

Hiccups and Psychosis: Two atypical presentations of COVID -19

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Case report

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Abstract

The WHO defines a possible case of COVID-19 as a person experiencing fever, cough, shortness of breath and neurological signs including anosmia, ageusia or dysgeusia. However, experiences from hospitals all over the world have shown that presentations vary widely. In our emergency department in a private hospital in Mexico City, we received two patients with very different symptoms on the same shift. Two previously healthy men in their 40 s presented, one with 3 days of hiccups and the other with a new onset psychotic event.

Case 1

A 48-year-old man presented to the gastroenterologist with an episode of hiccups lasting at least 96 hours. His past medical history only revealed an L5 surgical repair in 2005 and he denied allergies or recent travel. Aside from the hiccups, the patient recalled no other symptoms and denied abdominal pain, nausea, vomiting, diarrhea, chest pain, cough, dyspnea or fever. He was started on ambulatory treatment with metoclopramide 10 mg every 8 hours; however, the symptoms did not resolve.

He was admitted to the ER approximately 5 hours after and did not mention anything aside of what was previously recorded. His vitals showed a HR 82, RR 20 rpm, BP 133/88 mmHg, oxygen saturation 93%, temperature 36.7 °C. On the physical exam the patient was alert and oriented x 3 with a normal affect, gait was normal. The exam revealed no dermatological lesions, and nothing relevant was seen in the HEENT exam. His chest showed a normal AP diameter. However, lung auscultation revealed the presence of crackles on the base of the left lung. The rest of the exam was normal.

During his stay at the department he was treated with IV metoclopramide, omeprazole 40 mg, ondansetron 8 mg and oral frappe magaldrate/dimeticone (80/10 mg) without improvement of the symptoms. Routine labs were taken showing hyperglycemia (182 mg/dl), thrombocytopenia (81,000/mcl), leucopenia (4,000/mcl), lymphopenia (700/mcl absolute count). The rest of the results were normal (Hb 16.2 g/l, Htc 48.3%, BUN 19.2, UREA 41.1, Cr 1.1, Na 136.8, K 3.56). A chest X-ray revealed bilateral infiltrates so a CT scan was performed revealing multiple zones of diffuse alveolar infiltrate across all segments of both lungs, the rest was normal.

A SARS-CoV-2 PCR was performed and came back positive.

He refused to be admitted, so follow-up was not possible. However, informed consent was obtained in order to publish his case.

Case 2

A 43-year-old man was taken to the ER department by his mother. She reported her son`s symptoms had started 3 days after his father was diagnosed with Covid-19. The patient presented with tachylalia, disorganized ideas, restlessness, delusions of grandeur, emotional lability, hetero aggression and

aggression towards his mother. His mother revealed a past history only relevant for hetero-aggression episodes which usually resolved during 48 hours but they had never asked for medical help as the patient was socially functional and had a stable job.

Aside from his psychiatric symptoms his vitals were normal, and his physical exam did not reveal any other significant sign.

Because of his father's previous diagnosis of Covid-19, a PCR SARS-CoV-2 was obtained. Neurology and Psychiatry were consulted.

While results were pending, we documented hypokalemia K 3.3, elevation of hepatic enzymes (TGO 53, TGP 69), indirect hyperbilirubinemia (Total bilirubin 2.07, Indirect bilirubin 1.73, Direct bilirubin 0.34), and elevated ferritin levels (Fe 595). The rest within normal limits PCR: 1.8, VSG: 10, Procalcitonin: 0.05, Fibrinogen: 297.

An MRI of the brain was obtained in order to look for strokes or encephalitis related to Covid-19. However, there were no significant findings

CT was performed looking for glass ground opacities suggestive of COVID 19

Because of the non-significant findings, we decided to perform a spinal tap and the cytological test reported: transparent, with 0 leucocytes, 0 erythrocytes, 0 crenocytes. Glucose 65.6, Proteins 17.5, the Gram stain did not report any organisms, bacterial antigens were negative, viral PCR did not detect any pathogen. Chinese ink was negative.

