

Troubling tremors

All that shakes isn't Parkinson's

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A tremor is an involuntary, rhythmic, oscillating movement of any body part. It's caused by contractions of reciprocally innervated antagonist muscles. Not all tremors signal Parkinson's disease, however; in fact, the most common type is essential tremor, which increases with age.

A shaking of the head, a hand that can't hold a cup of coffee or plate of soup without its clattering may be embarrassing and impinge on the quality of life. Occupational therapy can be helpful in such cases. At the opposite end of the spectrum, Parkinson's and cerebellar defects can be debilitating. Investigation of symptoms is important to rule out underlying disease. Refer to a neurologist or movement disorders specialist any tremor causing functional disability and not controlled by medications, or associated with other neurologic findings or complex movement disorders, or of abrupt onset.

Tremor classifications

- resting — limb fully supported against gravity and not voluntarily activated
- action
 - postural — limb is positioned against gravity
 - kinetic — during any type of voluntary movement
 - intention — worse towards the end of goal-directed movement
- by etiology
 - physiologic
 - essential
 - Parkinson's
 - cerebellar dysfunction
 - psychogenic

Physiologic

- present in everyone but not clinically evident
- generally doesn't interfere with activities of daily living
- often decreases with application of large inertia loads to the limb
- accentuated by
 - anxiety, stress, sleep deprivation
 - fever, hyperthyroidism, hypoglycemia
 - beta-agonists, theophylline, lithium, valproic acid
 - caffeine, alcohol withdrawal

MANAGEMENT

- reassurance
- removal of trigger factors
- beta-blockers or anxiolytics

Essential tremor

- the most common — up to 5% of people over age 65
- usually symmetrical, but may be only on one side initially
- fine, rapid tremor
- worsens with aging — frequency of the wave reduces, but amplitude increases
- family history
- 90% involve the hands
- other affected areas — head, voice, legs and tongue
- temporary response with alcohol

MANAGEMENT

- reassurance
- avoidance of caffeine, amphetamines, certain psychoactive drugs
- occupational therapy
- physical therapy to strengthen certain muscle groups
- medication, but beware of side effects in older adults (dizziness, ataxia, confusion) — start with lowest dose and increase very slowly if need be; wean gradually if not effective
 - propranolol, starting from 10 mg once daily, up to 80 mg t.i.d.
 - primidone, the smallest dose is a 50-mg tablet, cut in half, at bedtime; up to 250 mg t.i.d.
 - propranolol and primidone combined
 - topiramate, starting dose 100 mg b.i.d., up to 200 mg b.i.d.
 - others — clonazepam, gabapentin, clozapine
- surgery
 - deep brain stimulation (DBS) of the ventral intermediate nucleus of the thalamus or the subthalamic area
 - stereotactic/gamma knife thalamotomy

Parkinson's disease

- asymmetrical limb involvement
- resting tremor — coarse, slower
- bradykinesia, rigidity and impaired postural reflexes
- responds to dopaminergic agents

MANAGEMENT

- refer to specialized team
- medications — levodopa, dopamine agonists, selegiline, rasagiline, amantadine, anticholinergics
- surgery
 - DBS of the subthalamic nucleus, globus pallidus interna, or ventral intermediate nucleus of the thalamus
 - ablative surgery — thalamotomy, pallidotomy and subthalamotomy

Cerebellar damage

- abnormal heel-to-shin and finger-to-nose movements; dysmetria; gait abnormalities; hypotonia; dysarthria; nystagmus
- ipsilateral signs and tremors that are irregular, erratic and non-rhythmic with action
- cerebellar outflow pathway dysfunction — rhythmic tremors, absent at rest and maximal with activity
- causes — multiple sclerosis (common), cerebellar stroke, Friedreich's ataxia, spinocerebellar ataxia

MANAGEMENT

- physical therapy
- medication, often with minimal benefit
 - ondansetron
 - isoniazid
 - clonazepam
 - carbamazepine
- surgery — DBS or ablative

Other tremors

PSYCHOGENIC

- tremor is the most common psychogenic movement disorder — 25% of all cases
- onset is often abrupt
- preceding events — work-related injuries, other accidents; involved in litigation or compensation issues
- variability of direction, amplitude and frequency
- positive entrainment test, co-contraction sign, distraction, suggestibility and slowness of voluntary movements
- comorbidity — psychiatric disorders, e.g. somatoform such as pain or diffuse sensory loss, conversion disorders and depression
- management — neuropsychiatric evaluation and/or psychotherapy

DYSTONIC

- postural and kinetic tremor in an area affected by dystonia, e.g. tremulous spasmodic torticollis
- localized, asymmetric, and irregular in amplitude and periodicity
- sensory tricks may reduce tremor amplitude
- often relieved by complete rest
- botulinum toxin — best treatment

HOLMES'

- previous names — midbrain, rubral, or thalamic tremor; myorhythmia; Benedikt's syndrome
- mostly affects proximal limbs (< 4.5 Hz), postural in nature, worsens during movement and goal-directed tasks
- almost always attributable to brain lesions

Physical examination

- arms held outstretched — tremor is brought out in essential tremor, not in Parkinson's
- finger-to-nose test
- heel-to-shin exercise
- look for rigidity, bradykinesia — present in Parkinson's, not in essential tremor
- ask about family history — may point to essential tremor
- rule out other conditions — e.g. hyperthyroidism, hypoglycemia — that may induce or accentuate shaking
- further investigations if needed — blood work, electromyogram, diagnostic imaging of brain

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