Reading Epilepsy—An Interesting Case Report

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Abstract

Reading epilepsy is a language induced reflex epilepsy with common ictal manifestations of regional myoclonus. The electroencephalogram (EEG) often shows focal, regional, or generalized discharges, rarely there may not be any associated EEG changes. We report case of a 25-year-old male with three episodes of seizures, precipitated while reading a book. Reported semiology was stuttering while reading with jerking of tongue as perceived by the patient followed by generalized tonic–clonic seizures (GTCS). Magnetic resonance imaging (MRI) of brain with 3 Tesla (3T) was normal. During videoelectroencephalogram (vEEG), reading precipitated recurrent stuttering each lasting for 1 to 2 seconds. Corresponding vEEG showed rhythmic 1/second symmetrical generalized spike and wave discharges lasting for 2 to 4 seconds during episodes of stuttering with intervening normal background activity, followed by generalized spike and wave discharges intermixed with artifacts recorded during secondary generalization. Patient was prescribed levetiracetam and responded well and is currently seizure-free for more than 6 years.

Keywords
- reflex epilepsy
- reading epilepsy
- electroencephalogram

Introduction

Reading epilepsy is a language induced reflex epilepsy where ictogenesis is reported by reading.[1] Common ictal manifestations are typically regional myoclonus that include jaw or orofacial myoclonus, which may spread to the limbs.[2] Importantly, this network hyperexcitibilty is genetically determined and is often age-related. The electroencephalogram (EEG) often shows focal, regional, or generalized discharges, rarely there may not be any associated EEG changes.[1,3] Atypically, bilateral myoclonic seizures and absence seizures associated with 3 Hz spike and wave discharges have also been previously reported.[1] If reading is not discontinued, secondary generalized tonic–clonic seizures (GTCS) can occur.

Case History

A 25-year-old male, right-handed student pursuing graduation was presented to the out-patient epilepsy clinic with reportedly three episodes of seizures over the last 8 years. All three episodes precipitated/occurred when he was reading. There was no significant prenatal, family, and past medical history. Reported semiology was stuttering while reading with jerking of tongue as perceived by the patient followed by GTCS. Other reported events included occasional episodes of jerking of tongue inside mouth while reading. No history of myoclonic jerks or automatisms were described by the patient. The birth and development history was unremarkable. Patient denied substance abuse or smoking. Since the presentation matches a typical description of reading epilepsy, further investigations were done.

Magnetic resonance imaging (MRI) of brain with 3 Tesla (3T) was normal. During videoelectroencephalogram (vEEG), reading precipitated recurrent stuttering each lasting for 1 to 2 seconds. At 8 minutes while reading, the patient had right face tonic contraction with posturing of right upper limb followed by abduction and extension of both upper limbs and extension of both lower limbs followed by tonic–clonic movements of both upper and lower limbs. Corresponding vEEG showed rhythmic 1/second symmetrical generalized spike and wave discharges lasting for 2 to 4 seconds during episodes of stuttering with intervening normal background activity, followed by generalized spike and wave discharges intermixed with artifacts recorded during secondary generalization (►**Figs. 1** and **2**).

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Fig. 1 Interictal EEG showing short bursts of symmetrical bilateral spike discharges corresponding with stuttering (orofacial myoclonus) by the patient while reading. EEG, electroencephalogram.

