Functional stroke-like presentations in the time of COVID-19

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In March 2020, the World Health Organization declared coronavirus disease 2019 (COVID-19) a pandemic.[1] As of 26 September 2020, there were over 32 million confirmed cases worldwide including almost one million deaths.[2] Over the same time period in New Zealand, there were 1,473 confirmed cases and 25 deaths.[3]

In addition to respiratory symptoms, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) may manifest with neurological symptoms. These include ischaemic and haemorrhagic stroke, encephalitis and Guillian-Barré syndrome.[4] Further, recent international studies describe the emergence of adverse psychological affects for some patients with COVID-19 [5] and worsening mental health for those with pre-existing functional neurological disorders (FND).[6] The socioeconomic consequences of the lockdown include increasing levels of social isolation, domestic abuse and job losses across many economic sectors.[7,8]

Though New Zealand has been relatively spared from the pandemic, locally we have noticed a spike in the numbers of patients presenting with functional stroke-like symptoms. These are one manifestation of FND, conditions characterised by the presence of neurological symptoms that cannot be explained by typical neurological diseases or other medical conditions. Anecdotal reports across other district health boards suggest similar observations of an increase in functional stroke-like presentations.

FND are common in neurology and associated with significant morbidity and healthcare costs.[9] Patients often present acutely, most commonly with psychogenic non-epileptic seizures or weakness resembling a stroke. The diagnosis of FND is challenging; clinical features include a history atypical for organic pathology and physical examination may demonstrate give-way weakness, a Hoover's sign and inconsistent neurological examination findings, particularly when compared with what the patient can perform when distracted. Neuroimaging is often helpful to assist with diagnosis, particularly using the more sensitive MRI diffusion weighted sequences. The cause of FND is unknown but may be associated with psychological stresses.[9] A recent review can provide the reader with further information.[10]

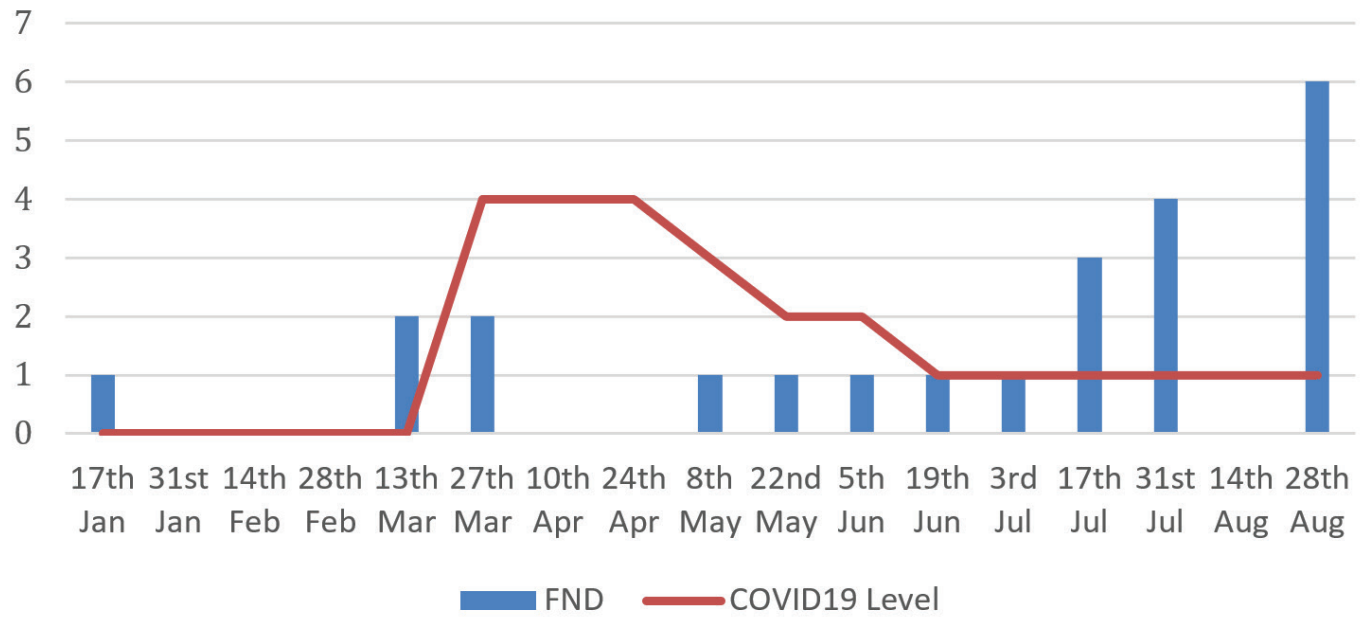
MidCentral District Health Board serves a population of 172,930 patients with approximately 330 stroke admissions per annum. Between 1 January to 31 August 2020, we had 24 admissions with stroke-like symptoms in 22 patients who had a final diagnosis of FND. This is in contrast to five admissions with FND over the same period in 2019. The most common presenting symptom was unilateral weakness (96%). All patients underwent brain imaging with CT or MRI, which excluded acute pathology. Baseline characteristics are detailed in Table 1. Figure 1 illustrates the admission dates and patient volumes during the various stages of COVID-19 lockdown.

