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.

Asian Journal of Psychiatry 73 (2022) 103115

Contents lists available at ScienceDirect

Asian Journal of Psychiatry

journal homepage: www.elsevier.com/locate/ajp

Hashimoto's encephalopathy presenting as acute mania following recovery from COVID-19

ARTICLE INFO

Keywords
COVID-19
Hashimoto's Encephalopathy
Mania
Anti-thyroid peroxidase antibody

To the editor,

Hashimoto's encephalopathy is a poorly understood autoimmune disease, which can present with diverse neurological and psychiatric manifestations. It is also known as steroid-responsive encephalopathy associated with autoimmune thyroiditis due to its beneficial response with steroids (Mattozzi et al., 2020). COVID-19 is an ongoing pandemic caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). Neuropsychiatric manifestations are reported in up to 20–40% of covid 19 patients (Kumar et al., 2021). We report a unique case of Hashimoto's encephalopathy presenting as acute mania in a patient following recovery from severe COVID-19 disease.

1. Case report

A 33-year-old male was brought to emergency room with 3 days history of acute onset of behavioral changes characterized by persistently elevated mood, increased speech, increased goal directed activity, and decreased sleep. He was found to have increased self-esteem and was making unrealistic plans about starting new business ventures. Two weeks before the presentation, patient was diagnosed with SARS-COV-2 infection. High-resolution computed tomography (CT) scan of his chest showed a CT severity score of 18/25 suggestive of severe disease. He required intensive care management and was initiated on supplemental oxygen, intravenous steroids, and anti-coagulants. He was discharged after two weeks of in hospital care during which he recovered. The behavioral changes were noted from the first day following discharge. The patient had no significant past medical or psychiatric history.

Physical examination of the patient was unremarkable. On mental status examination, he was conscious and oriented. He was found to be intrusive and overfamiliar with pressured speech. His mood was euphoric, and he expressed grandiose ideas. Impairment of recent memory was noted during cognitive function assessment. Diagnosis of a manic episode was made and he was initiated on Tab. Risperidone at2 mg and Tab. Divalproate sodium (750 mg) for his manic symptoms. At admission, he scored 28 on Young's Mania Rating Scale (YMRS). Risperidone was increased to 4 mg per day after four days.

In view of origin of psychiatric symptoms with impairment of recent memory following recovery from COVID-19 and absence of past or family history of psychiatric illness it was decided to evaluate in detail for organic etiology. Magnetic resonance imaging (MRI) of his brain was done and it showed few tiny, nonspecific hyperintense foci in bilateral frontal subcortical and left parietal periventricular white matter. Electroencephalogram (EEG) showed intermittent diffuse slow waves with atypical triphasic waves suggestive of diffuse dysfunction of brain (Fig. 1). Anti-thyroid peroxidase (TPO) antibody was found to be elevated (159 IU/ml). Other anti-neuronal antibodies (Anti CV2,Anti Yo, Anti HU, Anti Ri,Anti PNMA2,Anti Amphiphysin) were negative.

In view of presence of elevated anti-TPO antibody, concurrent EEG features suggestive of diffuse brain dysfunction, and associated behavioral changes, we made a diagnosis of Hashimoto's encephalopathy and started him on Tab. Deflazacort 5 mg concurrently with the psychiatric medications. Patient responded well to the treatment and was discharged after 1 week of inpatient care;at discharge, he scored 8 on YMRS.

2. Discussion

Hashimoto's encephalopathy is diagnosed when there are signs of encephalopathy with increased thyroid peroxidase antibodies. Symptoms generally respond well to steroids. Patients can either have a normal thyroid function or mild hypothyroidism. Other investigations like MRI brain and CSF studies are either normal or have non-specific findings (Mattozzi et al., 2020). In our patient, signs of diffuse dysfunction of brain in EEG with elevated anti TPO antibody and quick response to oral steroids is suggestive of possible Hashimoto's encephalopathy. MRI findings of non- specific white matter hyperintensities are seen in up to 9% of the patients with Hashimoto's encephalopathy (Menon et al., 2017).

COVID 19 can affect multiple systems of the body, including brain, through dysregulated immune response and precipitating a hyperinflammatory state which may predispose to autoimmune complications. More pertinently, there is evidence that COVID-19 infection can trigger an autoimmune response by generation of autoantibodies either following coupling of Angiotensin Converting Enzyme (ACE-2) receptor with viral proteins or exposure of ACE2 cryptic epitopes (Amiral, 2020). Around half of the patients tested positive for atleast 1 autoantibody

https://doi.org/10.1016/j.ajp.2022.103115
Received 14 January 2022; Accepted 7 April 2022
Available online 9 April 2022

