

Teaching Video NeuroImages: Congenital mirror movements

A paradigmatic video case

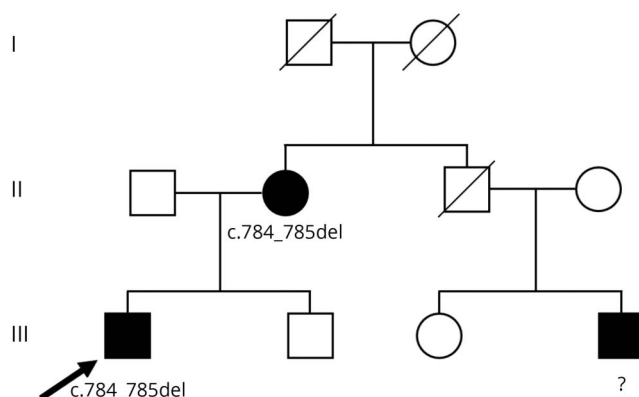
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Figure 1 Pedigree of the family with congenital mirror movements illustrating a probable autosomal dominant inheritance (the first cousin declined to carry out the genetic study)



An 18-year-old man had synkinetic hand movements¹ since early childhood (video), with stable course, and without other neurologic disorders. His mother and first cousin (figure 1) also had mild mirror movements in their hands.

MRI brain was normal (figure 2, A and B) but the functional MRI signals showed blood flow in both primary motor cortices and supplementary motor areas during movements of either the right hand (figure 2C) or left hand (figure 2D).

We excluded alternative diagnoses, such as X-linked Kallman or Klippel-Feil syndrome. A novel mutation leading to a frameshift (c.784_785del p.Val263Phefs*21) was identified in exon 4 of the *DCC* gene² in the patient and his mother. *DCC* gene mutations lead to truncated DCC protein that is receptor for netrin-1 that guides the development of CNS axons across the body's midline.²

Acknowledgment

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MORE ONLINE

Video

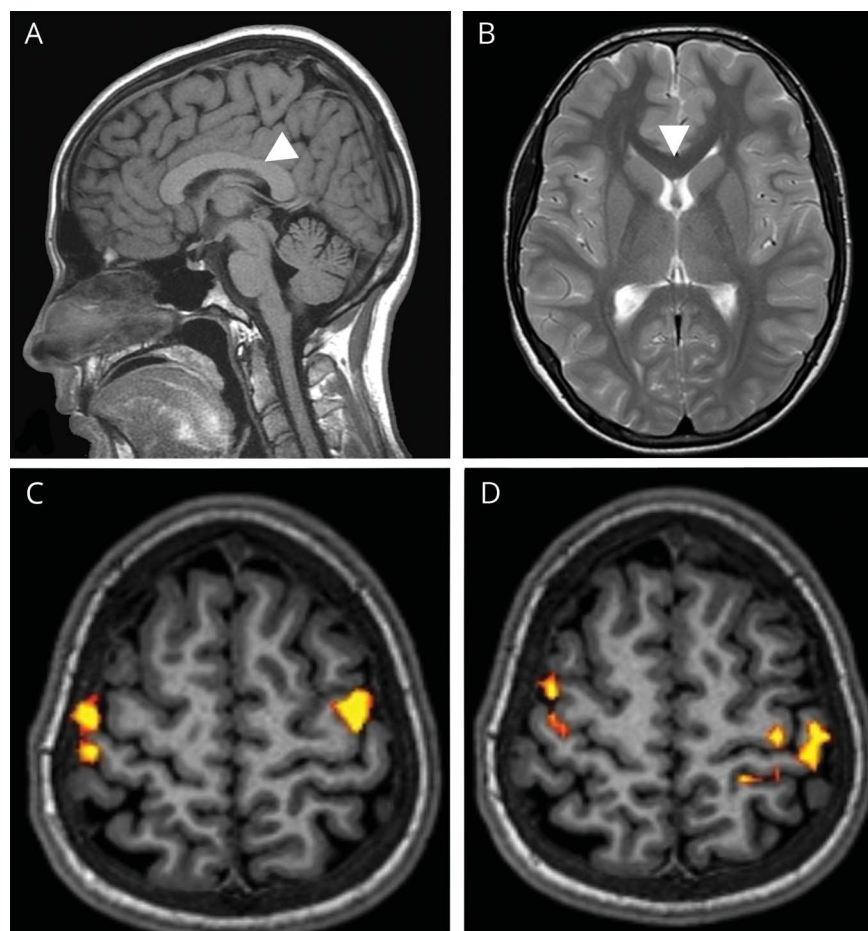
Teaching slides

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From the Neurology Department (A.M.-G., S.L.V.), Movement Disorders Section (A.M.-G.), Health Research Institute (A.M.-G., R.L.-B., S.L.V.), and Radiology Department, Neuroradiology Section (A.M.-D.A.), Hospital Universitario 12 de Octubre; Integrated Neurology Department (R.L.-B.), Hospital Universitario Rey Juan Carlos & Hospital General de Villalba & Hospital Universitario Infanta Elena; Department of Medicine (R.L.-B.), Faculty of Medicine, Universidad Complutense de Madrid; and Biomedical Research Networking Center in Neurodegenerative Disease (CIBERNED) (S.L.V.), Madrid, Spain.

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Figure 2 MRI brain



Sagittal T1-weighted (A) and axial T2-weighted (B) images showed no brain injury. The arrowheads indicate the normal appearance of the corpus callosum. Functional MRI study (C, D) during opening or closing movement of the hand. The movement of each hand separately produced a bilateral activation of both primary motor cortices, predominantly in the left when moving the right hand (C) and again predominantly in the left with the movement of the left hand (D).

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Disclosure

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

Appendix Authors

Name	Location	Contribution
Antonio Méndez-Guerrero, MD	Hospital 12 de Octubre, Madrid, Spain	Conceptualization of study, data acquisition, drafting and revising the manuscript for intellectual content
Ana Martínez de Aragón Calvo, MD	Hospital 12 de Octubre, Madrid, Spain	Preparation of images and neuroradiology interpretation

Appendix (continued)

Name	Location	Contribution
Roberto López-Blanco, MD	Integrated Neurology Department, Hospital Universitario Rey Juan Carlos, Hospital General de Villalba, Hospital Universitario Infanta Elena, Madrid, Spain	Conceptualization of study, video editing, revising the manuscript for intellectual content
Sara Llamas-Velasco, PhD	Hospital 12 de Octubre, Madrid, Spain	Data acquisition, revising the manuscript for intellectual content

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