The PCR for SARS-CoV-2 came back positive and the diagnosis of a psychotic manic episode and Covid-19 was made. Because of the isolation conditions of the hospital, family members decided to take the patient home in a voluntary discharge. However, he will receive follow-up by the neurologist and infectious diseases specialist. The patient consented to the publishing of his experience.

Discussion

Case 1

Singultus or hiccups are caused by involuntary, myoclonic and repetitive contractions of the diaphragm and intercostal muscles¹. These coordinated contractions cause a rapid intake of air interrupted by closure of the glottis that results in the characteristic sound². Singultus can be classified based on their duration. If the event lasts less than 48 h it's called acute, persistent if last more than 48 h and intractable if the attack lasts more than 30 days^{1,2}.

Although hiccups lasting > 48 hours are rare, the workup should try to identify organic pathology. The main causes of prolonged hiccups can be divided in three groups: structural, infectious, and inflammatory disorders that impact either the central nervous system or the phrenic nerves or their

branches^{3,4}. Searching for the cause of hiccups can be challenging due to the long course of nerves along the reflex pathway.

In this case, our patient had received pharmacological treatment for gastroesophageal causes of singultus with no improvement. The only remarkable finding during examination were crackles on lung auscultation. Similar to the case previously reported by Prince et al, where a 62-year-old woman presented with a 4-day history of hiccups, our patient had a Chest X ray and a CT scan showing ground-glass and consolidative pulmonary opacities compatible with SARS Cov 2 pneumonia⁵. Thus, the most likely cause of the patient's symptoms was phrenic nerve inflammation secondary to COVID 19 pneumonia.

Case 2

The second patient presented with no other symptom apart from an acute episode of psychosis and we suspect this is a neuropsychiatric symptom of the disease. Three other cases have been reported by Ferrnando et al.⁶, and similarly, all three did not show any respiratory tract involvement but did have elevated acute phase reactants and a positive PCR to SARS CoV-2. This differs from other patients experiencing psychotic symptoms because of fear for the disease but have been tested negative⁷. Even if Ferrnando et al suspect that the cytokine storm is involved in the pathophysiology behind these symptoms and this would explain this patient elevated ferritin and liver enzymes as well as the clear SARS Cov-2 neuropsychiatric manifestations are uncommon but should remain in an emergency physician's differential especially if there have been close contacts with the disease.

spinal tap, an EEG and the CSF PCR for SARS Cov-2 would be needed in order to rule out encephalitis⁸. Other diagnostic test useful in this scenario would have been oligoclonal bands in serum and CSF, this would serve to identify whether the infection was primarily encephalitis or a result of systemic infection⁹. This could be useful to identify the presence of an Escape Syndrome variant, which is typically a phenomenon seen in patients with Human Immunodeficiency Virus, as remarkably the patients described by Ferrnando and this patient all presented with no other sign of organ involvement and all four patients had no relevant past medical history. Escape syndrome described in HIV refers to patients with low plasmatic viral load but high CSF viral load and is the result of a well-controlled disease where virus migrate to the CSF and the patient develops new neuropsychiatric conditions¹⁰. Perhaps these cases represent viral escape when the patient's immunological response is adequate. Further studies are needed in order to explain clearly the physiopathology of SARS Cov-2, and even if SARS Cov-2 neuropsychiatric manifestations are uncommon, they should remain in an emergency physician's differential especially if patients have been in close contact with the disease.

Conclusions

We present two atypical cases of COVID-19. While most atypical manifestations have been described among children, older adults and patients with multiple comorbidities, these cases include two young previously healthy men. To our knowledge this is the second case of hiccups and COVID-19 reported in

the literature and the fourth case of a psychotic episode as a manifestation of the condition. While the patient presenting with hiccups has the expected physiopathology of SARS Cov2, for the second case, it is still unknown whether psychosis is a result of encephalitis or a result of the cytokine storm. These two cases highlight the diversity of presentations of the condition and add to the growing knowledge bank about this virus.

