

Mirror Writing Tremor: Dystonic Clues...

Sebastian R. Schreglmann, MD,^{1,2} Christian R. Baumann, MD,¹ Daniel Waldvogel, MD¹

Case Report

Primary writing tremor (PWT), the most prevalent form of task-specific tremors, is a flexion/extension tremor of the hand or wrist only appearing while writing or assuming a writing position.^{1,2} Though there has been debate about the pathophysiological origin of this symptom,^{3–5} the distinction from tremulous forms of writer's cramp, a form of focal hand dystonia, and essential tremor (ET) can be difficult.^{6,7} We present the first video of a mirror tremor in a patient with a writing tremor. Although described earlier in the context of PWT,² we argue that this mirror phenomenon, among other clinical features, argues for a dystonic origin of the writing tremor.

A 34-year-old right-handed male patient with no previous neurological or medical history, unremarkable family history, and no previous medication presented with a 3-year history of a gradually progressive shaking in his right hand that only became evident when writing. He had not noticed difficulties with all other fine motor skills, such as using a spoon, drinking from a glass, or transferring liquids.

On clinical examination, an irregular, low-amplitude, high-frequency, jerky tremor became apparent in the right hand upon writing. In addition, this tremor was also evident when he was assuming a writing or similar position (see Video 1, Segment 1) during performance of other tasks, but stopped immediately upon slight positional changes of the wrist (see Video 1, Segment 3). During writing with the right hand, slight dystonic posturing of the wrist became apparent. In addition, when writing with the left hand, the same arrhythmic, jerky tremor started in the right hand, presenting a task-specific mirror tremor (see Video 1, Segment 2). There were no further abnormal signs upon neurological examination, including voice, rest, action or intention tremor, sensory changes or extra-/pyramidal signs. Both MRI of the head, routine blood examination, and copper excretion in a 24-hour urine sample were unremarkable. Because these symptoms were perceived as not irritating, the patient did not try therapeutic botulinum toxin injections or oral medication and eventually was lost to follow-up.

PWT is, per definition, task specific and is elicited either by writing (type A: task-induced tremor) or by adopting a writing hand position (type B: positional sensitive tremor).² Although present in the very first patient described with this condition,¹ it is atypical for PWT that other tasks elicit a tremor.

Apart from overt dystonic posturing upon writing, several clinical characteristics in the presented case are reminiscent of features frequently encountered in dystonic conditions: As shown in Segment 3 of Video 1, the occurrence of the tremor depends on the task attempted. Furthermore, only writing executed by distal, but not by proximal, muscles provokes the tremor (see Video 1, Segment 4), which had actually been described in the very first PWT case as well.¹ Ultimately, the occurrence of a mirror tremor, elicited by writing with the contralateral hand, could be viewed in analogy to mirror dystonia, a particularly common finding in focal hand dystonia.⁸ To our knowledge, this is the first video documentation of a mirror tremor, although the phenomenon has been described previously.²

Taken together, dystonic posturing, task specificity, triggering by distal, but not proximal, muscle activity and the mirror tremor phenomenon argue for a dystonic origin of the writing tremor observed in this case.

Concerning the debated issue of whether PWT is a variant of dystonic tremor or ET, there have been cases of PWT in both hands with a positive family history of ET and positive response to propranolol,⁹ as well as cases of PWT and writers cramp in the same patient described in the literature.⁷ The clinical features noted in our patient at least make a strong argument for dystonia being the pathophysiological basis for the writing tremor observed in this case.

Author Roles

Manuscript Preparation: A. Writing of the First Draft, B. Review and Critique.

S.R.S.: A

C.R.B.: B

D.W.: B

¹Department of Neurology, University Hospital Zurich, Zurich, Switzerland; ²Department of Neurology, Kantonsspital St. Gallen, St. Gallen, Switzerland

*Correspondence to: Dr. Sebastian R. Schreglmann, Department of Neurology, Kantonsspital St. Gallen, Rorschacherstrasse 97, CH-9007 St. Gallen, Switzerland; E-mail: sebastian.schreglmann@kssg.ch

Keywords: primary writing tremor, dystonic tremor, focal hand dystonia, writer's cramp.

Relevant disclosures and conflicts of interest are listed at the end of this article.

Received 7 October 2014; revised 5 March 2015; accepted 11 March 2015.

Published online 2 June 2015 in Wiley InterScience (www.interscience.wiley.com). DOI:10.1002/mdc3.12182

Disclosures

Funding Sources and Conflicts of Interest: The authors report no sources of funding and no conflicts of interest.

Financial Disclosures for preceding 12 months: S.R.S. is supported by a grant by the EMDO Foundation, Zurich, Switzerland.

References

1. Rothwell JC, Traub MM, Marsden CD. Primary writing tremor. *J Neurol Neurosurg Psychiatry* 1979;42:1106–1114.
2. Bain PG, Findley LJ, Britton TC, et al. Primary writing tremor. *Brain* 1995;118(Pt 6):1461–1472.
3. Byrnes ML, Mastaglia FL, Walters SE, et al. Primary writing tremor: motor cortex reorganisation and disinhibition. *J Clin Neurosci* 2005;12:102–104.
4. Ljubisavljevic M, Kacar A, Milanovic S, et al. Changes in cortical inhibition during task-specific contractions in primary writing tremor patients. *Mov Disord* 2006;21:855–859.
5. Meunier S, Bleton JP, Mazevet D, et al. TENS is harmful in primary writing tremor. *Clin Neurophysiol* 2011;122:171–175.
6. Hai C, Yu-ping W, Hua W, et al. Advances in primary writing tremor. *Parkinsonism Relat Disord* 2010;16:561–565.
7. Pita Lobo P, Quattrocchi G, Jutras M-F, et al. Primary writing tremor and writer's cramp: two faces of a same coin? *Mov Disord* 2013;28:1306–1307.
8. Jedynak PC, Tranchant C, de Beyer DZ. Prospective clinical study of writer's cramp. *Mov Disord* 2001;16:494–499.
9. Jimenez-Jimenez F, Cabrera-Valdivia F, Orti-Pareja M, et al. Bilateral primary writing tremor. *Eur J Neurol* 1998;5:613–614.

Supporting Information

A video accompanying this article is available in the supporting information here.

Video 1. Upon writing or assuming a writing position with the right hand (Segment 3), an ipsilateral, irregular, low-amplitude, high-frequency, jerky tremor and dystonic posturing of the wrist became apparent (Segment 1). When writing with the contralateral hand, a “mirror writing tremor” occurred ipsilaterally (Segment 2). Writing provoked the tremor only when executed by distal, but not proximal, muscles (Segment 4). The patient gave written informed consent to be filmed for publication.