

# Bedside Head Impulse Test: A Useful Tool for Patients With Sensory Ataxia

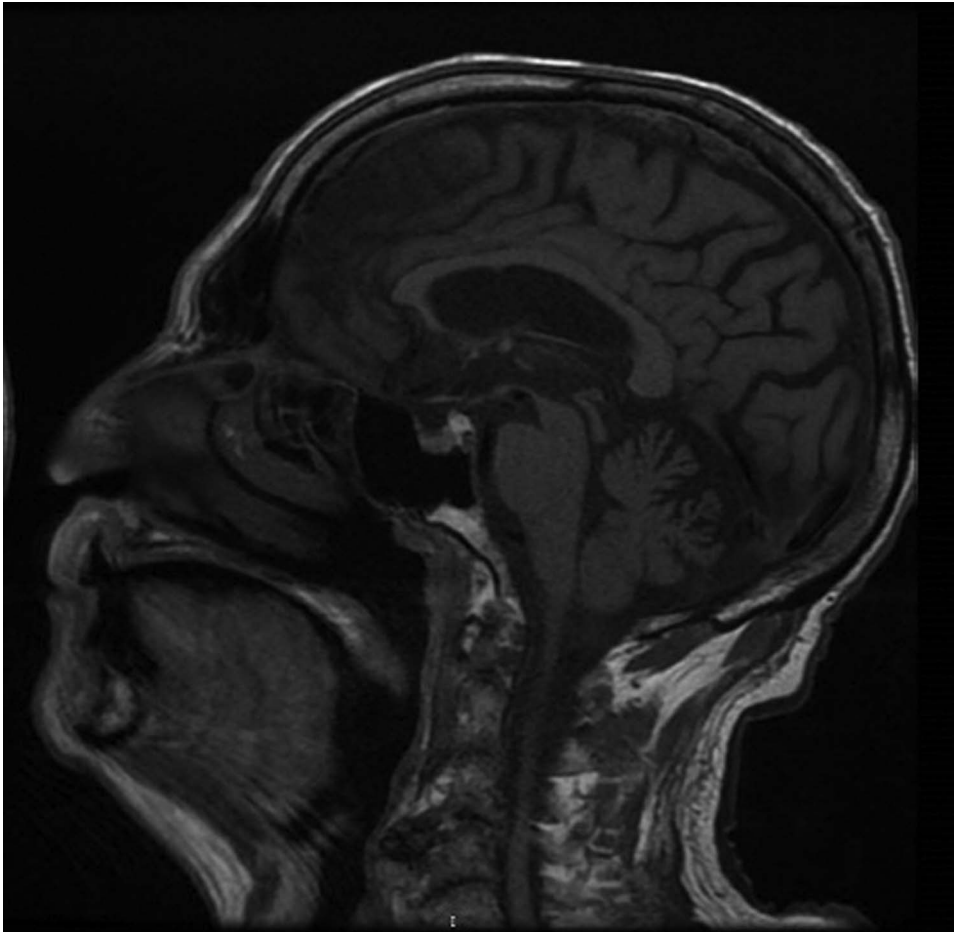
Stefano Tozza, MD, Andrea Cortese, MD, PhD, Aniello Iovino, MD, Marcello Esposito, MD, PhD, Natalia Dominik, MSc, Rosa Iodice, MD, and Fiore Manganelli, MD

*Neurol Genet* 2021;7:e541. doi:10.1212/NXG.0000000000000541

## Correspondence

Dr. Tozza  
ste.tozza@gmail.com

## Figure Brain MRI of CANVAS Patient



Brain MR T1-weighted, midsagittal image shows cerebellar vermian atrophy. CANVAS = cerebellar ataxia, neuropathy and vestibular areflexia syndrome.

## Case Summary

An 85-year-old man suffered from a 20-year history of idiopathic sensory neuronopathy (figure). Neurologic examination was characterized by severe sensory ataxia needing bilateral support

## MORE ONLINE

▶ Video

From the Department of Neuroscience, Reproductive and Odontostomatology Science (S.T., A.I., M.E., R.I., and F.M.), University of Naples Federico II, Italy; MRC Centre for Neuromuscular Diseases (A.C. and N.D.), Department of Neuromuscular Diseases, National Hospital for Neurology and Neurosurgery, UCL Queen Square Institute of Neurology, United Kingdom; and Department of Brain and Behavioral Sciences, University of Pavia, Italy.

Go to [Neurology.org/NG](https://www.neurology.org/NG) for full disclosures. Funding information is provided at the end of the article.

The Article Processing charge was funded by the Department of Neuroscience, Reproductive and Odontostomatology Science, University of Naples Federico II, Naples, Italy.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License 4.0 (CC BY-NC-ND), which permits downloading and sharing the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

during walking, subtle dysarthria, and reduced sensation for all modalities. Bedside head impulse test (HIT) revealed vestibular areflexia (video 1), arising suspicion of cerebellar ataxia, neuropathy, and vestibular areflexia syndrome (CANVAS), then confirmed by the presence of biallelic expansion in *RFC1* gene.<sup>1</sup> Clinical sensory involvement can be the only manifestation in some CANVAS patients,<sup>2</sup> and HIT, although overlooked in neurologic examination, should be performed in all patients with sensory ataxia to raise suspicion of CANVAS.

