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CASE REPORT

Addressing evaluation challenges and incorporating psychotherapeutic interventions in the diagnosis of functional seizures: A case report

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Abstract

Functional seizures (FSs) are a subset of functional neurological disorders frequently misdiagnosed due to their clinical overlap with neurological conditions. Unlike epileptic seizures, they occur without abnormal neuronal discharges and manifest through diverse motor, sensory, and cognitive symptoms. This case report presents the diagnostic trajectory of a patient initially misdiagnosed with stroke-related motor symptoms and later epilepsy, subsequently reevaluated at Ramos Mejía Hospital in Buenos Aires. A comprehensive multidisciplinary assessment involving a differential diagnosis process was conducted to confirm the diagnosis of FSs by ruling out epilepsy, autoimmune encephalitis, and concomitant psychosis. The implementation of targeted psychoeducation, symptom monitoring, and interventions based on the integrative cognitive model resulted in significant clinical improvement, including reduced seizure frequency and enhanced functional mobility. Furthermore, psychotherapeutic strategies facilitated patient acceptance of the diagnosis and adherence to treatment. This case underscores the diagnostic challenges associated with FSs and highlights the importance of a multidisciplinary, individualized approach to optimize symptom management and patient outcomes.

Keywords: Functional neurological disorders; Functional seizures; Misdiagnosis; Psychotherapeutic intervention; Diagnostic challenges

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1. Introduction

Functional neurological disorders (FND) are syndromes caused by neural network dysfunction rather than structural brain anomalies, including motor symptoms, functional seizures (FS), chronic functional dizziness, cognitive dysfunction, functional

somatosensory or visual symptoms, and functional speech symptoms.[1,2] FS mimic epileptic seizures without abnormal brain discharges, presenting with various motor, sensory, or cognitive symptoms.[3,4] Diagnosis is based on clinical signs differentiating FND from other conditions.[5,6] FNDs are the second most frequent reason for consultation in outpatient neurological centers all over the world.[7] Studies suggest a prevalence of FNDs in the range of 50 – 100 cases/100,000 people.[8]

This article details an FS case initially misdiagnosed as stroke, epilepsy, or autoimmune encephalitis. A psychotherapeutic program combining psychoeducation, cognitive behavioral therapy, mindfulness, and interpersonal therapy improved patient understanding, acceptance, and treatment adherence. The diagnostic steps and therapeutic outcomes of this case are illustrated in the paper.

2. Case presentation

2.1. Patient's information

A 52-year-old woman was admitted to Ramos Mejía Hospital (RMH) in January 2022, displaying incoherent speech, temporal and spatial disorientation, hallucinations, manual automatisms, and altered consciousness.

2.2. Previous medical history and treatment

The patient has a history of an accident in 2018 leading to motor disabilities, right hemiparesis, and language impairment. Subsequent ischemic strokes were reported in 2019 and 2020. In March 2020, she presented behavioral alterations, cognitive and language impairments, memory loss, and epileptic seizures, and was managed with lacosamide 100 mg every 12 h, valproic acid 250 mg every 12 h, and quetiapine 125 mg/day in the morning and 25 mg/day at night. Despite treatment, symptoms persisted, and a 2021 hospitalization led to the identification of her condition as status epilepticus, reinforcing the epilepsy diagnosis.

2.3. Clinical findings

The patient presented with incoherent speech, disorientation, automatisms, and altered consciousness. Two types of episodes were reported: brief episodes (2 – 3 min) with crying, tremors, and disorientation (type 1); and longer episodes (20 – 30 min) with oromandibular movements, hyperventilation, self-injury, and memory gaps (type 2). Both could manifest during wakefulness or sleep. With regard to these episodes, the patient described a lack of warning before their onset, post-episode confusion, and self-injury episodes marked by a gap in memory, followed by a period of drowsiness. Her family suspected that she experienced visual hallucinations during these episodes. Additional symptoms included sleep disturbances, a history of depression, sleepwalking episodes, and headaches. Her motor difficulties required her to use a wheelchair for mobility. Diagnostic studies were initiated during hospitalization.

2.4. Diagnostic assessments/studies

Medical reports from a previous brain magnetic resonance imaging (MRI) described small chronic ischemic lesions, initially interpreted as evidence of a stroke in 2018, with hemiparetic sequelae. However, since this MRI was conducted at another hospital, the exact location and characteristics of the lesions remain unknown. Moreover, the patient's clinical presentation did not fully align with this diagnosis. A follow-up MRI (including diffusion and apparent diffusion coefficient mapping) (Figure 1) and computed tomography scan were normal. Neurologic examination, as part of the physical assessment, was normal and not congruent with the stroke history. These studies, along with the patient's clinical presentation, were collectively evaluated by professionals specializing in abnormal movements, epileptologists, and vascular specialists.

