Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Letter to the Editor

New variants and new symptoms in COVID-19: First episode psychosis and Cotard's Syndrome two months after infection with the B.1.1.7 variant of coronavirus

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Dear editor;

During the course of coronavirus disease-2019 (COVID-19) pandemic, many neuropsychiatric manifestations of the disease have been observed while the precise pathophysiology remains unknown (Sen et al., 2021; Yesilkaya et al., 2021). New variants of coronavirus such as the 501.V2 and B.1.1.7 have emerged and obscurities in pathogenesis have increased even further with these variants. Here, we describe a patient with long-term effects of COVID-19, manifesting first episode psychosis accompanied by Cotard's Syndrome (CS) after infection with the B.1.1.7 variant of SARS-CoV-2.

1. Case

A 41-year-old female primary school teacher with no adverse medical history was admitted to the emergency department with symptoms of loss of smell, myalgia and sore throat. Upon confirmation of COVID-19 infection by a positive RT-PCR test result for the B.1.1.7 variant of coronavirus, the national COVID-19 treatment protocol with favipravir and hydroxychloroquine was started. The patient's symptoms improved gradually and a negative RT-PCR result was confirmed on the tenth day. The loss of smell, however, remained. Two months after the completion of treatment for COVID-19, the patient started to have thoughts of being annihilated by viral occupation of her body and of her nervous system getting decomposed. The patient's family brought her to the psychiatric emergency department with complaints of inability to continue with the teaching job at her primary school, staying in her room for hours without eating or talking and alluding to her death and suicide plans.

The patient was found to have strong suicidal ideations, referential thoughts, belief of being physically dead and her children being in danger of obliteration by COVID-19. As the patient believed that she was dead, she wanted to prove this to her family by committing suicide with the notion that that nothing would ever change afterwards. Clinical evaluation of the mental state of the patient suggested that cooperation and orientation were intact while speech output and speed as well as psychomotor activity were decreased. The patient was anxious, while her mood was dysphoric. Nihilistic, persecutory and referential delusions with no insight were recorded. The Positive and Negative Syndrome Scale (PANSS) score was 109. Physical and neurological examinations, blood tests and magnetic resonance imaging (MRI) revealed no significant findings. Upon hospitalization, despite her treatment with olanzapine 20 mg/day orally with an initial diagnosis of first episode psychosis and CS, her delusions and suicidal ideation persisted. Therefore, electroconvulsive therapy (ECT) was planned. Upon receiving 8 sessions of ECT along with olanzapine administration, her psychiatric symptoms and suicidal ideation ameliorated. The patients' PANSS score regressed to 54; however, her loss of smell continued. The patient was discharged from the hospital with olanzapine 20 mg/day orally and she is currently being followed-up in our outpatient clinic.

2. Discussion

To the best of our knowledge, this is the first report of a patient who developed CS and psychotic symptoms associated with COVID-19 following infection with a new variant of coronavirus.

CS is a rare self-perceptual anomaly with the presentation of nihilistic delusions. Patients often claim that their body is physically dead and complain of a feeling of nothingness (Young et al., 1994). CS has been described in various neuropsychiatric conditions such as schizophrenia, depression, encephalitis, traumatic brain injury or brain neoplasm (Ramirez-Bermudez et al., 2010). Nevertheless, these conditions are neither necessary, nor sufficient to reveal the exact pathophysiology of CS. Defective mechanisms of proprioception or interoception may lead to a self-misattribution following a perceptual dysfunction which might trigger CS. A disconnect between the occipito-parieto-temporal cortices and the limbic system may result in a disassociation between perceptual and emotional processing (Coltheart et al., 2007). Although blood tests indicated no systemic inflammation for the index patient, an indistinct neuroinflammatory process may lead to neurotoxicity that might result in perceptual disruption and CS or psychotic features, as suggested in previous reports (Dorcet et al., 2020; Ramirez Bermúdez et al., 2020).

Considering well-described anosmia and ageusia with COVİD-19, reports of hearing loss, vision loss, skin hypersensitivity and our case's

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symptoms after the infection, new variants of SARS-CoV-2 might affect the perceptual pathways. The angiotensin-converting enzyme-2 (ACE-2) receptor which might modulate smell and taste perception, has been identified as a potential viral receptor. Such interaction may disrupt chemosensory perception (Vaira et al., 2020). Furthermore, SARS-CoV-2 might disrupt the way that the body perceives external stimuli by affecting perceptual nuclei and pathways in the brain stem that the virus may infiltrate via ACE-2 receptors (Yesilkaya and Balcioglu, 2020).

Overall, COVID-19 and its long-term adverse effects may cause abnormal processing of perceptions. This in turn can lead to anosmia, ageusia and defective proprioception, resulting in self-misattributions as seen in the patient in the current case report who was diagnosed with CS. Clinicians should keep in mind that infections with the rapidly spreading B.1.1.7 variant of SARS-CoV-2 might result in more severe symptoms or long-term consequences of COVID-19 compared to other strains. It is also crucial to conduct further research to understand the ability to perceive chemosensory stimuli in patients with COVID-19 and the development of CS.

Declaration of competing interest

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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References

Coltheart, M., Langdon, R., McKay, R., 2007. Schizophrenia and monothematic delusions. Schizophr. Bull. 33 (3), 642–647.

Dorcet, G., Benaiteau, M., Bost, C., Mengelle, C., Bonneville, F., Martin-Blondel, G., Pariente, J., 2020. Two cases of late-onset anti-NMDAr auto-immune encephalitis after herpes simplex virus 1 encephalitis. Front. Neurol. 11.

Ramirez Bermúdez, J., Bustamante-Gomez, P., Espínola-Nadurille, M., Kerik, N.E., Dias Meneses, I.E., Restrepo-Martinez, M., Mendez, M.F., 2020. Cotard syndrome in anti-NMDAR encephalitis: two patients and insights from molecular imaging. Neurocase 1–8.

Ramirez-Bermudez, J., Aguilar-Venegas, L.C., Crail-Melendez, D., Espinola-Nadurille, M., Nente, F., Mendez, M.F., 2010. Cotard syndrome in neurological and psychiatric patients. J. Neuropsychiatr. Clin. Neurosci. 22 (4), 409–416.

Sen, M., Yesilkaya, U.H., Balcioglu, Y.H., 2021. SARS-CoV-2-associated first episode of acute mania with psychotic features. J. Clin. Neurosci. 87, 29–31.

Vaira, L.A., Salzano, G., Fois, A.G., Piombino, P., De Riu, G., 2020. Potential pathogenesis of ageusia and anosmia in COVID-19 patients. Int. Forum Allergy Rhinol. 10 (9), 1103–1104.

Yesilkaya, U.H., Balcioglu, Y.H., 2021. Neuroimmune correlates of the nervous system involvement of COVID-19: A commentary. J. Clin. Neurosci. 78, 449–450.

Yesilkaya, U.H., Sen, M., Balcioglu, Y.H., 2021. COVID-19-related cognitive dysfunction may be associated with transient disruption in the DLPFC glutamatergic pathway. J. Clin. Neurosci. 87, 153–155.

Young, A.W., Leafhead, K.M., Szulecka, K., 1994. The capgras and cotard delusions. Psychopathology 27 (3–5), 226–231.

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