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Research Article

FUNCTIONAL NEUROLOGICAL DISORDER DURING COVID-19 LOCKDOWN

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A R T I C L E I N F O

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A B S T R A C T

Over 73 countries around the world implemented lockdown of varying degree to prevent spread of SARS-CoV-2. The COVID-19 pandemic is a cumulative stressor unfolding over time having affected general society, economy, culture, ecology, politics, and psychosocial health. A commonly encountered manifestation of impact on psychosocial health was functional neurological disorder. Conversion disorder or functional neurological disorder is a clinical challenge for both psychiatrists and neurologists. This study was done to scrutinize the prevalence of conversion disorder in patients admitted in department of General Medicine, Neurology Unit during the period of lockdown and to compare the data with previous years.

Materials: This retrospective observational study was performed in the Neurology unit at SRMSIMS, Bareilly for duration of 3 months of lockdown (March 23rd 2020- June 30th 2020) and data was compared with previous 2 years. Patients diagnosed with conversion disorder who were admitted in the Neurology ward, meeting the inclusion criteria.

Observation: It was observed that out of total admission of 146 patients in neurology unit during 3 months of lockdown period, 11 patients were diagnosed with conversion disorder, which was about 7.53% of the total admissions in neurology unit during 3 months of lockdown. The percentage of patients diagnosed with conversion disorder in the previous 2 years was 2.0% and 3.06% in the year 2019 and 2018 respectively in the same duration.

Conclusion: The percentage of patients presenting with conversion disorder during the period of lockdown was 7.53% of total admissions in Neurology department which was significantly higher than when compared to previous 2 years. Our study revealed increased psychological disorders in public due to lockdown.

INTRODUCTION

Over 73 countries around the world implemented lockdowns of varying degree to prevent the spread of SARS-CoV-2. The COVID-19 pandemic is a cumulative stressor unfolding overtime having affected society, economy, culture, ecology, politics, and psychosocial health. Impact on psychosocial health was due to multiple factors during the COVID-19 lockdown. The disease with its high infectivity, fatality rate and forced quarantine had an immense impact on psychosocial health, which manifested in various forms like acute panic, anxiety, depression, obsessive behaviours, Post-Traumatic Stress Disorder (PTSD) and so on. A commonly encountered manifestation was functional neurological disorder. Functional Neurological Disorder (FND) or Conversion Disorder is a clinical challenge for both psychiatrists and neurologists. The clinical manifestations of functional neurological disorder can be in the form of sensorimotor deficit, blindness, deafness, abnormal body movement, non-epileptic seizure or gait disorder.(1)

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Patients may also present with a loss of speech and language, psychogenic dementia or a disturbance in any of the special senses.(2, 3)

According to the diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-5), conversion disorder is also known as functional neurological disorder(4)it is defined as symptoms of altered voluntary motor or sensory function or deficit that cause clinically significant impairment or distress with the presence of clinical findings supporting incompatibility between symptoms and neurological or medical conditions.

The incidence rates of conversion disorder is between 4 and 12 per 100,000 population per year.(5)Sudden lockdown in India on 23rd March 2020 due to Covid 19 resulted in forced stay at homes, loss of jobs, closure of schools and restriction of movement of people resulting in psychological stress. This study assesses the relative prevalence of functional neurological disorders during lockdown period and during the similar period in previous years in hospitalized patients at a tertiary care hospital in north India.

MATERIAL AND METHODS

This is a retrospective observational study, which was done in the department of General Medicine, Neurology Unit at Shri Ram Murti Smarak Institute of Medical Sciences (SRMS IMS), Bareilly, a tertiary care center in north India. The three months duration was taken for the study, during the months of lockdown (From March 23rd 2020 -to- June 30th 2020) and the data were compared with the same time period in previous two years.

Inclusion Criteria

As per the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)(6)following inclusion criteria were taken in our study.

1. One or more symptoms of altered voluntary motor or sensory function.
2. Clinical findings that show evidence of incompatibility between the symptoms and recognized neurological or medical conditions.
3. Symptoms or deficits that are not better explained by another medical or mental disorder.
4. Symptoms or deficits that cause clinically significant distress or impairment in social, occupational, or other important areas of functioning or warrants medical evaluation.
5. Normal scan of brain (CT / MRI)
6. New cases of functional neurological disorders

Exclusion Criteria

1. Abnormal scan of brain (CT / MRI)
2. Known case of psychiatric illness

A detailed neurological and psychiatric assessment were done in all the newly diagnosed patients of functional neurological disorders. All the patients were referred to a psychiatrist for detailed psychoanalysis and counselling. The patients were investigated for complete blood counts, biochemical parameters including random blood sugar, renal function tests, liver function tests, thyroid function tests, chest x-ray and electrocardiography (ECG). Neuroimaging of the brain (CT / MRI) was done in all the patients. As per the indication, electroencephalography (EEG) was also done in selected patients.

RESULT

There were 11 patients who had reported to neurology unit with functional neurological disorders over a period of approximately three months during lockdown from 23rd March, 2020 to 30th June, 2020. The total number of admitted patients in the neurology ward during the same periods were 146.

Table 1. shows that 11 out of a total of 146 patients admitted in the neurology unit, during the period of 3 months of lockdown had presented with conversion disorder, as compared with year 2019 in which 6 out of total of 308 who presented with conversion disorder and 9 out of 294 in year 2018. The percentage of incidence being 7.53 %, 2.0% and 3.06% in the year 2020, 2019 and 2018 respectively.

Table 1 Patients admitted with functional neurological disorders in the year 2018,2019 and 2020 [During Three Month Period From 23rd March -to- 30th June].

	2018	2019	2020
Total patients admitted in neurology	294	308	146
Patients with conversion disorder	9	6	11
Percentage	3.06%	2.0%	7.53%

Table 2 shows presentation of functional neurological disorder with percentage, out of 11 patients, 5 patients had psychogenic non-epileptic seizure (PNES), which was the commonest presentation. 2 patients had Astasia Abasia, 1 had adjustment disorder, 1 had generalized anxiety disorder (GAD) and 2 had hemiparesis/ paraparesis.

Table 2 Patients with Functional Neurological Disorder and their presentation with percentage

S.no	Presentation	Total (n=11)	Percentage
1.	PNES	5	45.45%
2.	Astasia abasia	2	18.9%
3.	Adjustment disorder	1	9.09%
4.	GAD	1	9.09%
5.	Hemiparesis / Paraparesis	2	18.9%

DISCUSSION

During the lockdown period, the number of hospital admissions were significantly decreased as compared to the previous years. However, we observed a relative increase (>50%) in admission of functional neurological disorder patients as compared to admission in the same duration in previous years. Our study showed a significantly higher percentage (7.53%) of hospital admissions of functional neurological disorder patients than the previous two years which were 2.0% and 3.06% in 2019 and 2018, respectively in the same period. The increase in functional neurological disorder patients reflected the high psychological stress in the society.

Guerriero *et al*.(7) reported the threefold increase in functional neurological disorder in children after the lockdown due to Boston Marathon bombing in 2013. The lockdown seems to have adramatic effect on the psychology and mental health of the people in the community.

The clinical presentation of functional neurological disorders are very broad and bizarre including sensorimotor deficit, abnormal movements, non-epileptic seizure, blindness, deafness, gait disorder, aphasia or dementia(1) . Our patients presented with psychogenic nonepileptic seizures (PNES), astasia abasia, adjustment disorder, generalized anxiety disorder (GAD) and functional motor weakness.

The age group of patients ranged from 19-to-45 years with a mean age of 26 years. There were 9 females (81.82%) and 2 males (18.18%) in the study. A female predominance was observed in our study with a male to female ratio of 1:4.5, which suggested a high psychological stress in females.

Another study by *Marco Colizzi et al (8)* reported a clinical case of a 16 years old adolescent, who presented with a history suggestive of COVID-19 infection and associated psychological distress.

The sensorimotor deficit and psychogenic non-epileptic seizure (PNES) are more frequent presentation of functional neurological disorders.(9) In our study, the most common

clinical presentation was psychogenic non-epileptic seizure (36.36%).

Our study revealed increased psychological disorders in public due to lockdown.

CONCLUSION

The lockdown in India due to Covid-19 resulted in psychological stress. We observed are relative increase (>50%) in admissions of functional neurological disorder patients as compared to admission in the same duration in previous years. This study suggested a high psychological stress in females as compared to male. Functional neurological disorders (FND) are commonly encountered sources of disability in medicine. These patients are often misdiagnosed which lead to inappropriate treatments, iatrogenic harm, unnecessary and expensive evaluations, and poor outcomes. Therefore, proper evaluation of such patients becomes important as this is a potentially reversible source of disability.(10)

In our study, the most common clinical presentation was psychogenic non-epileptic seizure (36.36%). Our study revealed increased psychological disorders in public due to lockdown.

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