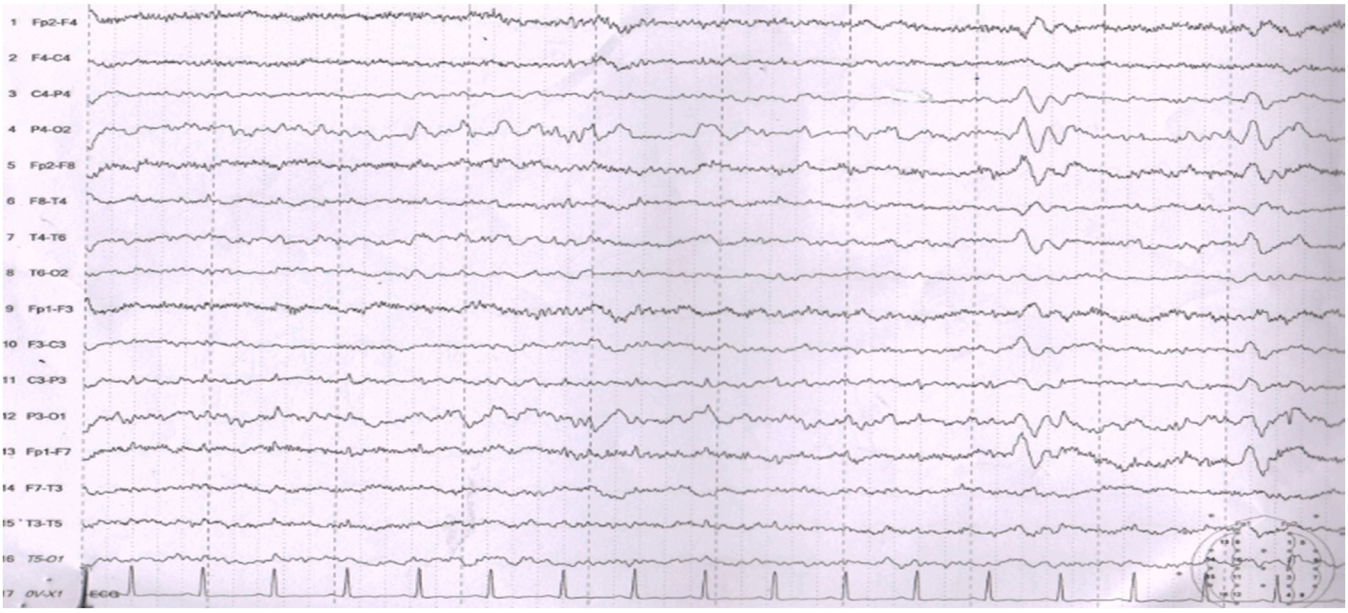

Fig. 1. - Awake EEG recording showing intermittent diffuse slow waves with atypical triphasic waves suggestive of diffuse dysfunction of the brain.

following COVID-19 infection; notably anti nuclear antibody (ANA) (33%), anti-cardiolipin antibody (24%), and anti beta2-glycoprotien-I antibody (9%). There are also prior reports of autoimmune diseases after SARS-CoV-2 infection like cold agglutinin syndrome(CAS), auto immune hemolytic anemia, Guillain-Barre syndrome (GBS) and systemic lupus erythematosis (SLE) (Liu et al., 2021).

There is one prior report of COVID-19 complicated by Hashimoto's thyroiditis (Tee et al., 2021) but the presentation was not in a psychiatry setting.To our knowledge this is the first reported case of mania heralding Hashimoto's encephalopathy post COVID-19 infection. Our report adds to the existing body of literature on autoimmune diseases following COVID-19 infection and also highlights the need for thorough organic work up for psychiatric symptoms developing post COVID-19.

Financial disclosures

There are no financial disclosures or sources of support for the present work.

Acknowledgments

None.

Conflict of interest

The authors declare no conflicts of interest relevant to the contents of the manuscript.

References

Amiral, J., 2020. Can COVID-19 induce an autoimmune disease associated with long-lasting symptoms and delayed complications. Ann. Clin. Immunol. Microbiol. 2 (1), 1014.

Kumar, S., Veldhuis, A., Malhotra, T., 2021. Neuropsychiatric and cognitive sequelae of COVID-19. Front. Psychol. 12, 577529 https://doi.org/10.3389/fpsyg.2021.577529.

Liu, Y., Sawalha, A.H., Lu, Q., 2021. COVID-19 and autoimmune diseases. Curr. Opin. Rheumatol. 33, 155–162. https://doi.org/10.1097/BOR.0000000000000776.

Mattozzi, S., Sabater, L., Escudero, D., Ariño, H., Armangue, T., Simabukuro, M., Iizuka, T., Hara, M., Saiz, A., Sotgiu, S., Dalmau, J., Graus, F., 2020. Hashimoto encephalopathy in the 21st century. Neurology 94, e217–e224. https://doi.org/10.1212/WNL.0000000000008785.

Menon, V., Subramanian, K., Thamizh, J.S., 2017. Psychiatric presentations heralding Hashimoto's encephalopathy: a systematic review and analysis of cases reported in literature. J. Neurosci. Rural Pract. 8, 261–267. https://doi.org/10.4103/jnrp.jnrp_440_16.

Tee, L., Harjanto, S., Rosario, B., 2021. COVID-19 complicated by Hashimoto's thyroiditis. Singap. Med. J. 62 https://doi.org/10.11622/smedj.2020106.

Manul Das[a,*], Ashraf Ali[b], Vikas Menon[c]

[a] *Department of Psychiatry, All India Institute of Medical Sciences, Deoghar 814142, India*

[b] *Department of Psychiatry, KIMSHEALTH, Trivandrum 695029, India*

[c] *Department of Psychiatry, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry 605006, India*

[*] Correspondence to: Department of Psychiatry, All India Institute of Medical Sciences, Deoghar 814142, India.