



International Journal of Case Reports & Short Reviews

Case Report

The Interplay of Panic Disorder and Hypothyroidism in COVID Setup: A Case Report -

Sunanda Kanojia, Prateek Upadhyay, Richa Saroa and Sanjeev Palta*

*Department of Anesthesia and Intensive Care, Government Medical College and Hospital,
Chandigarh*

***Address for Correspondence:** Sanjeev Palta, Department of Anaesthesia and Intensive Care,
Government medical college and Hospital, Sector 32, Chandigarh, Tel: +91-964-612-1523;
E-mail: sanjeev_palta@yahoo.com

Submitted: 03 January 2022; **Approved:** 06 January 2022; **Published:** 07 January 2022

Cite this article: Kanojia S, Upadhyay P, Saroa R, Palta S. The Interplay of Panic Disorder and
Hypothyroidism in COVID Setup: A Case Report. Int J Case Rep Short Rev, 2022 Jan 07; 8(1): 001-
004. doi: 10.37871/ijcsr.id97

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ABSTRACT

The human novel coronavirus, known as the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-COV-2) has made its way across the globe and has caused the unprecedented COVID-19 pandemic. It has infected humans of all age group and its severity varies with the extremes of age group and the presence of co-morbidities. The clinical features of COVID-19 range from mere cold to severe disease such as pneumonia, ARDS, bronchitis, multiorgan failure as well as death. Having such diverse manifestation, these clinical features often overlap with the respiratory manifestations of other illnesses including hypothyroidism and panic disorder, which are often not given due attention and stand as a potential for misdirected management. Hypothyroidism causes reduced responsiveness to hypoxia or hypercapnia, potentially causing life-threatening hypoventilation. Panic disorder is associated with the episodes of hyperventilation and extreme stress response to the stimuli such as palmar sweating, tachycardia, dyspnoea, movement disorder (ataxia, tremors), sensory disorders (paraesthesia), cold extremities, chest tightness/pain, etc. In the severe cases of COVID-19, the clinical features maybe inconsistent with the severity of the infection according to laboratory and imaging findings. The patient may develop severe dyspnoea, tachypnoea (respiratory rate > 30/minute), respiratory distress, SpO₂ ≤ 93%, PaO₂/FiO₂ < 300 or no visible features at all. However, these patients deteriorate very quickly and need to be monitored closely. We present a case that emphasize upon the need to differentiate the causes of respiratory illness in presence of comorbidities like hypothyroidism and panic disorder in COVID-19 patients.

Keywords: Panic disorder; COVID-19; ICU; Hypothyroidism

INTRODUCTION

The outbreak of Severe Acute Respiratory Syndrome that began in Wuhan, China and gained international attention shortly thereafter was conclusively attributed to a novel coronavirus (SARS-CoV-2). It was officially named “Coronavirus Disease 2019” (COVID-19) by the World Health Organization on February 12, 2020 and declared as pandemic on March 11, 2020. This outbreak progressed to a pandemic by spreading at an unprecedented speed internationally as it continues to broaden geographically and exponentially [1]. While most of the people who are infected experience a mild to moderate respiratory illness and convalesce without requiring distinct treatment, it's the older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, thyroid disorder and cancer who are more likely to develop serious illness [2]. We are presenting a case that narrates about the interplay of panic disorder and hypothyroidism in a hospitalized COVID-19 patient.

CASE PRESENTATION

The patient has consented to publish the medical details in a journal for academic and learning purposes. A 24-year-old female was admitted to COVID-19 ward after being tested positive for SARS-CoV-2. Her presenting complaints at the time of admission were sore-throat, dry cough and fever with chills which was documented to be varying around 101°F and relieved by acetaminophen. Her vitals were stable and her other investigations including complete blood count, liver function tests, serum electrolytes, renal function tests and coagulation profile were within normal limits. She was not a known case of any respiratory illness. However, there was a notable desaturation of blood oxygen that occurred in performing the 6 meters walk test of up to 92% from the baseline of 98% on room air. On day 2, she was started on Hydroxychloroquine therapy as per ICMR protocol and a high protein diet.

