

# Neurology®



The most widely read and highly cited peer-reviewed neurology journal  
The Official Journal of the American Academy of Neurology

---

Neurology Publish Ahead of Print  
DOI: 10.1212/WNL.0000000000010656

## Reflexive Movement in Brain Death: Challenges on Clinical Exam

Authors:

Chao Zheng, MD  
Daniel G. Di Luca, MD  
Jason H. Margolesky, MD  
*Department of Neurology  
University of Miami Miller School of Medicine  
1120 NW 14th Street, 13th floor  
Miami, FL 33136*

Title character count: 62

Number of tables: 0

Number of references: 2

Number of figures: 0

Number of videos: 1

Word count abstract: N/A

Word count paper: 100

Corresponding author: Daniel G. Di Luca, [Daniel.garbindiluc@jhsmiami.org](mailto:Daniel.garbindiluc@jhsmiami.org)

*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.

**Author contributions:**

Chao Zheng, MD: Review of the literature and drafting the case report. Daniel Garbin Di Luca: Review of the literature, and video footage. Jason Margolesky, MD: Critical review of the manuscript and final approval of the version to be published.

**Acknowledgements:** None

**Study Funding:** No targeted funding reported.

**Disclosure:** The authors report no disclosures relevant to the manuscript.

A 49-year-old woman found in cardiac arrest at home was resuscitated after 30 minutes. Brain CT revealed diffuse anoxic injury. After 72 hours of targeted temperature management, brain stem examination, EEG, and apnea testing were consistent with brain death. However, with applied nail bed pressure on left hand, finger flexion was observed (Video,<http://links.lww.com/WNL/B193>). This movement was deemed a spinal cord-mediated reflex, not inconsistent with brain death.<sup>1</sup> No other spinal reflexes were observed. In a series of brain-dead patients, 13.4% had spinal reflexes elicited.<sup>2</sup> Recognizing the semiology of these reflexes can prevent delay in diagnosis and avoid family and physician confusion.

**Teaching Slides-**<http://links.lww.com/WNL/B192>

**Video 1-**<http://links.lww.com/WNL/B193>

**References:**

1. Khan Z, Newey CR, George P, Raber L. Finger Flexion to Noxious Stimulation in a Brain-dead Patient: A Case Report and Review of Literature. *Cureus*. 2018;10(11):e3622. Published 2018 Nov 22. doi:10.7759/cureus.3622
2. Dosemeci L, Cengiz M, Yilmaz M, Ramazanoglu A. Frequency of Spinal Reflex Movements in Brain-Dead Patients. *Transplantation Proceedings* 2004; 36: 17-19.

**Legend:**

**Video 1. Reflexive Movement in Brain Death: Challenges on Clinical Exam**

Finger flexion is observed after applied nail bed pressure. Other spinal cord mediated reflexes, not present in our patient, include limb flexion or extension, versive neck movements, triple flexion, and the potentially complex Lazarus sign.

# Neurology<sup>®</sup>

## Reflexive Movement in Brain Death: Challenges on Clinical Exam

Chao Zheng, Daniel G. Di Luca and Jason H. Margolesky

*Neurology* published online August 14, 2020

DOI 10.1212/WNL.0000000000010656

**This information is current as of August 14, 2020**

<b>Updated Information &amp; Services</b>	including high resolution figures, can be found at: <a href="http://n.neurology.org/content/early/2020/08/14/WNL.0000000000010656.citation.full">http://n.neurology.org/content/early/2020/08/14/WNL.0000000000010656.citation.full</a>
<b>Subspecialty Collections</b>	This article, along with others on similar topics, appears in the following collection(s): <b>All Education</b> <a href="http://n.neurology.org/cgi/collection/all_education">http://n.neurology.org/cgi/collection/all_education</a> <b>All Spinal Cord</b> <a href="http://n.neurology.org/cgi/collection/all_spinal_cord">http://n.neurology.org/cgi/collection/all_spinal_cord</a> <b>Brain death</b> <a href="http://n.neurology.org/cgi/collection/brain_death">http://n.neurology.org/cgi/collection/brain_death</a> <b>Clinical neurology examination</b> <a href="http://n.neurology.org/cgi/collection/clinical_neurology_examination">http://n.neurology.org/cgi/collection/clinical_neurology_examination</a>
<b>Permissions &amp; Licensing</b>	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: <a href="http://www.neurology.org/about/about_the_journal#permissions">http://www.neurology.org/about/about_the_journal#permissions</a>
<b>Reprints</b>	Information about ordering reprints can be found online: <a href="http://n.neurology.org/subscribers/advertise">http://n.neurology.org/subscribers/advertise</a>

*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 © 2020 American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.

