Contrasting:
Parkinson's vs. Essential Tremor

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Parkinson's syndrome (PS) has an estimated prevalence of nearly 0.4% in the North American general population and 3% in those over 65.[1] Essential tremor (ET) is about 10 times more common.[2]

Parkinson's syndrome and ET are the movement disorders physicians encounter most often in daily practice. Movement disorders can be either hyperkinetic or hypokinetic. PS has features of both, while ET is the most common hyperkinetic disorder. Although both disorders appear most frequently among the elderly, about 10% of PS cases have onset before age 40,[3] and ET affects people of any age.

How do you test for tremor?

Resting tremor should be tested with the limb fully supported (*i.e.*, patient lying supine on the examining table). Alternately, the upper limb may be supported by an armrest with the patient seated.

Postural tremor is tested by having the arms outstretched in front of the patient with fingers apart, and then having the hands under the chin.

Action tremor is tested with the finger-nose-finger test. Any action that provokes the tremor should also be tested.

What about PS?

An easy way to remember PS is the 3 Ss: slow, stiff, and shaky.

PS diagnosis is clinical, with the presence of two of three of the following cardinal features:

- bradykinesia (slowness of movement),
- rigidity (increased tone independent of direction and velocity of movement), and
- resting tremor.

Sandra's Shaking

Sandra, 65, presents with a six-month history of right hand tremor. Examination reveals resting tremor of the right hand, cogwheel rigidity, and slowed movements.

Sandra is diagnosed with Parkinson's disease, but declines treatment, as she is functioning reasonably well.

Two years later, her gait is slow and shuffling and her posture is mildly unstable. Sandra is started on levodopa. 100 mg, carbidopa, 25 mg, three times daily with good response.

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Essential tremor is 10 times more common than Parkinson's.

More on Sandra

Three years later, Sandra notices increasing tremor and slowness 30 to 60 minutes before the next dose of levodopa and cabidopa.

The levodopa, 100 mg, and carbidopa, 25 mg, is increased to two pills four times daily**,** which improves the wearing-off symptoms. However she develops visual hallucinations. Sandra doesn't tolerate dose reduction and says the hallucinations are not bothersome.

Two years after being on the higher dose of levodopa/carbidopa, Sandra developed choreiform movements occurring two hours after each dose of medication. These movements are not bothersome, however, she becomes more concerned with her hallucinations and even mildly paranoid. She is started on quetiapine, with good results.

Rigidity is tested by passively moving the patient's wrist. Having the patient wiggle the toes or tap the heel of the opposite lower limb may bring out subtle increased tone.

Although not one of the cardinal features, unstable posture should prompt referral to a specialist. The typical parkinsonian gait is slow and shuffling, with difficulty changing directions. Arm swing is reduced, often asymmetrically. In more advanced stages, there is propulsion or retropulsion.

In early disease, the gait may be normal while in advanced illness, the patient may be unable to stand without assistance and has markedly flexed posture.

Other features of PS include:

- hypophonia,
- micrographia,
- reduced facial expression and blink rate,
- drooling, and
- seborrhea.

The majority of PS is actually Parkinson's disease (PD).[1]

When do you treat PD?

PD is treated when there is significant functional impairment or postural instability on exam. Mild, early cases don't need treatment and no treatment actually slows disease progression (Table 1).

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How do you diagnose ET?

ET consists of postural and/or action tremor of the upper limbs with no obvious cause. Head and voice tremor may also occur. There is no bradykinesia or rigidity, though in long-standing cases, one may see resting tremor.

ET is often mistaken for PS (Table 2). Some patients may have both ET and PS. As resting tremor may be seen in some ET cases, one must have all three cardinal features to make the additional diagnosis of PS. In contrast to PD, brain histology is normal in ET.

How is ET treated?

Medical treatment of ET includes beta blockers, primidone, benzodiazepines, and topiramate.

Take-home message

- There is no readily available diagnostic test to differentiate ET from PD; the diagnosis of each is clinical.
- PS diagnosis requires two of the three S's: slow, stiff, and shaky.
- ET is about 10 times as common as PD.
- Levodopa remains the most potent and effective treatment of PD.

Table 1
Treatment Options for PD

Levodopa
- most potent/best tolerated
- usual starting dose is 100/25 mg three times daily
- adverse effects uncommon, but may include nausea/vomiting, lightheadedness, and hallucinations
- prolonged use increases risk of motor fluctuations (wearing off and dyskinesias)

Dopamine agonists
- second most potent medications; less likely to cause motor fluctuations
- monotherapy may be maintained for a few years; eventually all patients need to be on levodopa
- newer agents are non-ergot derivatives
- may be associated with drowsiness
- adverse effects similar to levodopa, but more common
- pergolide has recently been associated with vavular heart disease

Amantadine
- multiple mechanisms of action; mild to moderate potency
- may also treat dyskinesias in addition to PS symptoms
- starting and maintenance dose is 100 mg twice daily
- adverse effects include lower limb edema, livedo reticularis, and hallucinations

Selegiline
- irreversibly inhibits monoamine oxidase B, thus inhibiting dopamine catabolism
- generally well-tolerated, but has only a mild symptomatic benefit

Anticholinergics
- mild benefit
- use limited by adverse effects

Table 2
Differentiating ET & PD patients

Essential Tremor
- postural & kinetic tremor
- upper limbs affected; occasionally head, voice
- typically symmetric
- may be any age; more common in elderly
- family history often positive
- amplitude worsens with prolonged disease
- handwriting tremulous
- voice may be normal or tremulous
- gait is normal

Parkinson's Disease
- resting tremor
- upper or lower limbs affected; jaw & lip
- often asymmetric
- onset in early 60's
- family history often negative
- tremor may be reduced or absent in advanced PD
- handwriting small (micrographic)
- voice is softer, more hoarse; speech may be rapid or slow
- gait is slow, shuffling; reduced armswing

Response of tremor to alcohol is not specific for ET, as other conditions with tremor (including PS and cerebellar disease) may also improve. CME

References
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