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Differential Diagnosis of Tremor

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Clinical Question

What is the differential diagnosis of tremor in the primary care setting?

Evidence-Based Answer

The most common tremor in primary care is an exaggerated physiologic tremor, followed by essential tremor and tremors caused by Parkinson's disease. (Strength of Recommendation [SOR]: C, based on extrapolation from a prospective cohort study of patients older than 50 years). Other types of tremor include primary writing tremor, orthostatic tremor, tremors caused by cerebellar and thalamic disease, neuropathic tremor, and psychogenic tremor. (SOR: C, expert opinion).

Evidence Summary

A prospective study reported on movement disorders in 706 patients 50 to 89 years of age who were randomly sampled from a population in northern Italy. Patients underwent interviews, standard examinations by neurologists with special expertise in movement disorders, and quantitative tremor analysis. Diagnoses were determined using a movement disorders consensus guideline. Overall, 14.5 percent (18 percent of men and 12 percent of women) had tremor, with the oldest patients having approximately three times the tremors of the youngest patients. The most common diagnoses were exaggerated physiologic tremor (9.5 percent), essential tremor (3.0 percent), parkinsonian tremor (2.8 percent), and cerebellar tremor (0.2 percent).¹

Many factors can enhance a normal physiologic tremor to the point that it becomes visible (*Table 1*).² Quantitative tremor analyses diagnosed exaggerated physiologic tremor in many patients (percentage not reported) suspected to have essential tremor based on clinical examination. Of these patients, 38 percent were receiving drugs known to create or enhance tremor, 13 percent had thyroid disease, 11 percent had severe systemic illness, and 10 percent had peripheral neuropathy.¹

Table 1. Factors That Can Enhance Normal Physiologic Tremor to the Point of Detection

Drugs or substances that increase adrenergic activity

Amphetamines
Caffeine Epinephrine
Isoproterenol (Isuprel)
Levodopa

Nicotine Selective serotonin reuptake inhibitors Terbutaline (Brethine*) Theophylline Tricyclic antidepressants

Miscellaneous drugs and toxins

Arsenic Bromides
Corticosteroids Lead
Lithium Mercury Other
antidepressants Sodium
valproate

Other causes of increased adrenergic activity

Alcohol withdrawal
Anxiety Excitement
Fever Fright
Hypoglycemia
Muscle fatigue Opioid
withdrawal
Pheochromocytoma
Thyrotoxicosis

*-Brand not available in the United States.
Information from reference 2.

The prevalence of essential tremor steadily increases with age; younger persons may be affected by the familial form of essential tremor.²³ Among 5,278 Spanish persons older than 64 years identified by census data, 472 screened positively for tremor symptoms as determined by a questionnaire administered in person. Neurologic examination confirmed essential tremor in 183 persons. Overall, essential tremor was found in 4.8 percent of persons, with a range of 3.4 percent (in persons 65 to 69 years of age) to 7.1 percent (in persons older than 85 years).⁴

A retrospective study using a statewide Parkinson's disease registry with 5,062 patients found that 86 percent of patients with Parkinson's disease had rest tremor compared with 2.8 percent of the general population. Rest tremors are evident when an affected body part is completely at rest; the tremor temporarily decreases during voluntary activity. Rest tremor was more prevalent with increasing age; it was found in 3.5 percent of men 60 to 69 years of age, 15 percent of men 70 to 79 years of age, and 36 percent of men older than 80 years. The prevalence of parkinsonian tremor also increased with age among women, but rates were approximately one half those found in men.⁵

Although rest tremor is characteristic of Parkinson's disease, it also occurs in essential tremor. A study of 64 patients with essential tremor who were recruited from a neurology referral center found that 19 percent had rest tremors. Patients with rest tremor from essential tremor had a form that was more severe, widely disseminated, and of longer duration.⁶

According to expert opinion, several conditions can be included in the differential diagnosis of tremor. Primary writing tremor is an action tremor of the hands occurring exclusively while writing (action tremors remain unchanged during the course of a voluntary movement). Orthostatic tremor is a postural tremor of the legs and trunk occurring exclusively while standing (postural tremors occur while the head or limbs are held in a fixed posture). Tremors caused by disease in the cerebellum or its outflow path to the thalamus are typically intention type, but may also be postural or action type (intention tremors increase during the course of goal-directed movement). Neuropathic tremor is usually postural or action type, and there may be other signs of peripheral neuropathy in the involved extremities. Psychogenic tremor is typically complex, with rest, postural, and action components, and often accompanies other features of psychogenic movement disorders.⁵

Recommendations from Others

The consensus statement of the Movement Disorder Society lists 95 causes for tremor, but does not specify which causes are most common in primary

Care.⁷ Tremors can be categorized into three classes according to clinical presentation: (1) postural-action tremors, which include enhanced physiologic tremor, essential tremor, primary writing tremor, other extrapyramidal disorders (e.g., Parkinson's disease, Wilson's disease, dystonia), cerebellar disease, and peripheral neuropathy; (2) intention tremors (cerebellar outflow), which include cerebellar disease, multiple sclerosis, midbrain stroke, and midbrain trauma; and (3) rest tremors, which include Parkinson's disease, parkinsonian

Clinical Commentary

To get a sense of the prevalence of tremor in the primary care setting, one has to extrapolate from data based on an exclusively white Italian population,¹ an older Spanish population,⁴ or patients with Parkinson's disease. Although these data do not provide a multi-ethnic sense of tremor in primary care, we learn that the prevalence of tremor increases with age; that the more common tremors include exaggerated physiologic tremor, essential tremor, and parkinsonian tremor; and that there may be factors causing or contributing to the severity of tremor (*Table 1*³). We can use this information to recall that all tremors do not equate with Parkinson's disease, and to prompt a review of the patient's history and medications for potential remediable causes of tremor.

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