

Video Abstracts

Re-Emergent Tremor of Parkinson's Disease Masquerading as Essential Tremor

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Abstract

Background: The re-emergent tremor of Parkinson's disease (PD) is generally recognized as a postural tremor.

Phenomenology Shown: A PD patient with a re-emergent tremor occurring during a task (spiral drawing), which on the surface produced a tremor that resembled that of essential tremor (ET).

Educational Value: Researchers and clinicians should be aware of features of this re-emergent tremor to help distinguish it from that of ET.

Keywords: Essential tremor, clinical, Parkinson's disease, screening, diagnosis

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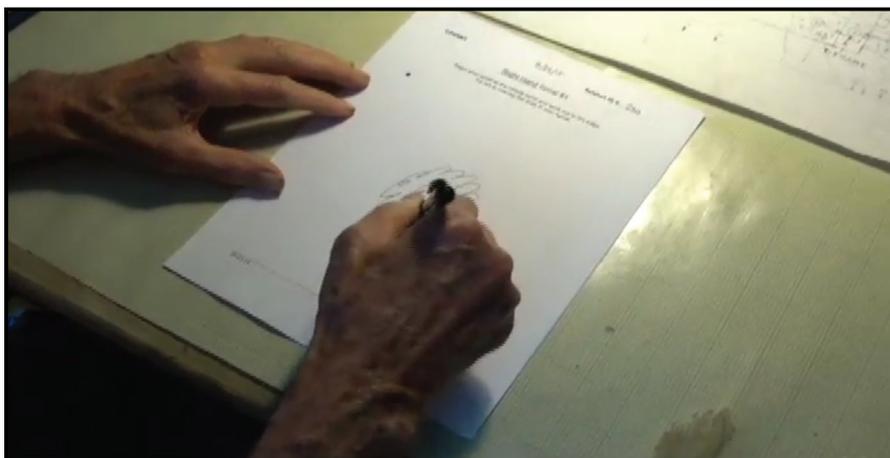
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Conflict of Interest: The authors report no conflict of interest.

Ethics Statement: This study was performed in accordance with the ethical standards detailed in the Declaration of Helsinki. The authors institutional ethics committee has approved this study and all patients have provided written informed consent. All patients that appear on video have provided written informed consent; authorization for the videotaping and for publication of the videotape was provided.

Spiral drawing is a sensitive and specific method to pre-screen large numbers of subjects for essential tremor (ET) in population-based clinical research.¹ We present a patient who screened positive for ET based on his screening spiral but whose diagnosis was later changed to Parkinson's disease (PD) after a detailed in-person videotaped neurological examination revealed mild to moderate hypomimia, axial bradykinesia, and bilateral appendicular bradykinesia that was more pronounced on the right, and tremor at rest on the right. Researchers should be aware of this possibility when screening ET patients using spirals. Re-emergent tremor, a tremor reappearing after a latency period,² is a clinical feature of PD. This video demonstrates that re-emergent tremor is not solely a postural tremor but also a tremor that can emerge during a task if there is stability of the body part (e.g., when maintaining a posture when no other posture needs to be selected to satisfy the current task context).³ As the patient draws spirals (Video 1), his distal upper limb (i.e., hand) is in a stable position. A re-emergent tremor, mainly involving the thumb and phalangeal joints, arises 2 seconds into the video, just as the patient initiates the spiral drawing. The

tremor has a pill-rolling quality and differs from the typical wrist tremor of ET. The voluntary movement that drives the pen around the page comes from more proximal joints (elbow or shoulder), whereas the hand/fingers are in a state of relative stability. Although on the surface the tremor in the hand-drawn spiral (Figure 1, right) resembles that of ET, and it lacks the overt tightness that may be seen in some PD spirals, on closer inspection there are a number of morphological differences with that of ET. First, the re-emergent spiral (right) does not worsen in particular quadrants, while ET spirals (Figure 1, left) often have a single identifiable tremor orientation axis. Second, the waveforms have a looping morphology. This may be the result of PD bradykinesia; the thumb and fingers move rapidly with tremor, but the bradykinetic arm makes slow progress during the spiral task: the resultant wave forms loop back on themselves. Third, unlike the ET tremor, which often has an intentional component (at the moment of initiation, near the "start here," the ET patient has a difficult time keeping the pen on the paper), there is no intentional component in our patient. Finally, there is a roundness to the waveform in the PD spiral that is not



Video 1. Spiral drawing. The Parkinson's disease patient's re-emergent tremor emerges during spiral drawing (2 seconds into the video). As the patient draws spirals, his distal upper limb (i.e., hand) is in a stable position, and a re-emergent tremor arises, mainly involving the thumb and phalangeal joints. The patient, enrolled in a clinical research study at Yale University, signed informed consent, including consent to be videotaped and for publication of the videotape.

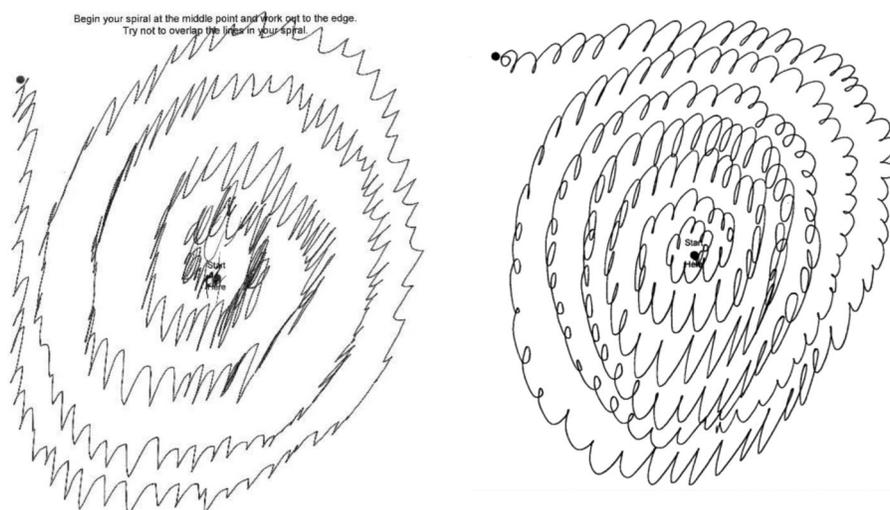


Figure 1. Hand-drawn spirals. Spiral drawn by ET patient (left) and spiral drawn by this patient (right). The ET spiral is worse in the upper right and lower left quadrants.

seen in that of the ET spiral. The sensitivity and specificity of these morphological features in distinguishing ET from PD require study; however, this video may help researchers to pick up a PD tremor of motor stability during the screening process.

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