Declarations

Ethics approval and consent to participate

Ethics approval was waived as there was no intervention just two descriptive cases.

Consent for publication

Consent for the publication was obtained in both cases presented.

Availability of data and materials

Please contact author for data requests

Competing interests

The authors declare that they have no competing interests

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Authors' contributions

Teresa Alvarez-Cisneros and Aldo Lara received the patients and coordinated the clinical cases. They also drafted the manuscript. Stephanie Sanson-Tinoco helped with the analysis of case 2. All authors read and approved the final manuscript.

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Figures

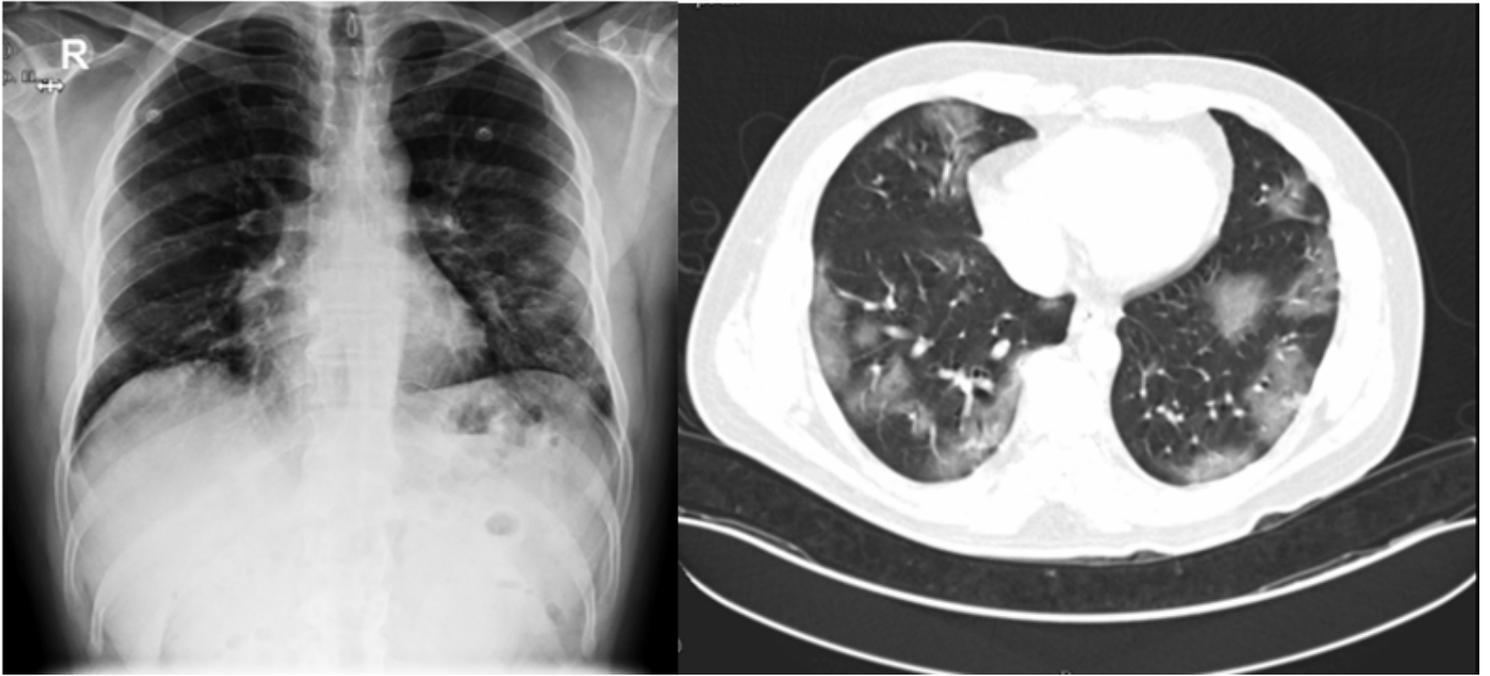


Figure 1

A. Chest X-Ray showing multiple ground-glass bilateral infiltrates, B. Chest CT scan showing multiple bilateral and peripheral ground-glass and consolidative pulmonary opacities

