A Positive ‘Pointing Test’ in a Parkinson’s Disease Patient

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INTRODUCTION

Various clinical tests have been advocated to differentiate psychogenic tremor (PT) from organic tremor (OT). These include, for example, the change of tremor characteristics upon distraction, entrainment, co-activation or loading [1–3]. The “pointing test” was introduced more recently. In an elegant study, subjects with various types of tremor were instructed to perform a rapid unilateral ballistic movement towards a switch following a visual cue, while tremor was observed in the contralateral hand [4]. Subjects included 11 patients with resting tremor caused by Parkinson’s disease (PD), 10 patients with essential tremor (ET), seven with psychogenic tremor, and 10 normal volunteers who purposely imitated tremors. In all patients with psychogenic tremor and in all normal volunteers, the ballistic movement of one hand led to a transient cessation of tremor within the contralateral hand. This clinical observation was supported by polygraphy. In contrast, the tremor did not cease in the two groups with organic tremor (patients with PD or ET). The authors suggested that this pointing test might have a relevant role for identifying psychogenic tremor [4]. Schwingenschuh et al. used a variant of the pointing test in their study- which was one test in a test battery- and partially reproduced these findings, showing a clear tremor pause during the pointing test in 5 of 12 patients with psychogenic tremor [5]. None of 25 patients with organic tremor showed such a tremor pause (test specificity: 100%), although a decreased amplitude during contralateral ballistic movements was noted in four of these 25 patients. Such amplitude reductions during contra-lateral ballistic movements can also occur in PD patients [6], but complete tremor cessation during the pointing test has never been described for organic tremors.

Here, we report an abnormal pointing test in a PD patient with a classic rest tremor, confirmed both clinically and using accelerometry, suggesting that the clinical utility of this test is imperfect.

CASE REPORT

This 73-year-old man presented with right-sided tremor-dominant PD since 8 years. Initially he was treated with an anticholinergic and pramipexol, followed by levodopa after one year. At the time of presentation, he took levodopa/carbidopa 125 mg and pramipexol 0.6 mg tid, with an adequate treatment response. Neurological examination in the off-state revealed a classic right-dominant rest and jaw tremor, right dominant severe bradykinesia, moderate axial and limb rigidity, a typical hypokinetic gait and mild balance impairment during the pull test (off state UPDRS motor-score: 47, Hoehn & Yahr stage: 2.5). His clinical presentation was consistent
We performed the ‘pointing test’ as follows: we instructed the patient to grasp a pencil that was located about 70 centimeter away, with his left (i.e. least affected) hand, as fast as possible immediately following a verbal command. Whenever the patient made such an abrupt, brisk ballistic movement, the tremor of his right hand stopped for about 1 second. However, during trials that were performed with a non-ballistic movement (slower movement velocities and/or delayed movement initiation) of the left arm, the right-sided hand tremor was not interrupted (see online video supplement). This abnormal clinical pointing test was substantiated by accelerometry recording (Fig. 1A and B; sensors attached to the dorsum of the hands). This showed a consistent bilateral resting tremor with a frequency between 4.2 and 4.8 Hz (amplitude right >left). Following a rapid ballistic grasping movement of the left hand, a reproducible arrest of the right hand tremor was detected. It typically started around 0.2 seconds after movement onset and lasted for 0.8 to 1.6 seconds (Fig. 1A). A slower ballistic movement of the left arm did not produce this effect, with only an amplitude reduction but not tremor cessation (Fig. 1B).
finding. However, our version is widely used in clinical practice, where no further equipment is available. In contrast to rapidly chasing a pen, which is moved by an examiner in a self-chosen (i.e., not standardized) speed [5], grasping a static object reduces the variability on one end, as the velocity is only dependent on the patient. We modestly propose to execute the test as we used it here, i.e., grasping a static target, which is located about an arm’s length away as rapidly as possible immediately after a verbal command, but would also like to stimulate further research and discussions on this test.

The notion that tremor in PD can be suppressed temporarily is not new. Transient disappearance of resting tremor in PD commonly occurs when the affected ipsilateral arm assumes a new posture, although the tremor reappears when the arm is maintained in this new position (re-emerging tremor) [8]. Yet, we believe that the mechanism underlying tremor arrest following a contralateral ballistic arm movement is different. Another possible explanation for tremor suppression in the contralateral arm could be an overflow of muscle activation- or even “mirror movements”. Subtle mirror movements are often barely visible with the naked eye, but may still affect resting tremor. Further studies with additional EMG recordings are needed to shed light on this fascinating phenomenon.

Our findings suggest that the diagnostic accuracy of the pointing test is imperfect, which limits its clinical utility to differentiate organic from psychogenic tremor. This report obviously entails just a single patient, and larger studies remain needed to establish the full diagnostic utility of the pointing test.

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CONFLICTS OF INTEREST

On behalf of all authors, the corresponding author states that there is no conflict of interest.

SUPPLEMENTARY MATERIAL

The supplementary video is available in the electronic version of this article: http://dx.doi.org/10.3233/JPD-150638.

REFERENCES