A 2-h electroencephalogram (EEG) was conducted due to suspected epileptic type 1 episodes, but no epileptiform activity was detected. Type 2 episodes suggested encephalitis, so autoimmune serum and cerebrospinal fluid analyses were conducted, yielding negative results. This panel utilized a fixed transfected cell method with indirect immunofluorescence as the detection technique. The tested antibodies and their cut-off values were: NMDA receptor, cut-off 1:10; contactin-associated protein 2, cut-off 1:10; AMPA receptor, cut-off 1:10; leucine-rich glioma-inactivated protein 1, cut-off 1:10; dipeptidyl aminopeptidase-like protein 6, cut-off 1:10; GABA B receptor, using monkey cerebellum as substrate, cut-off 1:50; tested antibodies were A-NMO-IgG, A-Hu (ANNA-1), A-Ri (ANNA-2), and A-Yo (PCA-1). Empirical immunotherapy was not considered due to the three-month wait time for results. A video-EEG was conducted, through which four events were observed without EEG correlation (Figure 2).

An informed consent was obtained, and a pseudonym was used for privacy. The case study was approved by RMH's ethics committee.

2.5. Presumptive diagnosis and treatment plan

The tests ruled out stroke, autoimmune encephalitis, and epilepsy, and, due to the patient's progression, chronic psychosis was also excluded. A diagnosis of FS was made based on clinical events and video-EEG results. The patient was referred to the mental health team, antiepileptic medication was gradually discontinued, and

lorazepam (3 mg/day) was added for insomnia. Quetiapine (125 mg/day) was continued for anxiety and insomnia.

2.6. Mental health intervention (Mental Health Team of the RMH Epilepsy Center)

After the diagnosis, the patient was referred to the mental health team at the RMH Epilepsy Center's – consisting of a psychiatrist and two psychologists specializing in FS – for monthly psychoeducational interviews (60 – 90 min each).

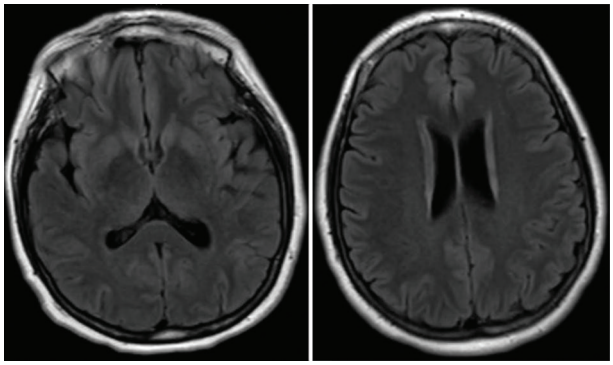

Figure 1. Magnetic resonance imaging findings. No abnormalities were observed in the evaluated anatomical structures. No signal abnormalities were observed in the diffusion. There is no evidence of chronic ischemic injury.

These sessions aimed to familiarize the patient and her family with the FS diagnosis and prepare her for psychotherapeutic treatment.

The initial session focused on differentiating FS from epilepsy, particularly in terms of etiology and EEG findings. The patient remained disengaged throughout the discussion.

Subsequent sessions focused on psychoeducation, with an emphasis on exploring the FS diagnosis and addressing symptom management. Grounding techniques were introduced to assist in managing seizures and motor symptoms, significantly enhancing the patient's ability to control her condition. As the sessions progressed, a notable improvement in seizure control and symptom moderation was observed. Family involvement in the psychoeducation process was encouraged.

An Excel spreadsheet for seizure tracking was implemented initially for recording occurrences and eventually for identifying triggers and behaviors post-seizures, although the family's consistency in maintaining these records varied.

By the fourth session, improved attention allowed for deeper psychoeducation using Brown and Reuber's

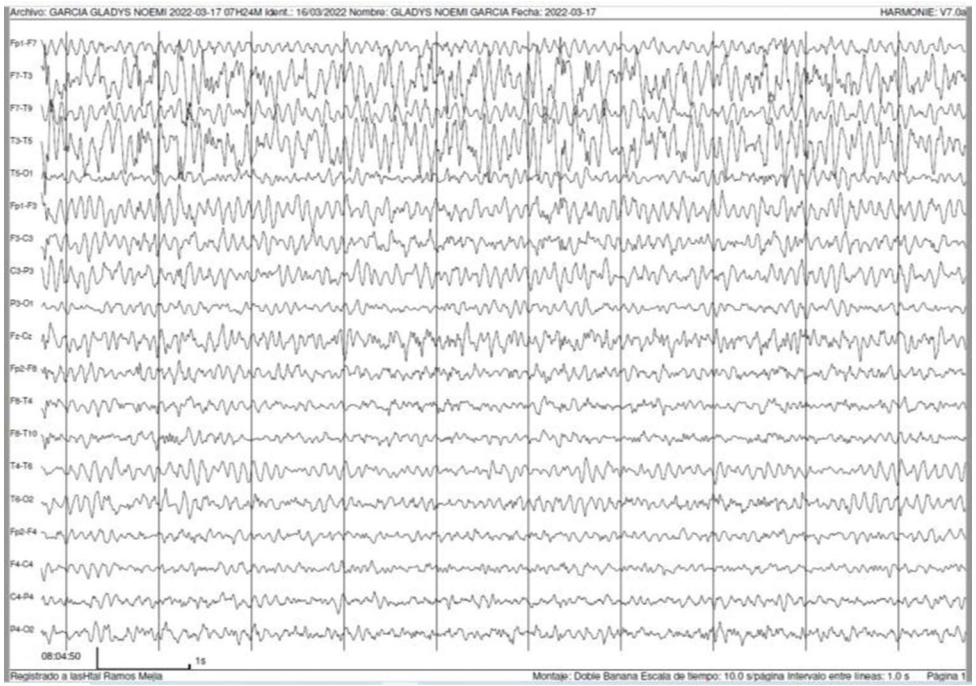

Figure 2. Video-electroencephalographic (EEG) finding. The tracing during the study showed movement artifacts without evidence of epileptiform activity. The patient presented four clinical events, characterized by abrupt onset of searching movements of the head to the sides, prima facie evidence of disorientation, and dystonic facial posture. Automatic gripping movements in both hands were observed. The patient did not respond to interrogation and continued with automatisms while issuing a phrase such as "where is the son?" The episodes extended in variable time from 15 min to 3 h. At the end of the events, the patient fell asleep.

integrative cognitive model (ICM),[9] which highlights the brain's predictive role in perception and emotion. The model proposes that FS arises from the automatic activation of erroneous procedural representations (schemas), distorting perception and action. This disruption affects the integration of behavior, memory, identity, consciousness, and motor control.

Later sessions addressed family dynamics, encouraging the patient to engage actively, recognize prodromal seizure symptoms, and apply control techniques, such as mindfulness and breathing exercises.

Gradual mobility improvements became evident by the fifth session, and by the seventh, the patient had shifted to using a walking stick, demonstrating increased daily autonomy. Her growing interest in attending a day center prompted further tailored psychoeducation. In addition, during the seventh meeting, she exhibited enhanced alertness, fluency, and proactive engagement in family activities, and she began inquiring about her diagnosis and the rationale behind previous exclusions of other possible conditions or diagnoses.

Physiotherapy and psychological treatment were recommended. The series of interventions and psychoeducation enhanced the patient's understanding of her condition, fostering increased self-care, a proactive attitude, and progress toward acceptance and self-management.

3. Discussion

Diagnosing conditions, such as epilepsy, psychosis, FND, FS, stroke, and autoimmune encephalitis can be challenging due to overlapping symptoms and the absence of definitive tests. Healthcare professionals must conduct thorough evaluations for accurate diagnoses and appropriate treatment.

In this case report, we provide a comprehensive account of the medical history of a 52-year-old woman at RMH. Throughout the diagnostic process, various potential diagnoses were explored and excluded. Ultimately, the process culminated in the confirmation of FS as the underlying condition.

In this specific case of stroke, epilepsy, and autoimmune encephalitis with suspicion of concomitant psychosis were considered but subsequently ruled out based on diagnostic tests, the clinical presentation of symptoms and the case evolution.

Autoimmune epilepsy, an autoimmune disorder, involves immune-mediated neuroinflammation leading to diverse neurological symptoms, including psychiatric disorders, cognitive dysfunction, and seizures.[10] Psychosis, present in approximately 7% of epilepsy cases,[11] poses a challenge for those attempting to distinguish between psychotic symptoms and FS. FS and stroke symptoms can also be mistaken for each other, complicating accurate identification.[12-14]

FS treatments, including psychoeducational and psychotherapeutic interventions, demonstrate positive outcomes.[15-19] Accepting the FS diagnosis by patients themselves may be challenging, underscoring the need of repeated psychoeducation to help them embrace the condition.[20] Etiological models, such as the ICM, place an emphasis on psychophysiological mechanisms, particularly sympathetic arousal responses.[9] The implementation of grounding and mindfulness techniques based on understanding the predictive role of the brain can positively impact emotional regulation and symptom management in FS patients.

4. Conclusion

Diagnosing complex conditions, such as FS, stroke, and autoimmune epilepsy is challenging due to overlapping symptoms. In this case, an exhaustive diagnostic process identified FS, underscoring the difficulty of correlating electroencephalographic findings with diverse clinical manifestations. Psychoeducational interventions, followed by structured follow-ups before psychotherapeutic treatment, led to significant improvements in motor performance, cognitive abilities, and self-perception. Importantly, these interventions proved effective even in the absence of immediate access to specialized psychological treatment. This finding suggests that psychoeducation is an essential component of the therapeutic approach for patients with FS. It facilitates patient comprehension of their condition, mitigates stigma, and empowers active participation in their recovery process, as demonstrated in our case.

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Conflict of interest

The authors declare that they have no competing interests.

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Ethics approval and consent to participate

This study was approved by the Ethics Committee of Hospital Ramos Mejía. The patient provided written informed consent to participate in the study.

Consent for publication

Patient consented on the publication of their data.

Availability of data

Data are available from the corresponding author upon reasonable request.

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