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Teaching Neuroimages: Bereitschaftspotential: A neurophysiological test for functional or voluntary jerks

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A 47-year-old man presented with a two-year history of recurrent, short-lasting and sudden jerky movements, which resembled myoclonus (**Video**, <http://links.lww.com/WNL/B220>). Examination was normal. Brain and spine MRI were normal. Surface electromyography 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

Appendix 1: Authors

Name	Location	Contribution
José Luiz Pedroso, MD, PhD review	Universidade Federal de São Paulo	Conception, organization, writing the first draft,
Felipe Barbosa Magalhães, MD	Universidade Federal de São Paulo	Conception, organization, review
Agessandro Abrahão, MD, MSc	University of Toronto	Conception, organization, review
Gilberto M. Manzano, MD, PhD	Universidade Federal de São Paulo	Conception, organization, review
Orlando G. Barsottini, MD, PhD	Universidade Federal de São Paulo	Conception, organization, review

Teaching Slides - <http://links.lww.com/WNL/B219>

Video - <http://links.lww.com/WNL/B220>

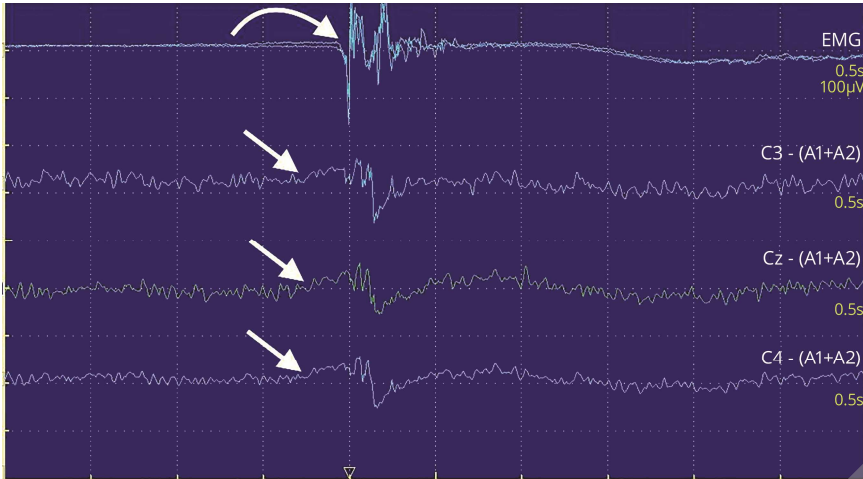
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Video: Patient with functional movements resembling myoclonus.

Figure: Surface electromyography and EEG showing 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 electromyography (EMG) of the vastus lateralis and adductor magnus. EEG waves were registered at C3-(A1+A2), Cz-(A1+A2), and C4-(A1+A2), respectively.



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