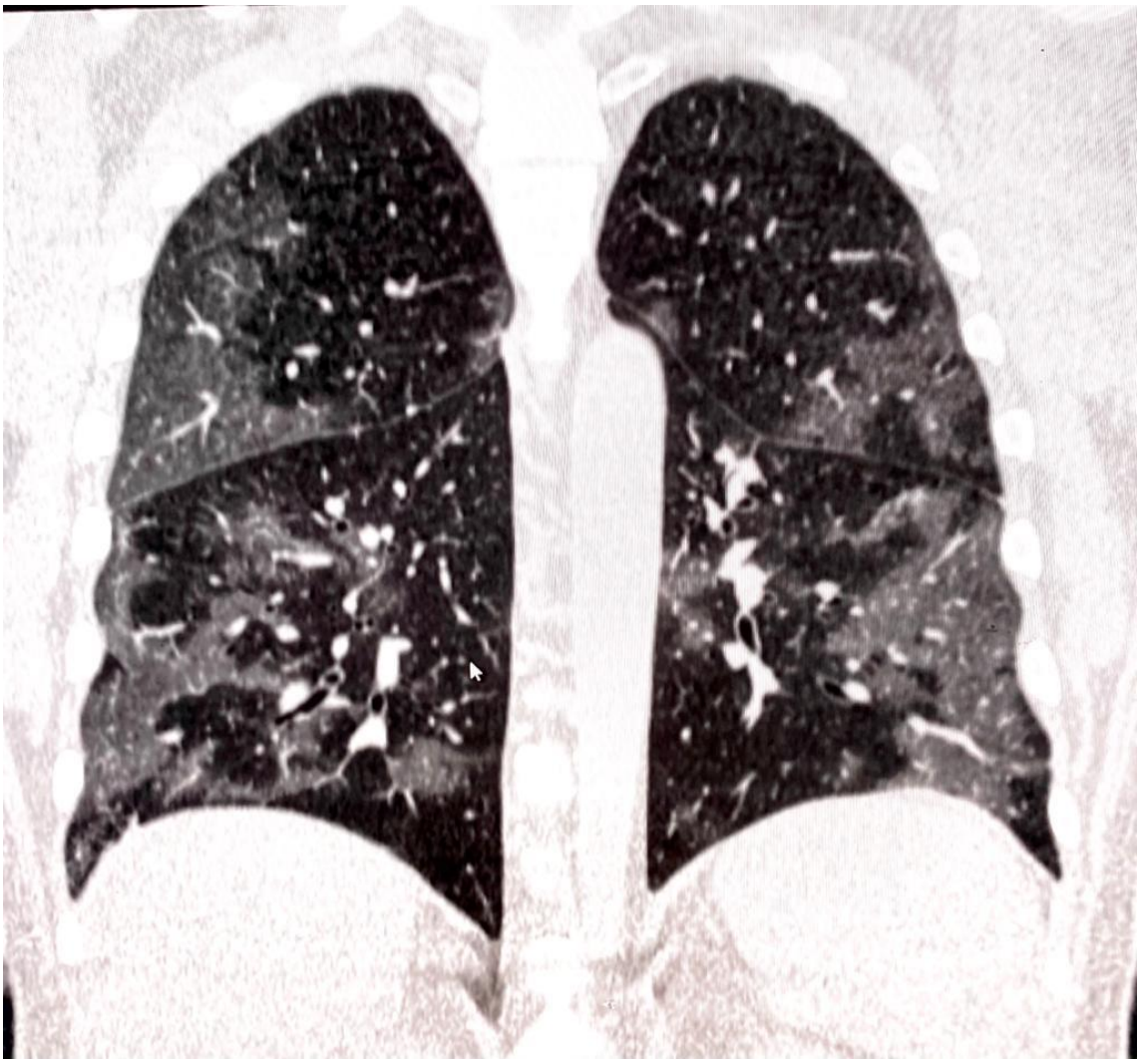

Figure 1. Chest Computed Tomography of the patient.

Discussion and Conclusion

Hiccups are a rare complication in Covid-19 patients but there are some reports in the literature, most of them in male patients [3]. Usually they appear after respiratory symptoms, but they can be present before these symptoms [10].

Possible causes of hiccups crises are alcohol intake, cigarettes and other irritants of the gastrointestinal or respiratory tract, gastroesophageal reflux, use of corticosteroids, underlying neurological disorders, influenza and

pneumonia, especially basal cases [8, 11].

In this case, we can highlight as possible causes responsible for the crises gastroesophageal reflux, use of dexamethasone in high doses (24 mg/day), pulmonary pneumonia/ inflammation, or neural involvement caused by Covid-19 [4, 12].

Pneumonia is associated with long-lasting hiccups. One of the causes could be irritation of the phrenic and vague nerves, especially in cases of pneumonia with involvement of the pulmonary bases [2]. Based on physical examination and chest tomography, this patient presented a typical picture of Covid-19 pneumonia with possible bacterial complications, including in the pulmonary bases.

Corticoids are associated with persistent hiccups and dexamethasone is the main cause but the mechanism remains unclear [11]. In general, the doses of dexamethasone that can cause oral reactions range from 8–40mg [14]. In this case, the patient was treated with a high dose of dexamethasone (24 mg/day) for five days.

Phrenic nerve damage can lead to hiccups, and there have been reports of phrenic neuropathy in Covid-19 [13]. Some physical maneuvers to relieve hiccups are breath holding, Valsalva's maneuver, drinking cold water etc. These maneuvers are less likely to relieve persistent or intractable hiccups [16].

Various medications have been used for the treatment of hiccups, including bromopride, a dopaminergic antagonist used as an antiemetic; chlorpromazine, an antipsychotic of the phenothiazine group; and baclofen, an antispastic GABA-agonist medication that acts on the GABA-B receptors [1, 9]. This patient was treated appropriately with bromopride and baclofen, and his symptoms resolved.

In the present case, the patient presented with dyspnoea with low oxygen saturation and concomitant hiccups. The sudden cessation of dyspnoea soon after the hiccups disappeared strongly suggests a cause–effect relationship, something rarely described [5].

The present case reports a rare situation of persistent hiccups with complaint of dyspnoea lasting over 48 hours in a patient diagnosed with COVID-19. The hiccup crisis may have been triggered by gastroesophageal reflux, the use of high doses of dexamethasone, pneumonia, or even neural compromise from Covid-19 infection. Treatment of the hiccups led to prompt resolution of the dyspnoea.

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