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Editorial

Functional Neurological Disorders and COVID-19 Vaccine: A Call for Action

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Since the first reported cases of severe acute respiratory syndrome coronavirus 2, also known as coronavirus disease 2019 (COVID-19), there have been over 500 million confirmed cases and almost 11.5 billion vaccine doses administered worldwide.[1] It has been a real rollercoaster ride with recurrent waves of COVID-19 infections seen across the world, restrictive measures in place in an attempt to curb outbreaks as well as a global race to develop vaccines including effective vaccination programs. We also saw a dramatic change in daily routines, complete removal of social gatherings, and, unfortunately for some, even changes in occupational status. It is no surprise that significant amounts of psychological distress have been experienced by many.

Functional neurological disorders (FNDs), including functional movement disorders (FMDs), during the pandemic have generated much interest among clinicians, partly because of concerns related to worsening symptoms in patients with pre-existing FNDs during high levels of stress, but also due to increasing reports of severe de novo FMD cases resulting in acute hospital admissions.[2] Outpatient movement disorder services have also seen an increased uptake of referrals in their practice during this period.[3] Furthermore, since the advent of COVID-19 vaccines, new challenges have arisen due to increasing reports of neurological side effects, including those thought to be functional.

We are not new to vaccine-related FNDs as this has previously received an enormous amount of interest from the media, further spreading misinformation in this field. Probably, the most paradigmatic example is the story of Desiree Jennings, a well-known cheerleader in her community, who developed a functional dystonic gait and a fluctuating foreign accent syndrome after receiving the flu shot.[4] Unfortunately, this was not presented to the public opinion as a disabling medical condition deserving compassion and medical attention, but rather as a "hoax," once again fueling the misconception that basically FND is malingering.[4]

To date, there has been a paucity of reported FND related to the vaccine in COVID-19, which arguably could be signifying an underrecognized problem. In this issue, Souza et al[5] have reported three further interesting cases, two of which were related to a movement disorder (tremor cases), thus adding to the growing literature surrounding this novel observation. The real challenge to the non-expert eye is elucidating the full spectrum of FND symptoms and gauging whether there is in fact an underlying neurological process since functional symptoms can co-exist with other neurological disorders. For example, one could argue that a mild form of Guillain–Barre Syndrome cannot be excluded in one of the cases, as deep tendon reflexes can remain present in 10% of cases and CSF analysis might not demonstrate albuminocytologic dissociation if carried out too early. A thorough clinical assessment, however, helped to elicit the incongruous clinical findings during the latter half of the illness (following the second vaccine dose) in order to secure the diagnosis of FND. This is a classic situation that leads us to a crossroad of having to decide whether the symptoms could be attributed to either an adverse reaction due to the vaccine itself or due to an "immunization stress-related response" leading up to the process of receiving the vaccine.[6–7]

As such, it is vital for patients not to confuse the above two very different types of reactions, and, in a world where social media is rampant, there is a need for health care professionals to quash any inappropriate spreading of misinformation surrounding COVID-19 vaccination. Lastly, raising awareness is only half the battle. There is also a great necessity for the establishment of an experienced multidisciplinary team in respective centers to help combat the possibility of an impending FND pandemic.

In conclusion, the experience gathered over the years – and more recently with COVID-19 – has further shaped our biological model of FND, as summarized in Figure 1. Judging from our personal experience, these patients are clearly underreported and a call for action is urgently needed at this point (Table 1).

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Table 1: A call for action for FND after COVID-19 vaccines

• Critically interpret the neurological adverse events observed during trials and particularly the ones reported by the media
• Educate the public opinion and media in order to avoid spreading of the misinformation fueling vaccine hesitancy
• Identify patients at risk ○ A history of FND might increase the risk of vaccine-related FND
• Keep an open dialogue with patients presenting with FND after the vaccine: 1. Vaccines do have severe side effects, although they're rare and certainly less prevalent than the consequences of COVID-19 2. Admit the uncertainties of new drugs reaching the market on an urgent basis, especially in terms of long-term effects 3. Emphasize the enormous number of people who have received vaccines and the issue of reporting bias 4. Explicitly diagnose and explain FNDs 5. Distinguish side effects caused by the "vaccine" from FND caused by the "vaccination" 6. Explain that this has happened before with other vaccines 7. Allocate enough time to answer all the questions arose during the appointment
• Consult patients about receiving further doses ○ A history of vaccine-related FND might increase the risk of a further event

Abbreviations: COVID-19: coronavirus disease 2019; FND: functional neurological disorder.

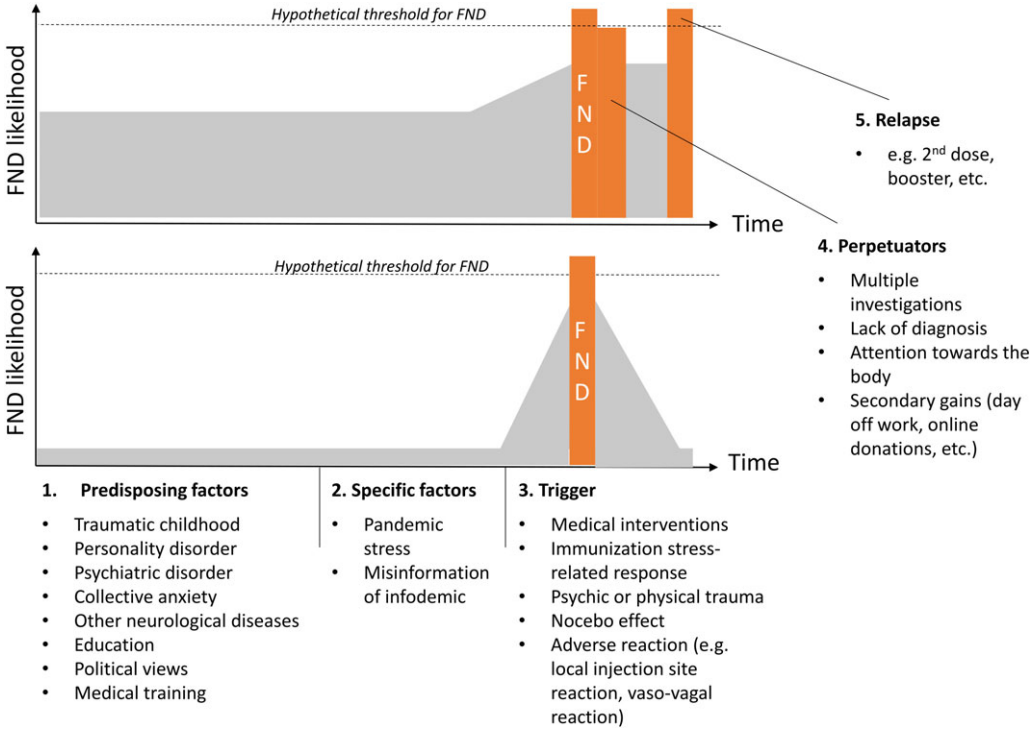

Figure 1: The figure schematically shows the current biological framework of FND in the context of the COVID-19 pandemic. FND arise from a multifactorial process and can variably present in each individual, as shown by the two examples in the figure. The top row shows a paradigmatic "frail" patient featuring a number of predisposing factors, in whom the vaccination triggered an event that was perpetuated and relapsed. The bottom row shows a patient with a low risk of developing FND, in whom the stress caused by the pandemic was so severe to rapidly facilitate the onset of FND after the vaccine.

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