Physical trapping of any patient due to isolation, usually evokes negative thought so mental health counselling was provided to the patient. She was hypothyroid and was on Tablet Thyroxine 75 mg OD for 2-3 years. Reassurance was provided to her by the concerned psychiatrist telephonically. Patient was compliant and attended regular counselling for 1 week henceforth.

On day 5, she developed generalised body aches, anosmia, loss of taste, diarrhoea and nausea and was treated symptomatically. Further,

on day 8, the patient had an abrupt onset of shortness of breath associated with palpitations, chest pain and apparent respiratory distress. On physical examination, her vitals were: BP: 136/78 mmHg, HR: 150/min, RR: 36 bpm and a room air SpO₂ of 84%. She was shivering and her body temperature was 99.4F. Relating this event to the course of COVID-19 infection, she was shifted to ICU while receiving oxygen therapy with a venturi mask delivery FiO₂ of 0.6 @ 15 LPM helping her maintain a blood oxygen saturation of 99%. After 20 min, her above mentioned symptoms resolved without any pharmacological intervention. The arterial blood gas analysis was suggestive of hyperventilation. Portable echocardiography showed no abnormality. Patient was cooperative and agreed to mental health care counselling. In the counselling session, previous history of similar episodes of these symptoms was obtained and it was found that she had been taking treatment for managing depression with T. Sertraline 100 mg and T. Fluoxetine 20 mg for 6-8 months, 3 years back. She was diagnosed with hypothyroidism around the same time in view of complaints of low mood, lethargy, anorexia and weight gain. Two hours after the counselling session, her blood gas analysis came out to be normal. However, her thyroid function tests showed a raised TSH level and so her thyroxine dose was increased to 88 mcg/dl. No abnormality was detected in the remaining investigations including hypothalamic-pituitary-ovarian axis blood test analysis and chest X-ray imaging. Patient was kept under observation for 24 hours in ICU and was shifted back to the COVID ward thereafter.

Based on this, a diagnosis of panic attack without Agoraphobia and Severe Depression without Psychotic Symptoms, currently under clinical remission was made. She was started on T. Clonazepam 0.25 mg as and when required. Patient was reassured and her counselling sessions were continued throughout her hospital stay. She was discharged after 2 negative swab reports after the 14th day.

DISCUSSION

This case brings forth the need to differentiate the respiratory clinical features of hypothyroidism, panic disorder and the severe-severity of COVID-19 and encourages us to discuss the following:

1. Dyspnoea associated with hypothyroidism vs. COVID-19.
2. Panic disorder and COVID-19.
3. Importance of mental health well-being in COVID-19 patients.



Dyspnoea associated with hypothyroidism vs. COVID19

While COVID19 patients can experience breathing difficulty with an increase in respiratory drive heralding the onset of respiratory failure, the symptoms of hypothyroidism can be overlapping. A hypothyroid patient commonly presents with fatigue, muscle cramps, dry skin, cold sensitivity, voice change and constipation [3]. Deficiency of thyroid hormones reduces the strength of the respiratory muscles and may also cause obstructive sleep apnea in severe cases. It affects the respiratory drive causing reduced responsiveness to hypoxia or hypercapnia, potentially causing life-threatening hypoventilation. A reduction in diffusion lung capacity for carbon monoxide suggests involvement of lung parenchymal as well. These two changes lead to a predominantly restrictive pulmonary physiology on spirometry [4]. Exercise testing parameters can be significantly reduced in contrast with a normal chest imaging study, arterial blood gases and spirometry. There is also significant reduction in oxygen consumption and carbon dioxide output, minute ventilation, tidal volume and oxygen pulse in hypothyroid patients as suggested by Sadek SH, et al. [5]. Thyroxin replacement therapy even for just 1 week reverses the impaired ventilatory responses to hypothyroidism [6].

