Teaching Video NeuroImages: Abnormal Movements Due to Brainstem Release Phenomenon

Author(s):
Kshama Ojha, MD; Julie Grace Gianakon, MD; Mohammed Ilyas, MD

Equal Author Contributions:
none

Corresponding Author:
Kshama Ojha
shama16oct@gmail.com

Affiliation Information for All Authors:
Kshama Ojha MD, Department of Child Neurology, Children's Mercy Hospital, University of Missouri-Kansas City, Missouri; Julie Gianakon MD, Department of Child Neurology, Children's Mercy Hospital, University of Missouri-Kansas City, Missouri; Mohammed Ilyas MD, Department of Child Neurology, Children's Mercy Hospital, University of Missouri-Kansas City, Missouri

Neurology® Published Ahead of Print articles have been peer reviewed and accepted for publication. This manuscript will be published in its final form after copyediting, page composition, and review of proofs. Errors that could affect the content may be corrected during these processes.
Contributions:
Kshama Ojha: Drafting/revision of the manuscript for content, including medical writing for content; Major role in the acquisition of data; Study concept or design; Analysis or interpretation of data
Julie Grace Gianakon: Drafting/revision of the manuscript for content, including medical writing for content; Analysis or interpretation of data
Mohammed Ilyas: Drafting/revision of the manuscript for content, including medical writing for content; Major role in the acquisition of data; Study concept or design; Analysis or interpretation of data; Additional contributions: Senior Author

Number of characters in title: 7
Abstract Word count: 0
Word count of main text: 100
References: 3
Figures: 1
Tables: 0


Acknowledgements: None

Study Funding: The authors report no targeted funding

Disclosures: No disclosures
Case Summary:

15-month-old with spinal muscular atrophy presented with refractory myoclonic status epilepticus post cardiorespiratory arrest. During therapeutic burst suppression, patient developed rhythmic upper extremity movements (Video, http://links.lww.com/WNL/B402), only during the suppression phase, with cessation in the burst phase. Brain MRI (Figure) showed global ischemic injury.

These abnormal movements could arise from deep-seated epileptic focus^1,2^. However, reflexive, fleeting movements, occurring exclusively during periods of cortical suppression are likely due to brainstem release phenomenon^1,2^, secondary to extensive cerebral injury, with relative preservation of the brainstem, and should not be misinterpreted as seizures. Existent literature suggests, ictal SPECT can differentiate between brainstem release and seizure^3^.

Figure Legends:

Video:

Video with simultaneous EEG demonstrating rhythmic bilateral upper extremity internal rotation movements, only during the EEG suppression phase, with cessation in the EEG burst phase, lasting 2-10 seconds.
Figure: Brain MRI

(A) Axial DWI (Diffusion-weighted image) and (B) ADC (Apparent diffusion coefficient) sequences demonstrating global ischemic injury.

Appendix 1: Authors

<table>
<thead>
<tr>
<th>Author</th>
<th>Location</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Kshama Ojha MD</td>
<td>Children’s Mercy Hospital, University of Missouri-Kansas City. Kansas City, MO</td>
<td>Role in study concept, acquisition and analysis of data. Drafting and revision of manuscript.</td>
</tr>
<tr>
<td>Dr. Julie Gianakon MD</td>
<td>Children’s Mercy Hospital, University of Missouri-Kansas City. Kansas City, MO</td>
<td>Role in acquisition, analysis of data and manuscript revision</td>
</tr>
<tr>
<td>Dr. Mohammed Ilyas</td>
<td>Children’s Mercy Hospital, University of Missouri-Kansas City.</td>
<td>Role in study concept, acquisition and analysis of</td>
</tr>
</tbody>
</table>
Teaching Slides - http://links.lww.com/WNL/B401

Video - http://links.lww.com/WNL/B402

References:


