Teaching NeuroImages: Imaging features of DCC-mediated mirror movements and isolated agenesis of the corpus callosum

Timothy J. Edwards, MBBS,* Ashley P.L. Marsh, PhD,* Paul J. Lockhart, PhD, Linda J. Richards, PhD, and Richard J. Leventer, MBBS, PhD

Neurology® 2018;91:e886-e887. doi:10.1212/WNL.0000000000006085

Correspondence
Dr. Leventer
Richard.Leventer@rch.org.au

Two unrelated children were prenatally diagnosed with isolated agenesis of the corpus callosum (iACC) in otherwise uneventful pregnancies. Postnatal clinical assessments identified mirror movements in these offspring, their siblings, and their respective mothers. MRI (figure) showed characteristic features of complete (A, B) and partial (C, D) iACC, and abnormal crossing of the corticospinal tracts (E, F) on diffusion imaging. Sequencing revealed monoallelic missense mutations in the axon guidance receptor DCC.

The association of iACC and abnormal corticospinal decussation is unique to only a handful of genes known to cause agenesis of the corpus callosum, and can provide a clinical clue towards a genetic diagnosis.

*These authors contributed equally to this work.

From the Queensland Brain Institute (T.J.E., L.J.R.), Faculty of Medicine (T.J.E.), and School of Biomedical Sciences (L.J.R.), The University of Queensland, Brisbane; Bruce Lefroy Centre for Genetic Health Research (A.P.L.M., P.J.L.) and Neuroscience Research Group (R.J.L.), Murdoch Children’s Research Institute, and Department of Neurology (R.J.L.), Royal Children’s Hospital; and Department of Paediatrics (A.P.L.M., P.J.L., R.J.L.) University of Melbourne, Parkville, Victoria, Australia.

Go to Neurology.org/N for full disclosures. Funding information and disclosures deemed relevant by the authors, if any, are provided at the end of the article.

More Online

Teaching slides
links.lww.com/WNL/A645
Author contributions
Dr. Edwards: study concept and design, analysis and interpretation. Dr. Marsh: study concept and design, analysis and interpretation. Dr. Lockhart: critical revision of the manuscript for important intellectual content. Dr. Richards: critical revision of the manuscript for important intellectual content, study supervision. Dr. Leventer: study concept and design, acquisition of data, critical revision of the manuscript for important intellectual content, study supervision.

Study funding
No targeted funding reported.

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

References
Teaching NeuroImages: Imaging features of DCC-mediated mirror movements and isolated agenesis of the corpus callosum
Neurology 2018;91:e886-e887
DOI 10.1212/WNL.0000000000006085

This information is current as of August 27, 2018

Updated Information & Services
including high resolution figures, can be found at:
http://n.neurology.org/content/91/9/e886.full

References
This article cites 2 articles, 0 of which you can access for free at:
http://n.neurology.org/content/91/9/e886.full#ref-list-1

Subspecialty Collections
This article, along with others on similar topics, appears in the following collection(s):
All Genetics
http://n.neurology.org/cgi/collection/all_genetics
Developmental disorders
http://n.neurology.org/cgi/collection/developmental_disorders
DWI
http://n.neurology.org/cgi/collection/dwi
Motor Control
http://n.neurology.org/cgi/collection/motor_control
MRI
http://n.neurology.org/cgi/collection/mri

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