Nine of the patients admitted with FND acknowledged recent psychological stressors which may have contributed to their symptoms. While FND is typically associated with younger age of onset, in our population one-third were 70 years of age or older. This may reflect the increasing social isolation experienced in this age group during lockdown. The two patients who received thrombolysis did not experience any adverse effects of treatment. Finally, the spike which occurred on easing COVID-19 restrictions is likely a combination of the factors described earlier as well as a reduced fear of healthcare-acquired infections.

Table 1:

Variable	Mean (SD)	n/22 (%)
Age (years)	60.6 (±15)	
Male sex		6 (27)
Ethnicity		
Māori		4 (18)
NZ European		13 (59)
Asian		3 (14)
European		2 (9)
Vascular risk factors		14 (64)
Previous stroke/TIA		7 (32)
Previous psychiatric history		8 (36)
MRI brain performed		15 (68)
Received thrombolysis		2 (9)
Length of stay (days)	1.96 (±1.2)	
Discharge destination		
Home		21 (96)
Rehabilitation unit		1 (5)

Figure 1: Functional stroke-like presentations during lockdown.



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We find that an early explanation of the diagnosis, using the term 'functional weakness', demonstrating inconsistencies in examination (eg, Hoover's sign) to reinforce the 'functional' nature of the condition, validating the illness and explaining the overall good prognosis, is well received by patients. All patients receive multi-disciplinary input by physiotherapists, occupational therapists and social workers. Unfortunately, access to psychology services are limited in our region, however we offer advice on how to seek help. On discharge, patients are provided with FND literature about support organisations, self-management to aid recovery and advised to see their primary care practitioner for follow-up. This approach is associated with a relatively low length of hospital stay (two days) and low rates of re-admission.

In addition to the economic hardship, the COVID-19 pandemic appears to be having an adverse impact on societal health and well-being. The volume of patients and healthcare resource implications of FND pose a significant public health issue, and may exacerbate once the full economic impact of COVID-19 is realised. The solution may lie in preventative and remedial action: a focus on societal wellbeing and mental health in the community, educating healthcare professionals on the condition and providing adequate mental health and rehabilitation support in the early recovery period.

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REFERENCES:

1. World Health organization. http://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen Accessed Sep 2020.
2. WHO Coronavirus Disease (COVID-19) Dashboard. http://covid19.who.int/ Accessed Sep 2020.
3. Ministry of health COVID-19: Current cases. http://www.health.govt.nz/our-work/diseases-and-conditions/covid-19-novel-coronavirus/covid-19-current-situation/covid-19-current-cases Accessed Sep 2020.
4. Ellul MA, Benjamin L, Singh B, et al. Neurological associations of COVID-19. Lancet Neurol. 2020; 19:767–83.
5. Torales J, O'Higgins M, Castaldelli-Maia J, Ventriglio A. The outbreak of COVID-19 coronavirus and its impact on global mental health. Int J Soc Psychiatry. 2020; 66:317–320.
6. Nistic V, Goeta D, Gambini O, Demartini B. The psychological impact of COVID-19 among a sample of Italian patients with functional neurological disorders: A preliminary study. Parkinsonism Relat Disord. 2020; 78:79–81.
7. New Zealand Herald. Available online at: http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12324237. Accessed Sep 2020.
8. Nicola M, Alsafi Z, Sohrabi C, et al. The socio-economic implications of the coronavirus pandemic (COVID-19): A review. Int J Surg. 2020; 78:185–93.
9. Cock HY, Edwards MJ. Functional neurological disorders: acute presentations and management. Clin Med (Lond). 2018; 18:441–47.
10. Popkirov S, Stone J, Buchan AM. Functional Neurological Disorder: A common and treatable stroke mimic. Stroke. 2020; 51:1629–35.