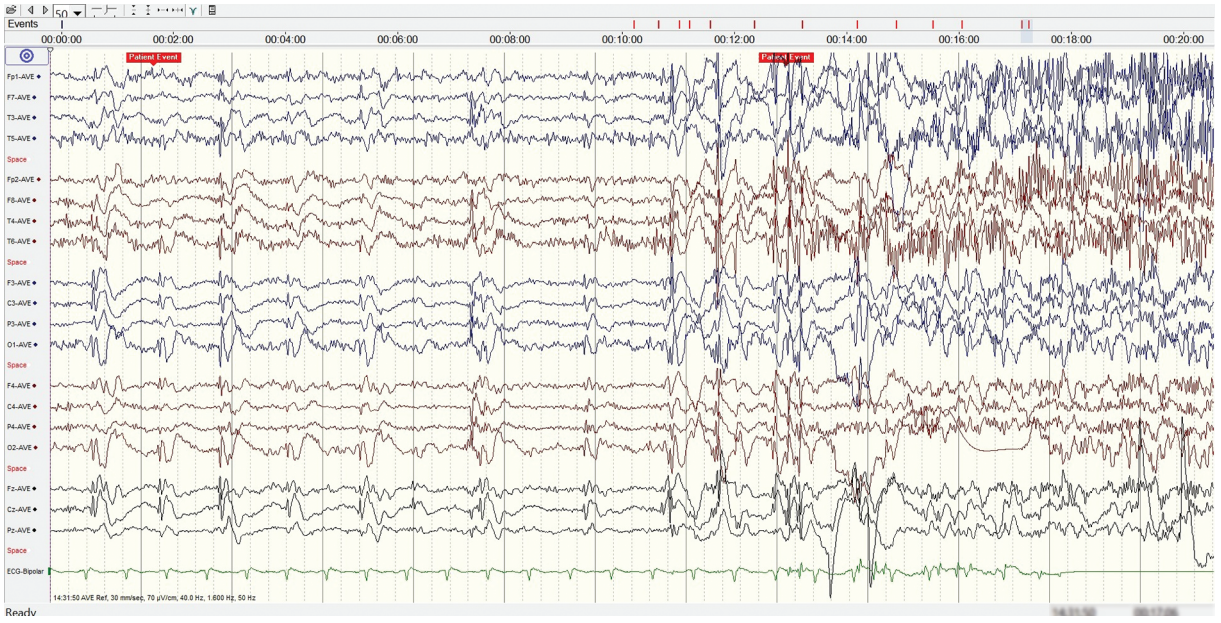

Fig. 2 Stuttering was followed by a generalized seizure, with corresponding EEG showing generalized spike activity followed by evolution of EEG activity. EEG, electroencephalogram.

Patient was prescribed levetiracetam and responded well and seizure free for more than 6 years. He was advised to avoid of prolonged reading.

Discussion

Reading epilepsy is characterized by orofacial reflex myoclonus triggered by reading in which the patients may report as jaw jerks, partial seizures which may become generalized convulsions, and in some patients, jerks of the arms and head.[1] Reading epilepsy seems to be a further example of activation of a hyper excitable functional network, which can produce seizures when sufficient critical mass is incorporated by adequate stimuli to produce a seizure, at times a seizure of apparently generalized epilepsy.[4] Consistent with existing literature, the patient in this report stuttering while reading with corresponding generalized spike discharges. Similar to the patient in this report, the age of onset for reading epilepsy is usually in adolescence with nearly two-thirds of the cases being men.[5] Interictal EEG findings are reportedly normal in 80% patients, with spontaneous spike and wave discharges in 11%, and temporal paroxysmal discharges in 5% (►**Fig. 1**). Intermittent photic stimulation evokes a photo paroxysmal response 9%, in keeping with an idiopathic

generalized epilepsy (IGE) syndrome.[6] Existing literature suggests that during an episode of reading epilepsy, 77% have epileptiform discharges of short bursts of sharp waves, spikes or spike, and wave complexes. These complexes are symmetrical and bilateral in 32% patients, bilateral but asymmetrical in 38%, whereas focal spike and wave complexes are reported in 30% patients (►**Fig. 2**). Lateralization is often observed to the language-dominant hemisphere (78%), with a preference to temporoparietal region (80%).[7] In fact, Radhakrishnan et al[2] reported generalized and symmetric ictal discharges in 15 of the 20 patients with reading epilepsy. The remaining five patients had unilateral discharges in five with lateralization to the dominant hemisphere. The ictal EEG in the present case showed short bursts of rhythmic 1/second symmetrical generalized spike and wave discharges lasting for 2 to 4 seconds during episodes of stuttering with intervening normal background activity, followed by generalized spike and wave discharges.

Radhakrishnan et al[2] and Koutroumanidis et al[1] also reported that not only reading but language-related tasks like argumentative talking and writing were also effective in inducing epileptiform discharges in a subset of their study population. Furthermore, Wolf et al[3] quantified that argumentative talking was effective to induce seizures in 27% patients with reading epilepsy and writing in 11%. Additionally, difficult calculations and playing chess or card games were also reportedly provocative in some patients. Similarly, although in previously reported patients, reading aloud was more activating than silent reading[3]; probably because of maximal attention or effort in the act of reading rather than for comprehension, we did not observe relevant findings in the reported patient.

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Conflict on Interest
None declared.

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