



## Functional Neurological Disorders and COVID-19 Vaccination

Jing-Han Ng, MBBS <sup>1</sup>

K. Ray Chaudhuri, MD, DSc, FRCP,<sup>2</sup> and

Eng-King Tan, MBBS, MRCP (UK), FRCP (Edin),

FAMS (Neurology) <sup>3,4</sup>

We thank Goss and colleagues for providing a timely discussion on the neurological complications of the coronavirus disease 2019 (COVID-19) vaccines.<sup>1</sup> Besides common neurological symptoms like dizziness, headache, and paraesthesia,<sup>1</sup> there have been recent concerns over individuals who reportedly developed abnormal movements after taking COVID-19 vaccines.<sup>2</sup> Viral videos depicting these movements triggered fear and distrust of the vaccines, to the extent that neuropsychiatric experts have provided public affirmation that these symptoms were likely due to functional neurological disorders (FND).<sup>3</sup> It is crucial to educate the public that psychogenic movements may develop as part of conversion, somatoform, or factitious disorders and to correct misleading information that may result in significant vaccine fear and hesitancy.

However, we would like to highlight that, although FND may be identified by experts with reasonable confidence based on video recordings,<sup>3</sup> an accurate diagnosis of the movement disorder would require proper evaluation, with history, examination, and investigations. Furthermore, FND often co-exists with organic neurological disorders and may sometimes be a red herring to a more serious underlying problem. Functional neurological symptoms, for example, are associated with the prodromal phase of Parkinson's disease and exist in approximately one fifth of patients with underlying epilepsy.<sup>4</sup>

Many vaccines have been studied for possible neurological complications. For example, there had been concerns in the past that hepatitis B vaccination may be associated with multiple sclerosis (MS) due to the possibility of immunological cross-reactivity between human myelin basic protein and the vaccine.<sup>5</sup> It was subsequently found that whereas the hepatitis B vaccines did not increase the risk for multiple sclerosis, the act of vaccination could hasten and trigger the development of symptoms in patients with subclinical MS.<sup>5</sup> Notably, symptoms of MS may masquerade as FND, with reports of patients with MS initially misdiagnosed with FND and patients with MS who have concomitant functional symptoms.<sup>4</sup> It is thus prudent to perform a detailed evaluation of patients who present with what appears to be functional neurological symptoms, to avoid missing underlying or concomitant organic disorders.

Recent evidence of thrombotic thrombocytopenia after the use of ChAdOx1 novel coronavirus 19 (nCoV-19) vaccine,

despite earlier suggestion of a lack of association between the vaccine and thrombosis,<sup>6</sup> illustrates the need for further data collection and follow-up studies for the COVID-19 vaccines. The actual incidence of FND after COVID-19 vaccination is unclear and may be magnified by social media. We thus need further studies to provide active epidemiologic surveillance of neuropsychiatric symptoms and signs post-vaccination, to better ascertain the neuropsychiatric effects of COVID-19 vaccination.

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## Potential Conflicts of Interest

There are no disclosures related to the submission of this paper to report.

<sup>1</sup>*SingHealth, Singapore, Singapore*

<sup>2</sup>*Kings College London and Kings College Hospital, London, UK*

<sup>3</sup>*National Neuroscience Institute, Singapore General Hospital, Singapore, Singapore*

<sup>4</sup>*Duke-NUS Medical School, Singapore, Singapore*

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