Teaching Video NeuroImage: Unique Ipsilateral Manual Automatism in Temporal Lobe Epilepsy

Conducting the Orchestra

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Two women aged 21 and 19 years presented with lesional drug-resistant temporal lobe epilepsy (TLE) (table) with focal impaired awareness seizures (FIAs) (figure). Inpatient video EEG monitoring captured habitual FIAs accompanied by predominant ipsilateral upper extremity automatisms that mimicked a conductor leading an orchestra (video).

Although the origins and mechanisms behind nonmanipulative unilateral upper extremity automatism are controversial, they are considered a reliable sign with localizing value in mesial

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Table Clinical Characteristics of 2 Patients With Lesional Temporal Lobe Seizures Associated With Predominant Ipsilateral Upper Extremity Automatisms

	Patient 1	Patient 2
Hand dominance	Right	Left
Age at onset, y	16	7
Habitual seizure semiology	Anxious and confused but remains verbal, accompanied by floppy movements involving the right upper extremity	Unresponsive staring associated with repetitive swallowing, lip-smacking, and left upper extremity fumbling movements
Seizure episode		
Description	She grabbed her nose with her right hand, tapped her head, and then started to wave her index finger as if she was conducting an orchestra; later, a subtle contralateral left upper extremity dystonic posturing was seen	She started to point with her left index finger, then repetitively moved her left arm as if she was conducting an orchestra
Automatism duration, s	15	27
Other associated signs	Ipsilateral nose-wiping	Aphasia
EEG features		
Ictal EEG findings	Clinical onset preceded EEG onset. At seizure onset, the EEG was contaminated by movement artifact. Several seconds later, a rhythmic right temporal discharge appeared.	A sentinel sharp wave was initially seen over the left frontotemporal head region before a rhythmic ictal delta discharge in the left frontotemporal and left frontocentral head regions was seen.
Latency between EEG onset and automatisms, s	13	14
Interictal EEG findings	Frequent right temporal intermittent delta activity and right midtemporal spikes and sharp waves	Left temporal spikes and sharp waves and focal left temporal slowing
Neuroimaging		
Brain MRI	See figure 1	See figure 1
PET/SISCOM	SISCOM: right temporal hyperperfusion (figure 1)	PET: left temporal hypometabolism (figure 1).

Abbreviations: SISCOM = subtraction ictal-interictal SPECT coregistered with MRI.

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Figure Temporal Lobe Seizure Accompanied by Ipsilateral Automatisms That Mimicked a Conductor Leading an Orchestra

(A) A 21-year-old woman with right temporal-onset seizures (clinical onset preceded EEG onset [not shown]). (B) T2-weighted MRI shows right-temporal cortical malformation. (C) SIS-COM (subtraction ictal-interictal SPECT) coregistered with MRI) shows right-temporal hyperperfusion. (D) A 19-year-old woman with left temporal-onset seizure. (E) Axial fluid-attenuated inversion recovery MRI shows left amygdala enlargement and hyperintensity. (F) PET scan shows left-temporal hypometabolism. EEGs in bipolar (A) and referential montage (D) displayed at 10µV/mm, LFF = 1 Hz, HFF = 30 Hz, timebase = 30 mm/s.

TLE.^{1,2} This is particularly true in the setting of concordant electroclinical data. When unilateral upper extremity automatisms occur with contralateral dystonia, their lateralizing value to the ipsilateral hemisphere is high.² Our observation adds to the spectrum of manual automatisms associated with TLE.

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Name	Location	Contribution
Alaa S. Mohamed, MD, MSc	Department of Neurology, Mayo Clinic, Jacksonville, FL	Drafting and revision of the manuscript for intellectual content, acquisition of data, editing video

Appendix (continued)

Name	Location	Contribution
Christian C. Prusinski, DO	Department of Neurology, Mayo Clinic, Jacksonville, FL	Drafting and revision of the manuscript for intellectual content, acquisition of data
Anthony L. Ritaccio, MD	Department of Neurology, Mayo Clinic, Jacksonville, FL	Revised the manuscript for intellectual content
William O. Tatum, DO	Department of Neurology, Mayo Clinic, Jacksonville, FL	Revised the manuscript for intellectual content
Anteneh M. Feyissa, MD, MSc	Department of Neurology, Mayo Clinic, Jacksonville, FL	Designed and conceptualized study, drafting and revision of the manuscript for intellectual content, acquisition of data

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