

Functional disorders after COVID-19 vaccine fuel vaccination hesitancy

Due to the dramatic spread of COVID-19, public health measures and a campaign of widespread distribution of vaccines against SARS-CoV-2 are among the most important priorities for many governments worldwide. Attitudes of people towards vaccination against SARS-CoV-2 can be basically split into three major categories. A first category includes people (60%–80% of the population) who are convinced that the benefits of vaccination outweigh its risks. A second category of people include irreducible anti-vaxxers, who have not changed their opinion even during the COVID-19 pandemic. A third group of people understand the advantages of vaccination, but are still undecided about undergoing vaccination. In the era of COVID-19 pandemic, many individuals have also to deal with the ‘infodemic’ challenge, a term coined by the WHO to refer to the ‘overabundance of information—some accurate and some not—that occurs during an epidemic’. Misinformation in social media and conspiracy beliefs about COVID-19 pandemic are now enriched by the theories of anti-vaccine movements, in keeping with the notion that online false news stories spread more rapidly than true news.

Among the various adverse events which might observed after COVID-19 vaccination, the occurrence of functional—once called psychogenic—neurological disorders (FNDs) might be a challenging issue for healthcare providers, media and public opinion with a negative impact on vaccination campaigns. In fact, in the past few months, as the vaccination campaign against SARS-COV-2 was finally reaching larger slices of the general population, we have seen two young women manifesting FND after COVID-19 vaccination.

The first patient presented with a short episode of generalised tonic-clonic psychogenic non-epileptic seizures (PNES) 20min after receiving the second dose of the Pfizer vaccine. The event was followed by different episodes with different phenomenology (eg, inability to move the whole body with preserved level of consciousness). No post-ictal period followed these episodes, some of which were also captured by video-electroencephalography that did not disclose any epileptic activity. The second patient

showed persistent dizziness and a subjective loss of tactile sensitivity in the right arm and leg about 2 weeks after receiving the Astra-Zeneca vaccine. Brain CT scan was unremarkable and neurological examination did not disclose any objective loss of tactile or pain sensitivity. In both patients, neurological symptoms were characterised by a sudden onset and overt inconsistency, as typically observed in patients with FND.¹

FNDs refer to various relatively common and disabling conditions in which people may experience neurological symptoms arising from brain networks dysfunction in absence of damage or structural disease of the nervous system, with or without psychosocial stressors.¹ FND may present with a variety of symptoms, including weakness, movement disorders, sensory symptoms, persistent dizziness, speech disorders and PNES.¹ Recent studies have shown the remarkable impact on mental health of stressful conditions related to COVID-19 pandemic, particularly the psychological and social effects of imposed lockdown and public fear fuelled by the extensive media coverage, with sudden disruption of daily life activities. This has been the case especially in individuals with pre-existing psychiatric conditions. In addition, there is strong evidence that universally felt stressors, such as natural disasters and acts of terrorism, can induce or worsen FND even among people not directly affected. Accordingly, recent studies have linked the COVID-19 outbreak with the worsening of PNES and other clinical manifestations of FND.² In one of these studies, 3 of 18 patients reported the onset of FND during the outbreak.²

In our view, FND following COVID-19 vaccination will not be a rare phenomenon and will be widely covered by the media, being interpreted as a direct consequence of the vaccine, as already seen in the past. One of such cases regards a famous American cheerleader who developed generalised functional dystonia, pain and a foreign accent syndrome after an influenza shot.³

Given the reported high prevalence of FND among private videos uploaded on YouTube, we searched the web for similar cases in time of COVID-19 vaccine. We found the case of a young man who fainted outside a Hong Kong government-run vaccination centre, where he took a China-made Sinovac vaccine on 24 March 2021.⁴ He later woke up in hospital with 'facial palsy', a still debated event meanwhile

being reported following the inoculation of US-produced COVID-19 vaccines. However, in this patient's video, two atypical features pointing to an FND are noticeable: variable lower face spasms—as previously described in facial FND, and the inability to close *both* eyes. We also found the case of a middle-aged American woman who went viral with Facebook and YouTube claims that a COVID-19 vaccine caused her uncontrollable shaking and tongue spasms.⁵ Again, her video (posted on 14 January 2021) entitled 'Don't take the jab' shows the typical features of functional axial jerks also accompanied by the classic 'huffing and puffing sign'. She concludes her video saying "there's nothing that will convince me that this is not from the Moderna vaccine."

The success of vaccination programmes relies on high rates of public acceptance and population coverage, which is contingent on encouraging scientific data about safety and efficacy of the vaccines as well as effective information campaigns. Vaccine hesitancy, characterised by lack of confidence in vaccination and/or complacency about vaccination that may lead to delay or refusal of vaccination despite the availability of services, threatens to undermine the success of COVID-19 vaccination programmes.

Although the WHO recently ranked vaccine hesitancy as one of the top 10 threats to global health, a new report by the Centre for Countering Digital Hate has lambasted social media companies for allowing the anti-vaccine movement to remain on their platforms. For this reason, while health experts have attempted to stress that in various instances, no direct link between COVID-19 vaccines and various media-covered adverse events has been established, such attempt is probably not enough. With regard to FND, we suggest that the medical community should be more vocal in informing the media and public opinion about FND, thus making a further step towards the establishment of 'eHealth literacy'.

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