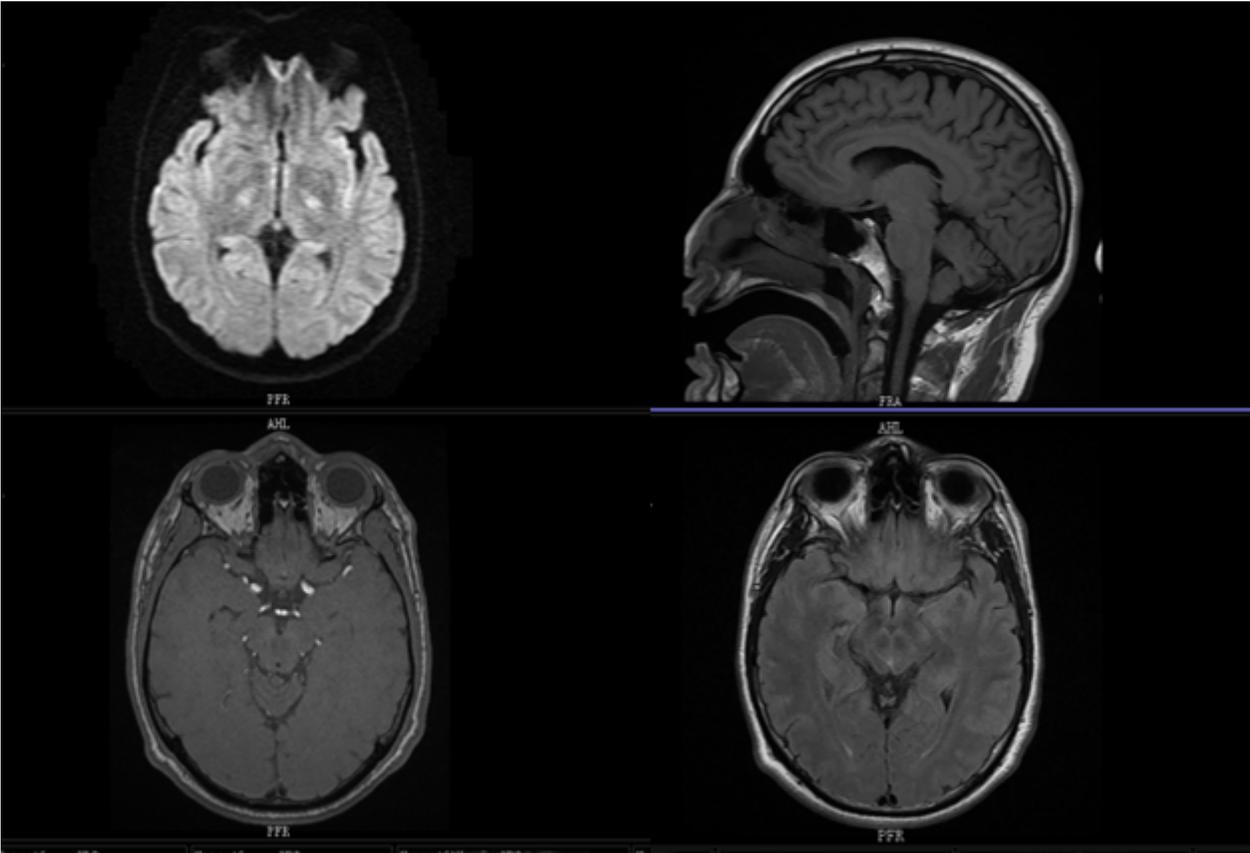


Figure 2

Img.2 Brain MRI showing no signs of stroke or encephalitis.

