Teaching NeuroImage: Pseudo Figure-of-Four Sign

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Case Summary
A 37-year-old right-handed man with spastic quadriparetic cerebral palsy, congenital hydrocephalus, and anxiety was admitted for seizure characterization with video-EEG monitoring. Neurological examination demonstrated marked upper extremity spasticity and left elbow flexion contracture. Three habitual focal to bilateral tonic-clonic seizures (Figure 1) were recorded on EEG (Figure 2).

While the figure-of-four sign in focal to bilateral tonic-clonic seizures is strongly lateralizing contralateral to the tonically extended arm,\(^1,2\) our patient’s left arm spasticity restricted extension leading to a falsely lateralizing figure-of-four sign. Semiology remains a cornerstone for clinical decision making though requires individualization for comorbid physical disabilities.

Figure Legends
Figure 1: Semiology during video-EEG supporting seizure-onset in the left hemisphere. Pseudo-figure-of-four sign with right arm extended and left arm flexed to reproduce a falsely lateralizing number "4" from left elbow flexion contracture in a patient with focal epilepsy and recurrent focal to bilateral tonic-clonic seizures.
Figure 2: Interictal and ictal EEG supporting right temporal lobe epilepsy. EEG demonstrating (A) right temporal ictal rhythmic theta. Onset was obscured by movement and myogenic artifact and (B) interictal right mid-temporal sharp waves.

References:
Appendix 1. Authors:

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<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Contribution</th>
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<tbody>
<tr>
<td>Chethan K. Rao, DO, MS</td>
<td>Mayo Clinic, Jacksonville</td>
<td>Drafting of the manuscript, acquisition of data, manuscript preparation and literature review</td>
</tr>
<tr>
<td>William O. Tatum, DO</td>
<td>Mayo Clinic, Jacksonville</td>
<td>Study concept and design, acquisition of data, critical revision of the manuscript for important intellectual content</td>
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