

Teaching NeuroImages: Electroretinographic artifacts in EEG

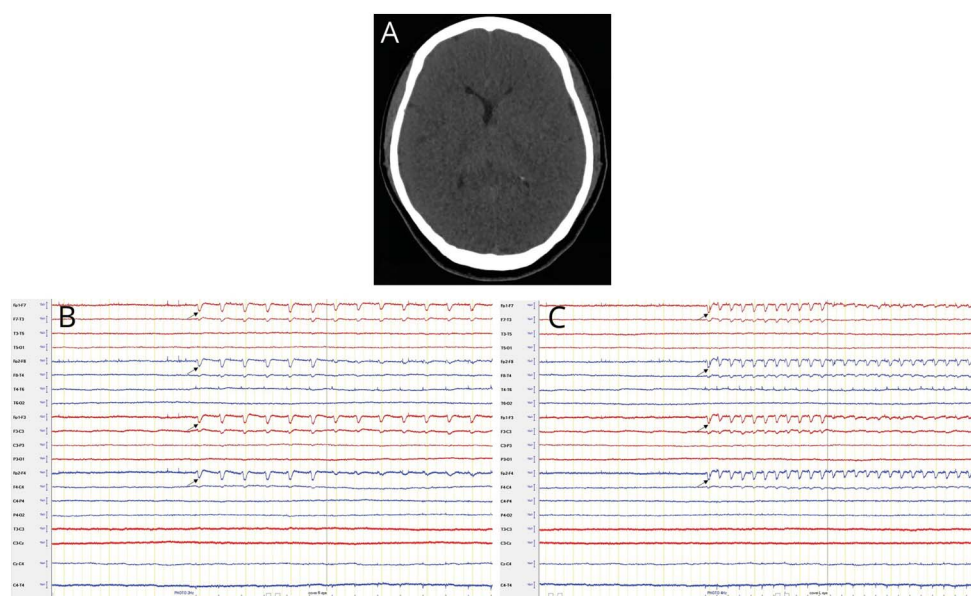
Peng Soon Ng, MBBS, Yee-leng Tan, MBBS, Ambihai Sivalingam, MBBS, and Shermyn Neo, MBBS

Neurology® 2019;93:e1660-e1661. doi:10.1212/WNL.0000000000008373

Correspondence

Dr. Ng
ng.peng.soon@
singhealth.com.sg

Figure CT brain and longitudinal bipolar montage



(A) CT brain shows diffuse cerebral edema and loss of normal gray–white differentiation. (B, C) Longitudinal bipolar montage (2 μ V/mm sensitivity) shows electroretinographic (ERG) artifacts from retinal depolarization (arrows) induced by photic stimulus (arrowheads). Alternate covering of right and left eye blocked retinal stimulation, obliterating ERG discharges, first in Fp2 (B), then in Fp1 (C), confirming the ocular source of these waveforms.

A 47-year-old woman was admitted following an out-of-hospital cardiac arrest. On presentation, the patient's Glasgow Coma Scale was 3. CT brain showed inversion of gray–white densities and diffuse cerebral edema consistent with severe hypoxic ischemic injury and EEG showed electrocerebral inactivity throughout the recording with time-locked electroretinographic (ERG) discharges to photic stimulus (figure). Recognizing the discharges as ERG artifacts rather than cerebral reactivity to photic stimulus or photic blink reflex is of paramount importance to avoid misinformed neurologic prognostication.^{1,2} The misrecognition of the latter 2 discharges may erroneously suggest a functionally intact thalamo-cortical network and brainstem, respectively.

Study funding

No targeted funding reported.

Disclosure

The authors report no disclosures relevant to the manuscript. Go to Neurology.org/N for full disclosures.

MORE ONLINE

→Teaching slides

links.lww.com/WNL/A982

From the Department of Neurology, National Neuroscience Institute, Singapore.

Go to Neurology.org/N for full disclosures.

Appendix Authors

| Name | Location | Role | Contribution |
|---------------------------------|--|--|--|
| Peng Soon Ng, MBBS | National Neuroscience Institute, Singapore | Author | Interpreted the EEG, concept, drafting and revisions of manuscript |
| Yee-leng Tan, MBBS | National Neuroscience Institute, Singapore | Author | Concept and critical revisions of manuscript |
| Ambihai Sivalingam, MBBS | National Neuroscience Institute, Singapore | Author | Concept and revisions of manuscript |
| Shermyn Neo, MBBS | National Neuroscience Institute, Singapore | Consulting neurologist for the patient, author | Acquisition of images and revisions of manuscript |

References

1. White DM, Van Cott AC. EEG artifacts in the intensive care unit setting. *Am J Electroneurodiagnostic Technol* 2010;50:8–25.
2. Mitsuhashi M, Hitomi T, Aoyama A, et al. Electroretinogram (ERG) to photic stimuli should be carefully distinct from photic brainstem reflex in patients with deep coma. *Shinkeigaku* 2017;57:457–460.

Neurology[®]

Teaching NeuroImages: Electroretinographic artifacts in EEG

Peng Soon Ng, Yee-leng Tan, Ambihai Sivalingam, et al.

Neurology 2019;93:e1660-e1661

DOI 10.1212/WNL.0000000000008373

This information is current as of October 21, 2019

| | |
|---|---|
| Updated Information & Services | including high resolution figures, can be found at: http://n.neurology.org/content/93/17/e1660.full |
| References | This article cites 2 articles, 0 of which you can access for free at: http://n.neurology.org/content/93/17/e1660.full#ref-list-1 |
| Subspecialty Collections | This article, along with others on similar topics, appears in the following collection(s): Coma http://n.neurology.org/cgi/collection/coma EEG http://n.neurology.org/cgi/collection/eeg_ EEG; see Epilepsy/Seizures http://n.neurology.org/cgi/collection/eeg_see_epilepsy-seizures |
| Permissions & Licensing | Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: http://www.neurology.org/about/about_the_journal#permissions |
| Reprints | Information about ordering reprints can be found online: http://n.neurology.org/subscribers/advertise |

Neurology® is the official journal of the American Academy of Neurology. Published continuously since 1951, it is now a weekly with 48 issues per year. Copyright © 2019 American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.

