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Tremor and Other Hyperkinetic Movements

Case Reports

Leucine-Rich Glioma-Inactivated 1 Encephalitis: Broadening the Sphere

Amine Rachdi[1], Julia Dupouy[2], Marie Benaiteau[2], Chloé Bost[3], Marion Simonetta Moreau[2], Christine Brefel Courbon[2], Olivier Rascol[1,2] & Fabienne Ory Magne[2]*

[1]Centre d'investigations Clinique, CHU Toulouse, Toulouse, FR, [2]Service de neurologie B8, CHU Toulouse, Toulouse, FR, [3]Service d'immunologie, CHU Toulouse, Toulouse, FR

Abstract

Background: Leucine-rich glioma-inactivated 1 (LGI1) encephalitis is a rare entity. Its typical features are seizures, faciobrachial dystonic seizures (FBDS), cognitive impairment, and personality changes.

Case report: We report the case of a 66-year-old man with an unusual presentation, consisting of two types of FBDS, one starting in the foot and the other consisting of asynchronous myoclonic and dystonic jerks of the face triggered by noise and chin stimulation. The patient displayed no personality changes or cognitive impairment.

Discussion: LGI1 encephalitis is a heterogeneous disease. Many different forms of FBDS may be observed, and these seizures can be the only symptom. This type of encephalitis should be suspected in presenting very frequent episodic events with dystonic features, regardless of the part of the body affected.

Keywords: Automimmune encephalitis, LGI1 encephalitis, LGI1 atypical presentation, dystonia, seizure-like

Citation: Rachdi A, Dupouy J, Beneteau M, Moreau MS, Courbon CB, Rascol O, et al. Leucine-rich glioma-inactivated 1 encephalitis: Broadening the sphere. Tremor Other Hyperkinet Mov. 2019; 9. doi: 10.7916/tohm.v0.663

*To whom correspondence should be addressed. E-mail: ory.f@chu-toulouse.fr

Editor: Elan D. Louis, Yale University, USA

Received: April 9, 2019; **Accepted:** September 13, 2019; **Published:** October 9, 2019

Funding: None.

Financial Disclosure: None.

Conflicts of Interest: The authors report no conflict of interest.

Ethics Statement: All patients who appear on video have provided written informed consent; authorization for the videotaping and for publication of the videotape was also obtained.

Introduction

The diagnosis of autoimmune encephalitis with movement disorders can be challenging,[1] particularly for atypical presentations, but prompt diagnosis is required to reduce delays in treatment. Leucine-rich glioma-inactivated 1 (LGI1) encephalitis is a rare disease, generally associated with seizures, asymmetric faciobrachial dystonic seizures (FBDS), personality changes and rapidly progressing cognitive impairment.[2] We report an unusual presentation of LGI1 encephalitis limited to two atypical types of FBDS: (1) principally dystonic jerks beginning in one foot, (2) occasional, asynchronous reflex myoclonus and dystonic jerks of the face, triggered by noise and chin stimulation. The patient presented no other symptoms, and no cognitive decline was detected, despite late diagnosis, a few months after disease onset.

Case report

The patient was a 66-year-old man with a history of Crohn's disease, but no other relevant medical antecedents and no relevant family history.

He had been experiencing disabling and involuntary movements of the right foot since July 2016, with no improvement on levetiracetam (dose limited to 1 g per day due to adverse events).

He was referred to our department in October 2016. He described his symptoms as repetitive bursts of movement in the right foot, each lasting only a few seconds and occurring up to 12 times per hour (during both night and day). There was no trigger. He reported the occurrence of a strange feeling in his foot a few seconds before the movement began in some, but not all seizures. These movements were limited to his right foot. He reported no other symptoms. We observed rapid dystonic jerks

beginning in the right foot that rapidly spread to the right hand and shoulder (but not the face) and lasted no more than a few seconds (Video 1). We also observed myoclonus and dystonic jerks of the two sternocleidomastoid muscles that spread to the trapezius and neck muscles (Video 1), occurring asynchronously and independently of the foot jerks. They were triggered by noise and chin stimulation and were not observed spontaneously in the absence of a trigger. Interictal neurological examinations were otherwise normal.

Magnetic resonance imaging revealed no abnormality. Repeated electroencephalography recordings showed no epileptiform discharges and no focal or generalized slowing, even during the ictus.

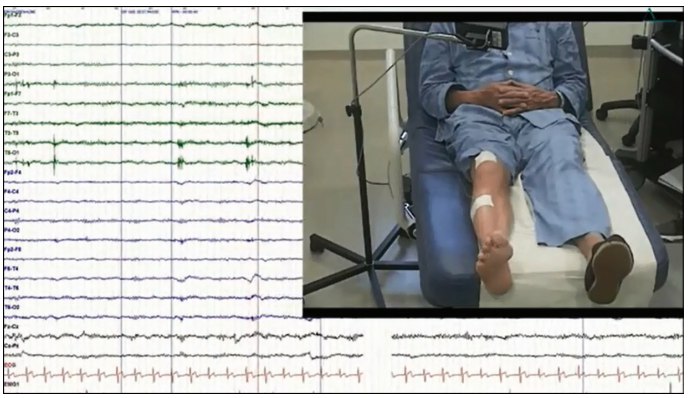
Anti-LGI1 antibodies were detected in serum samples from the patient (titer: 1/7,500) but not in his cerebrospinal fluid.

No neoplasia was detected on thoracic, abdominal, and pelvic computerized axial tomography or whole-body positron emission tomography.

Treatment was initiated in February 2017 with a combination of immunoglobulins (0.4 mg/kg per month) and steroids (methylprednisolone hemisuccinate, 1 g/day i.v., for 5 days, once monthly). By the fourth month of treatment (June 2017), the symptoms had completely resolved and the anti-LGI1 antibodies were undetectable. After 6 months, steroid treatment was stopped due to adverse events (recurrent unsightly facial mycosis and marked diabetes mellitus), and the patient was switched to immunoglobulins (same dose as during the previous 6 months) and cyclophosphamide (1 g i.v. per month). This treatment was maintained for the next 6 months. The patient remained symptom-free until the end of this 12-month treatment period, after which treatment was stopped and replaced by medical surveillance.

Discussion

FBDS generally consist of very brief recurrent posturing of the arm and ipsilateral hemiface. They are one of the hallmarks of LGI1 encephalitis, together with amnesia, seizures, and personality changes.[1,2] Atypical FBDS have been described before, affecting the arm, face, and leg (in descending order of frequency).[2–5] Here, we report a patient with two unusual presentations of FBDS.



Video 1. **(A) Showing the Patient during Video-EEG.** The patient experiences local dystonia of the right foot (seconds 13--19) with no change in the EEG trace. Brief dystonic posturing of the right hand and forearm (see seconds 14–15) was also observed. **(B) Another FBDS Occurring in an Asynchronous and Independent Manner, with Myoclonic and Dystonic Jerks of the Face, Triggered by Noise and Chin Stimulation**.

Some of the dystonic jerks of the right foot spread to the upper limb, but the patient only perceived and complained of the foot movement. The patient said that the foot movements were highly disabling because of their high frequency (up to 200 events on some days, as previously described[2,3]), causing him anxiety about the likelihood of an attack and leading to him increasingly remaining in a chair or his bed during the daytime when the number of FBDS increased. This may explain the absence of serious falls, which have been reported in other patients,[2] despite the high frequency of crises in our patient. Another explanation for the lack of falls is the "strange feeling" just before the attacks reported by the patient. Such manifestations have been described before as a sensory aura, and are sometimes difficult for the patient to describe and identify.[2,4,5]

The myoclonic and dystonic facial manifestations were trigged by noise and skin contact. Other triggers, such as rapid movement and high levels of emotion, have also been described[2,3] and should be investigated during the clinical examination. We considered these movements to be atypical FBDS, as they were brief, like his other FBDS, without paroxysmal changes on Electroencephalogram (EEG). However, FBDS are considered to be a borderline manifestation between movement disorders and seizures, and their origin therefore remains a matter of debate.[5]

This patient was atypical in having FBDS as his only symptom. The number of FBDS increased over time, and treatment initiation was delayed for 7 months by late diagnosis, but the patient's neuropsychological test results remained completely normal. Cognitive dysfunction is another hallmark of LGI1 encephalitis that may occur at any time during its course, although it is generally preceded by FBDS.[2–4,6] The absence of cognitive impairment in this patient may reflect the success of the treatment in stopping FBDS, as it has been shown that the control of FBDS can prevent cognitive dysfunction.[3,7]

LGI1 encephalitis can be difficult to diagnose due to the presence of atypical clinical features or because normal results are obtained for paraclinical examinations. In our case, cerebral Magnetic Resonance Imaging (MRI) results were normal, as in up to 50% of the cases described in a recent review.[2]

We found no neoplasm, consistent with reported results, as 90% of the patients included in published reviews were free of tumors.[2] Our patient had Crohn's disease (which had been stable for years). The possible link between these two diseases is unclear.

Anti-LGI1 antibodies were detected in the patient's serum, but not in his cerebrospinal fluid, consistent with the greater sensitivity of detection for these antibodies in serum than in the Cerebro spinal fluid (CSF) (for a review, see Binks et al.[2]). However, high levels of anti-LGI1 antibody in the cerebrospinal fluid may be predicted of a worse neurological.[8]

The atypical presentation in our patient delayed diagnosis, resulting in treatment initiation about 7 months after symptom onset. Treatment for LGI1 encephalitis should be initiated as soon as possible, to prevent

cognitive decline, and possibly, to alter the clinical course of the disease.[3,7] Steroid treatment in this patient was halted due to severe adverse events, which made a progressive decrease in steroid dose impossible. We chose a specific treatment regimen of immunoglobulins and cyclophosphamide to prevent relapse[2] and because too few data were available for evidence-based selection of the best treatment option.

Conclusion

LGI1 encephalitis is rare and has a highly variable presentation. The recognition of FDBS is a key element for diagnosis, but LGI1 encephalitis must be diagnosed on whatever unilateral and focal features are observed.

The time between FDBS onset and treatment initiation, and the presence of cognitive decline, are two major prognostic factors. Neither MRI nor EEG can rule out this diagnosis, and treatment is based on immunotherapy.

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