Teaching Video NeurolImages: Bereitschaftspotential

A Neurophysiologic Test for Functional or Voluntary Jerks

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Neurology® 2021;96:e1267-e1268. doi:10.1212/WNL.0000000000010846

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Figure Surface EMG and EEG Show Cortical Activation Preceding the Abnormal Movements

Cortical slow negative potential (straight arrows on EEG) preceding the onset of muscle activity (curved arrow) recorded on surface EMG of the vastus lateralis and adductor magnus. EEG waves were registered at C3-(A1+A2), Cz-(A1+A2), and C4-(A1+A2).

A 47-year-old man presented with a 2-year history of recurrent, short-lasting, and sudden jerky movements, which resembled myoclonus (video 1). Examination was normal. Brain and spine MRI were normal. Surface EMG and EEG revealed cortical activation preceding the abnormal movements (figure), consistent with Bereitschaftspotential and the diagnosis of functional jerks.

Bereitschaftspotential, or readiness or premotor potential, is a slow negative cortical potential beginning 1.5–2 seconds before voluntary movements, with maximal amplitude over centroparietal areas.¹ This represents a cortical contribution to the premotor planning of voluntary movement. Along with clinical observation, Bereitschaftspotential is useful to differentiate myoclonus, tics, and functional movement disorders.²

Study Funding

No targeted funding reported.

Disclosure

The authors report no disclosures relevant to the manuscript. Go to [Neurology.org/N](https://www.neurology.org/N) for full disclosures.

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Name	Location	Contribution
José Luiz Pedroso, MD, PhD	Universidade Federal de São Paulo	Conception, organization, writing the first draft, review
Felipe Barbosa Magalhães, MD	Universidade Federal de São Paulo	Conception, organization, review
Alessandro Abrahão, MD, MSc	University of Toronto	Conception, organization, review
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Appendix *(continued)*

Name	Location	Contribution
Orlando G. Barsottini, MD, PhD	Universidade Federal de São Paulo	Conception, organization, review

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José Luiz Pedroso, Felipe Barbosa Magalhães, Agessandro Abrahao, et al.
Neurology 2021;96:e1267-e1268 Published Online before print September 14, 2020
DOI 10.1212/WNL.0000000000010846

This information is current as of September 14, 2020

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