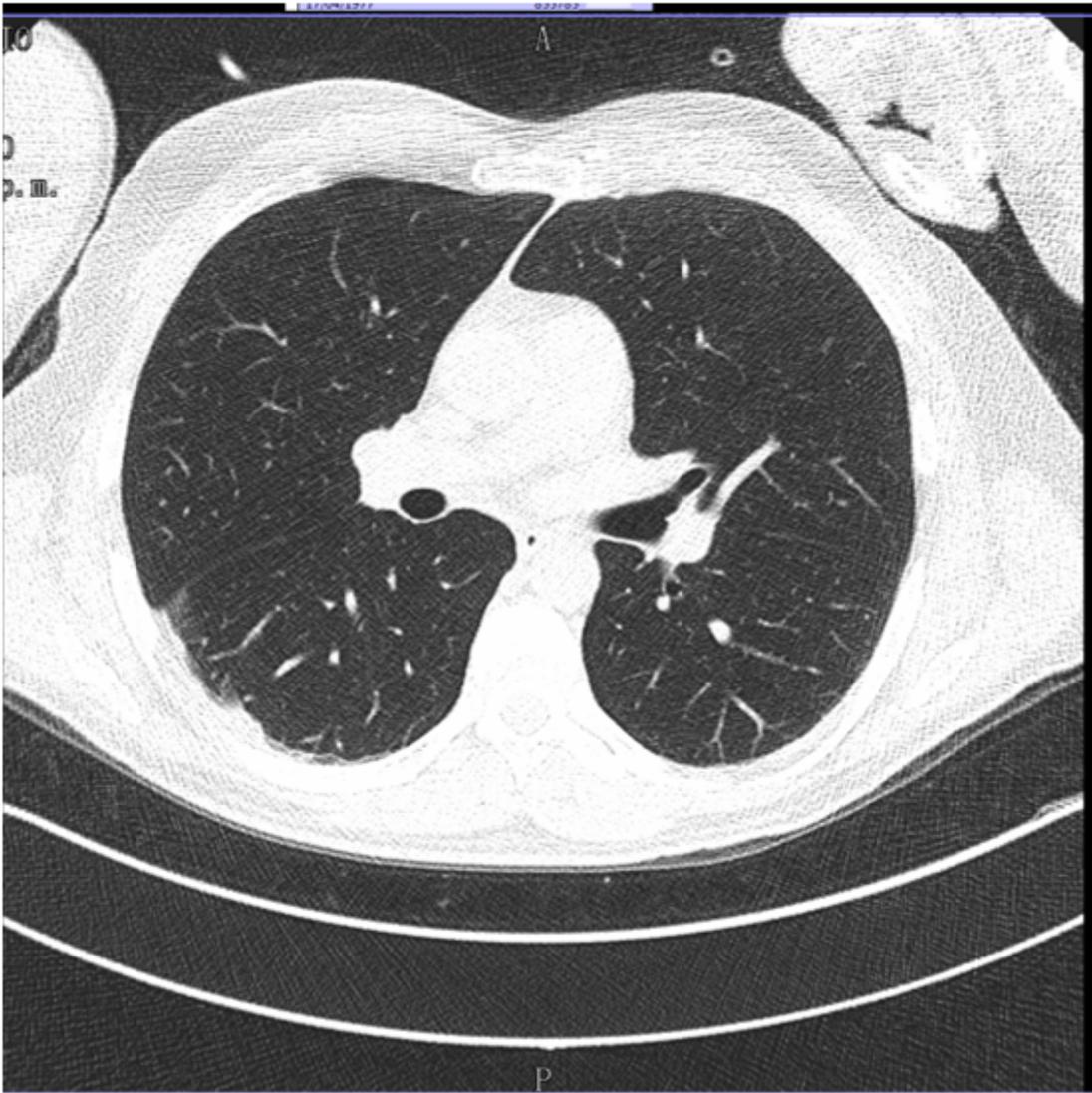


Figure 3

Img. 2 Chest CT scan not showing any infiltrates, consolidation images or other signs of pneumonia, but a single pleural nodule not related to the condition.