In COVID-19, hypoxemia is the hallmark of the pulmonary derangement of the disease. There can be typical or atypical presentation of COVID-19 associated ARDS (CARDS) [7]. The typical clinical presentations include the presence of severe dyspnoea, tachypnoea (respiratory rate > 30/minute), respiratory distress, $SpO_2 \leq 93\%$, $PaO_2/FiO_2 < 200$, and/or greater than 50% lung infiltrates within 24 to 48 hours [8]. The presence of significant hypoxemia and no signs of respiratory distress is the atypical picture of ARDS known as silent hypoxemia [7]. The imaging of pulmonary changes due to COVID-19, is pleomorphic with interstitial changes and patchy and ground glass shadows. It's often out of step with the patient's symptoms, and Wan S, et al. [9] called it as "shadow-syndrome discrepancy".

Lab findings-Levels of AST (Aspartate Transaminase) and ALT (Alanine Transaminase) at the time of admission correlate with clinical deterioration to ARDS [8]. Also, levels of CRP correlate directly with disease severity and progression. Due to cytokine storm, mononuclear cells such as neutrophils and monocytes in the patient's lung tissues and peripheral blood produce elevated levels of pro-inflammatory cytokines such as interleukin-6 (IL-6), interleukin-1 and tumour necrosis factors which further progresses with disease severity [7].

During the distress in this patient, the PaO_2/FiO_2 was more than 300. The chest x-ray revealed no new changes. Bed side lung ultrasound inferred no significant lung changes. Also, portable echocardiography was done to rule out venous thromboembolic events or heart failure. There was no further elevation or worsening of covid markers in lab findings.

Panic disorder and COVID19

Multiple respiratory and autonomic manifestations due to Panic Disorder (PD) can be found in patients of COVID-19, which can be confused with the severity of COVID-19. Panic disorder is associated with episodes of hyperventilation and intense response to stimuli like stress [10]. The patient can experience palmar sweating, tachycardia, dyspnoea, movement disorder (ataxia, tremors), sensory disorders (paraesthesia), cold extremities, blurring of vision, tinnitus, loss

of bowel and/or bladder control, giddiness, loss of consciousness and chest tightness/pain [11]. Hence, these episodes are often overwhelming and traumatic for the patients. There is a vicious cycle composed of the panic episode and the hyperventilation syndrome associated therewith. The "fear network of brain" that is composed of the hippocampus, the medial prefrontal cortex, the amygdala and its brainstem projections is postulated to be oversensitive in these patients and explains the effectiveness of cognitive behavioural therapy as evident in the above case presented [11]. Symptoms of depression, anxiety, psychosis, cognitive impairments such as memory loss can be present in hypothyroidism as well [12].

During the counselling sessions, the patient revealed that she was apprehensive about the health of her family and about further deterioration of her own. The saturation of the patient improved drastically in 20 minutes from 84% to 99% after oxygen supplementation, which would be gradual in presence of any lung pathology related to COVID-19. Clonazepam therapy and psychiatric counselling improved the clinical signs as expected in panic disorder.

RESULTS

In the presented case we can appreciate that taking mental health into consideration saved the patient from the trauma of a therapeutic misadventure like endotracheal intubation. COVID-19 pandemic and its media coverage has caused a lot of apprehension and worry in public. The constant fright with steep rise in infection rate and morbidity has accentuated stress and other mental health problems. Unfortunately, mental health is neglected in most of the patients.

CONCLUSION

From the anesthesiologist's point of view, the present case highlights the importance of multidisciplinary approach to the patient. While managing the patients it is for an utmost importance that all the other systemic disorders, must be ruled out. With this present case report, mental health issue have been pertinent during clinical evaluation which brings to our notice the importance of Mental Health Practitioner (MHP) in the scenario of COVID-19, for thorough evaluation of patients with or without psychiatric history.

We suggest round the clock presence of MHP for mental health issues of these patients, inclusion of mental health problems in the routine history taking, always considering mental health problems in the differential diagnoses and provision of a healthy and happy environment for patient.

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