## Study Funding

A. Cortese thanks Medical Research Council (MR/T001712/1), Fondazione CARIPO (2019-1836), Italian Ministry of Health Ricerca Corrente 2018-2019 and 2020 and the Inherited Neuropathy Consortium (INC) for grant support.

## Disclosure

The authors declare no financial or other conflicts of interest. Go to [Neurology.org/NG](https://www.neurology.org/NG) for full disclosures.

## Publication History

Received by *Neurology: Genetics* October 2, 2020. Accepted in final form October 29, 2020.

## Appendix Authors

Name	Location	Contribution
<b>Stefano Tozza, MD</b>	Department of Neuroscience, Reproductive and Odontostomatology Science, University of Naples Federico II, Italy	Design and conceptualized study, acquisition and analyzed the data, and drafted the manuscript for intellectual content
<b>Andrea Cortese, MD</b>	MRC Center for Neuromuscular Diseases, Department of Neuromuscular Diseases, National Hospital for Neurology and Neurosurgery, UCL Queen Square Institute of Neurology, United Kingdom; Department of Brain and Behavioral Sciences, University of Pavia, Italy	Analyzed the data and revised the manuscript for intellectual content

## Appendix (continued)

Name	Location	Contribution
<b>Aniello Iovino, MD</b>	Department of Neuroscience, Reproductive and Odontostomatology Science, University of Naples Federico II, Italy	Revised the manuscript for intellectual content
<b>Marcello Esposito, MD, PhD</b>	Department of Neuroscience, Reproductive and Odontostomatology Science, University of Naples Federico II, Italy	Revised the manuscript for intellectual content
<b>Natalia Dominik</b>	MRC Center for Neuromuscular Diseases, Department of Neuromuscular Diseases, National Hospital for Neurology and Neurosurgery, UCL Queen Square Institute of Neurology, United Kingdom	Analyzed the data and revised the manuscript for intellectual content
<b>Rosa Iodice, MD</b>	Department of Neuroscience, Reproductive and Odontostomatology Science, University of Naples Federico II, Italy	Revised the manuscript for intellectual content
<b>Fiore Manganelli, MD</b>	Department of Neuroscience, Reproductive and Odontostomatology Science, University of Naples Federico II, Italy	Design and conceptualized study and revised the manuscript for intellectual content

## References

1. Cortese A, Simone R, Sullivan R, et al. Biallelic expansion of an intronic repeat in *RFC1* is a common cause of late-onset ataxia [published correction appears in *Nat Genet*. 2019 May;51(5):920]. *Nat Genet* 2019;51:649–658.
2. Cortese A, Tozza S, Yau WY, et al. Cerebellar ataxia, neuropathy, vestibular areflexia syndrome due to *RFC1* repeat expansion. *Brain* 2020;143:480–490.

# Neurology<sup>®</sup> Genetics

## Bedside Head Impulse Test: A Useful Tool for Patients With Sensory Ataxia

Stefano Tozza, Andrea Cortese, Aniello Iovino, et al.

*Neurol Genet* 2021;7;

DOI 10.1212/NXG.0000000000000541

**This information is current as of December 21, 2020**

<b>Updated Information &amp; Services</b>	including high resolution figures, can be found at: <a href="http://ng.neurology.org/content/7/1/e541.full.html">http://ng.neurology.org/content/7/1/e541.full.html</a>
<b>References</b>	This article cites 2 articles, 0 of which you can access for free at: <a href="http://ng.neurology.org/content/7/1/e541.full.html##ref-list-1">http://ng.neurology.org/content/7/1/e541.full.html##ref-list-1</a>
<b>Subspecialty Collections</b>	This article, along with others on similar topics, appears in the following collection(s): <b>All Genetics</b> <a href="http://ng.neurology.org/cgi/collection/all_genetics">http://ng.neurology.org/cgi/collection/all_genetics</a> <b>All Neurotology</b> <a href="http://ng.neurology.org/cgi/collection/all_neurotology">http://ng.neurology.org/cgi/collection/all_neurotology</a> <b>Clinical neurology examination</b> <a href="http://ng.neurology.org/cgi/collection/clinical_neurology_examination">http://ng.neurology.org/cgi/collection/clinical_neurology_examination</a>  <b>Peripheral neuropathy</b> <a href="http://ng.neurology.org/cgi/collection/peripheral_neuropathy">http://ng.neurology.org/cgi/collection/peripheral_neuropathy</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://ng.neurology.org/misc/about.xhtml#permissions">http://ng.neurology.org/misc/about.xhtml#permissions</a>
<b>Reprints</b>	Information about ordering reprints can be found online: <a href="http://ng.neurology.org/misc/addir.xhtml#reprintsus">http://ng.neurology.org/misc/addir.xhtml#reprintsus</a>

*Neurol Genet* is an official journal of the American Academy of Neurology. Published since April 2015, it is an open-access, online-only, continuous publication journal. Copyright © 2020 The Author(s). Published by Wolters Kluwer Health, Inc. on behalf of the American Academy of Neurology. All rights reserved. Online ISSN: 2376-7839.

