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A Comprehensive Review on Functional Neurological Diseases

Shakti K*

CardioNeuroSciences, Centre All India Institute of Medical Sciences, Ansari Nagar New Delhi, India

Abstract

In neurological practise, functional neurological disorders are frequent. The focus of a novel method for making a positive diagnosis of this condition is on patterns of truly felt symptoms and indications that exhibit variability over time both within and across activities. Despite being a frequent risk factor for functional neurological impairment, psychological stresses are frequently missing. Functional seizures, functional movement disorders, persistent perceptual postural dizziness, and functional cognitive disorder are variations of an illness at the interface of neurology and psychiatry that have commonalities in aetiology and pathogenesis. Clinical neurophysiological investigations and other indicators can help with the diagnosis of all four entities since they each have unique characteristics. The creation of an internal symptom model as part of a predictive coding framework, excessive limbic system activity, and failure of the brain networks that give movement the appearance of voluntariness are all components of the pathophysiology of functional neurological disorders. Evidence supports individualised, interdisciplinary treatments that may use techniques from physical and psychological therapy.

Keywords: Neurology; Pathogenesis; Neurological disorders; Seizures; Neurological illness; Functional neurological disorders

Introduction

Functional neurological diseases, also known as conversion disorders, represent a complex and intriguing area of study within the field of neurology. These conditions manifest as physical symptoms that cannot be fully explained by underlying organic pathology. Rather than being rooted in structural or physiological abnormalities, functional neurological diseases are thought to arise from alterations in the functioning of the nervous system. This article aims to provide a comprehensive review of these intriguing conditions, including their clinical presentation, etiology, diagnosis, and treatment approaches. Functional neurological diseases (FND) are a group of conditions that involve neurological symptoms, such as weakness, tremors, seizures, or sensory disturbances, that cannot be explained by a structural or organic disease or lesion in the nervous system. FNDs are also known as functional neurological disorders (FNDs) or conversion disorders. The underlying cause of FNDs is thought to be related to psychological or emotional factors, such as stress, trauma, or unresolved conflict. The symptoms of FNDs are real and can be disabling, but they are not caused by a physical abnormality or disease in the nervous system. The diagnosis of FNDs is typically made after ruling out other possible causes of the symptoms through a thorough medical evaluation and testing. Treatment for FNDs usually involves a multidisciplinary approach that includes psychological counseling, physical therapy, and sometimes medication. It's important to note that FNDs are not "all in the patient's head" or a result of malingering. Rather, they are a genuine manifestation of psychological distress that can be addressed through appropriate medical and psychological interventions.

The phrase functional neurological disorder describes a condition in which changes in the way that brain networks operate, rather than abnormalities of brain structures, are the main pathophysiological processes. Despite its lengthy history of recognition, this disorder which has been given a variety of diagnostic designations, including conversion, psychogenic, and dissociative disorders was generally ignored in medical education and by healthcare professionals from the middle to the end of the 20th century. Functional neurological symptom disorder (conversion disorder) is how some people refer to functional neurological condition. In collaboration with other medical specialists, including psychiatrists and neurologists, diagnostic criteria have also been developed [1-4]. In this review, the term "functional neurological disorder" is used to describe clinical syndromes that include symptoms and signs of genuinely felt changes in motor, sensory, or cognitive performance that are distressing or detrimental and manifest one or more patterns of deficits that are predominantly consistent with nervous system dysfunction, as well as show variability in performance both within and across tasks. Functional seizures (also known as dissociative or psychogenic non-epileptic seizures) and functional movement disorders, including paresis, are the two most prevalent forms of functional neurological illness included in this review. We also discuss chronic wooziness and cognitive impairment (as a component of a functional disorder), which have held a shaky position in respect to functional neurological condition [5]. We analyse potential similarities and differences between these four entities, noting that people with functional neurological disorders frequently have more than one category or switch between them over time. Somatosensory or visual symptoms, as well as speech difficulties, are additional frequent manifestations that we had to leave out of this Review owing to space considerations. Other medical specialities have identified functional disorders, such as gastroenterology's irritable bowel syndrome, rheumatology's fibromyalgia, and urology's painful bladder syndrome. Functional neurological diseases frequently co-occur with other functional disorders, which show either similar risk factors or a propensity for one disorder to eventually develop to others over time [6-8]. Except for certain common predisposing and triggering variables that we explore in this Review, the link between other functional disorders and functional neurological condition is unclear. In order to explain the distinct changes in neurological functioning that distinguish functional neurological illness as a legitimate diagnosis, we take into account information from neuroimaging, neurophysiological,

***Corresponding author:** Shakti K, CardioNeuroSciences, Centre All India Institute of Medical Sciences, Ansari Nagar New Delhi, India, E-mail: shaktik@gmail.com

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and genetic research as well as novel notions of voluntary motor and sensory control. We conclude by discussing enhanced diagnostic methods, prospective biomarkers, and emerging data for enhanced therapies based on a deeper comprehension of processes.

