

Parkinson's Disease: The Basics

BACKGROUND: Parkinson's disease (PD) was first described in 1817 by James Parkinson, in *An Essay on the Shaking Palsy*. It is a neurodegenerative disease, meaning it is caused by degeneration (dysfunction and death) of neurons within the brain. PD causes motor (movement) and non-motor symptoms. As is the case with many neurological disorders, the cause of PD is not known. However, scientists and researchers are working to uncover the possible cause(s), including genetics and environmental factors, of PD.

Parkinson's disease is defined as a **complex, chronic, progressive neurodegenerative** illness, resulting from the slow loss of substantia nigral dopamine producing cells and other non-dopaminergic cells. The complexity arises from the fact that there is variability in disease progression, symptom presentation, and perhaps pathogenesis. Symptoms usually begin on one side of the body. Some of the common symptoms of PD are *tremor* of the hands, arms, legs or jaw; *rigidity or stiffness* of the limbs, neck and trunk; *bradykinesia or slowness of movement*; and *postural instability* or impaired balance and coordination. Table 1 below provides an excellent overview of the constellation of symptoms.

DIAGNOSIS: The diagnosis of PD is a **clinical diagnosis**, since there is no diagnostic test except in rare genetic presentations. The cardinal features include tremor, rigidity, bradykinesia, and postural instability. Diagnosis is considered when a patient has at least two of the first three cardinal features. Due to the absence of diagnostic tests to differentiate PD from other forms of parkinsonism, diagnosis may be a challenge. Table II below provides a guide to the differential diagnosis of PD.



Table 1 Parkinson's disease symptoms

Motor symptoms	Non-motor symptoms
Tremor, bradykinesia, rigidity, postural instability	Cognitive impairment, bradyphrenia, tip-of-the-tongue (word finding) phenomenon
Hypomimia, dysarthria, dysphagia, sialorrhea	Depression, apathy, anhedonia, fatigue, other behavioral and psychiatric problems
Decreased arm swing, shuffling gait, festination, difficulty arising from a chair, turning in bed	Sensory symptoms: anosmia, ageusia, pain (shoulder, back), paresthesias
Micrographia and slowed activities of daily living such as cutting food, feeding, dressing and hygiene	Dysautonomia (orthostatic hypotension, constipation, urinary and sexual dysfunction, abnormal sweating, seborrhoea), weight loss
Glabellar reflex, blepharospasm, dystonia, striatal deformity, scoliosis, camptocormia	Sleep disorders (REM behavioral disorder, vivid dreams, daytime drowsiness, sleep fragmentation, restless legs syndrome)



DIFFERENTIAL DIAGNOSIS OF PARKINSON'S DISEASE

Common Misdiagnoses	Distinguishing features
Essential tremor (ET)	Tremor (action/postural) is the only or predominant feature; no response to PD drugs
Progressive supranuclear palsy (PSP)	Supranuclear downgaze palsy; square-wave jerks; upright posture; pseudobulbar affect; early gait instability; dysphagia
Multiple system atrophy (MSA)	Autonomic disturbance, cerebellar signs, relative absence of tremor; early gait instability; dysphagia
Corticobasal degeneration (CBD)	Limb apraxia; cortical sensory abnormalities; coarse unilateral tremor; early dementia
Diffuse Lewy body dementia (LBD)	Early dementia; psychosis; agitation
Alzheimer's disease	Dementia is the primary symptom
Drug-induced parkinsonism	Exposure to dopamine-blocking drugs; lack of rest tremor and asymmetry
Vascular parkinsonism	History of chronic hypertension; stepwise progression (if any); unilateral; imaging

Other Disorders

- Wilson's disease
- Huntington's disease
- DRPLA
- SCA-3
- Metabolic disorder
- Structural lesion
- Hydrocephalus
- Infectious encephalitis

http://www.mdvu.org/library/disease/pd/par_dd.asp



PREVELANCE: PD impacts about 1 million persons in the U.S., with 50,000 - 60,000 individuals diagnosed each year, and this number does not reflect the thousands of cases that go undetected. There is a slightly higher incidence in men. PD is present in all races and socioeconomic groups, although there are disparities in diagnosis and treatment. Incidence of PD increases with age, but an estimated 5-10 percent of people with PD are diagnosed before the age of 50.

TREATMENT: The variability of the symptoms dictates that disease management be individualized. Ideally, a Parkinson-trained specialist (such as a neurologist or movement disorders specialist) would be consulted to deal with the complexity of the disease. Pharmacological treatment of PD is tailored to the individual, with consideration of age, general health and comorbidities. Current treatments provide symptomatic relief but do not alter the disease course. Dopamine agonists and other non-levodopa agents may be used prior to levodopa (Sinemet), which may be added later as the disease progresses. Early in the disease, medications adequately manage the symptoms. As the disease progresses, a combination of medications and dosing strategies provide the best symptom control. Ultimately, select patients are appropriate for deep brain stimulation surgery (DBS). Because of the complex nature of the disease, a comprehensive team approach to care is recommended for optimal management of this disease. Ideally, this could include services of a nurse, physical therapist, occupational therapist, speech-language pathologist, social worker, and/or other professionals (psychiatrists, dietitians, neuropsychologists, creative arts therapists, etc.). Alternative or complimentary therapies can also be helpful.

NPF designates Centers of Excellence which specialize in assessment and treatment of PD. NPF national and international Centers of Excellence can be found in a searchable database on the NPF website. www.parkinson.org/Centers



RESOURCES

National Parkinson Foundation
1501 N.W. 9th Avenue / Bob Hope Road
Miami, Florida 33136-1494
Toll free: 1-800-327-4545
www.parkinson.org

American Parkinson Disease Association (APDA)
135 Parkinson Ave.
Staten island, NY 10305
1-800-223-2732
<http://www.parkinsonsapda.org>

Parkinson's Disease Foundation (PDF)
1359 Broadway, Suite 1509
New York, NY 10018
1-800-457-6676
<http://www.pdf.org>

Michael J. Fox Foundation (MJFF)
Church Street Station
P.O. Box 780
New York, NY 10008
1-800-708-7644
<http://www.michaeljfox.org>

WE MOVE
<http://www.wemove.org>



LOCAL NPF CENTER OF EXCELLENCE (sample information below)

PARKINSON'S DISEASE CENTER
AND MOVEMENT DISORDERS CLINIC AT BAYLOR
6550 Fannin, Suite 1801
Houston, Texas 77030
www.bcm.edu/neurology/pdcmdc
www.jankovic.org
Phone:(713) 798-7438; Fax: (713) 798-6808

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