Epidemiology

People between the ages of 4 and 94 have been diagnosed with functional neurological disorders [5,6]. Although the gender disparity is smaller in early and late life, there is a startling feminine prevalence (60-80%) [7,8]. Compared to functional seizures, functional movement disorders have a smaller proportion of female patients, which may be related to the combination of sex, age, and trauma history. Functional seizures often start in the late 20s, whereas functional movement problems typically start in the late 30s.

Predisposition, triggers, sustainers, and results

Functional neurological disorders have several causes. Exposure to psychological stresses and a history of childhood hardship, particularly maltreatment, are risk factors for the illness in adulthood, with odds ratios of approximately 3-4.19. However, more than 50% of respondents in several published studies did not have such incidents recorded. The increased exposure of girls to childhood trauma is thought to be a contributing factor to the documented female majority in functional neurological disorders [9].

Functional seizures

Functional seizures, often referred to as psychogenic non-epileptic seizures or dissociative seizures, are characterised by episodes that mimic syncope or epilepsy. Since symptoms might change quickly and full histories may only be known through witnesses, making an accurate diagnosis difficult, the diagnosis is typically delayed.

Movement disorders

Any sort of aberrant movement might be an indication of functional movement disorders.63 Tremor is the most typical aberrant movement, followed by dystonia,25 myoclonus,44 and gait abnormalities, according to the majority of case studies (video 2).42 Parkinsonism, 33 tics, 64 stereotypy, 65 facial movements such hemifacial spasms, 41 and chorea are less prevalent symptoms. 188 (46%) of the 410 individuals in a multicenter study with functional movement disorders exhibited a variety of movement abnormalities [10].

Functional cognitive disorder

Traditional classifications of functional neurological disorders have eliminated cognitive symptoms, however research over the past five years has revealed clearly recognisable symptoms and indicators of the illness. Functional cognitive disorder was described by the Consortium diagnostic criteria, which were published in 2020, as a state of cognitive symptoms with obvious internal inconsistency, not better explained by another illness, and producing discomfort or impairment or necessitating medical attention. Differentiating a functioning neurological illness from a covert condition [11-13]. Clinical staff commonly accuses a person with functional neurological disorders of fabricating symptoms, which is unfortunate, and this suspicion has contributed to the severe stigma associated with this illness. Given that functional neurological illness is a condition of voluntary movement, where performance fluctuates with attention and symptoms and impairment may be varied, there is reason to be suspicious of pretending.

Pathophysiology

Functional seizures, functional movement disorders, persistent perceptual postural vertigo, and functional cognitive disorders all have a common core pathophysiology that can be characterised as a failure of sensory processing, motor or thinking output, or both [14]. Compared to chronic postural perceptual dizziness, functional movement disorders, functional seizures, and functional cognitive impairment all show noticeable output abnormalities.

Treatment

In order to increase comprehension and include patients in their own care, effective therapy for all varieties of functional neurological disorders starts with two-way communication between the physician and patient. Neurologists have traditionally shied away from treating patients with functional neurological disorders, despite the fact that they are frequently the most qualified professionals to include patients in therapy.

The management of functional neurological diseases typically involves a multidisciplinary approach, which may include neurologists, psychiatrists, psychologists, and physical or occupational therapists. The primary goal of treatment is to alleviate symptoms and improve overall functioning and quality of life. Cognitive-behavioral therapy (CBT), a form of psychotherapy, has shown promising results in helping patients understand and cope with their symptoms. Other therapeutic interventions, such as physiotherapy, relaxation techniques, and stress management strategies, may also be employed [15]. The prognosis for functional neurological diseases varies among individuals. Some patients may experience spontaneous remission or improvement in symptoms over time, while others may have a chronic and fluctuating course. Early recognition, accurate diagnosis, and appropriate management can significantly enhance the likelihood of positive outcomes. It is essential for healthcare providers to adopt a patient-centered approach, ensuring empathy, understanding, and support to facilitate the healing process.

Conclusion

Functional neurological diseases pose unique challenges in clinical practice due to their complex interplay between psychological and neurological factors. While the exact mechanisms underlying these conditions remain elusive, advancements in research and understanding have contributed to improved diagnostic accuracy and treatment strategies. Continued efforts in unraveling the complexities of functional neurological diseases hold the potential for better patient care and improved outcomes in the future. Since the publication of the DSM-II in 1968, diseases affecting the voluntary motor and sensory nerve systems have been included in the definition of functional neurological disorder. There is a compelling case for discussing functional seizures in this Review alongside functional motor disorders since they are paroxysmal motor occurrences. We also examined the overlap between two prevalent functional neurological illness subgroups including cognitive impairment and vertigo.

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Conflict of Interest

Author declares no conflict of interest.

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