

# How can I be sure that I have Parkinson's disease?

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# Overview

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- Background
- Diagnostic Criteria
- Supportive tests
- Atypical features
- Mimicking disorders

# Parkinson's Disease

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- Originally described by James Parkinson in 1817
- "Essay on the Shaking Palsy"
  - Descriptions of 6 cases, three of whom he personally examined; three he observed on the streets of London
- Charcot later in the 19th century gave credit to Parkinson by referring to the disease as “maladie de Parkinson” or Parkinson's disease

# What is Parkinson's Disease (PD) ?

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- Progressive neurologic disorder of largely unknown cause that results in the loss of specific cells in your brain that produce a chemical called dopamine
- Dopamine - a messenger responsible for transmitting signals within the brain that allow for coordination of movement
- Loss of dopamine leaves patients less able to control their movement, rendering them slow, stiff and/or shaky

# How can I be sure I have PD?

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- The road to diagnosis can be quite arduous and prolonged
- There is no blood test or Xray for PD
- Definitive diagnosis
  - Pathological confirmation at autopsy
- In clinical practice, diagnosis is based on
  - Thorough history
  - Physical examination

# Questions you may be asked ...

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- Do you shake ?
- Slower in your usual activities?
- Hand writing smaller?
- Trouble buttoning buttons, tying shoe laces etc?
- Difficulty standing up from a chair?
- Don't swing your arms?
- Hunched over, walking "like an old man"?
- Voice quiet or soft?

# What are the signs and symptoms of PD?

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- Main Symptoms
  - Tremor (shaking)
    - » 80% of people with PD
  - Bradykinesia (slowness of movement)
    - » Facial expression, Finger taps
  - Rigidity (stiffness)
    - » Passively move limbs
  - Postural instability (difficulty with balance)
    - » Pull test
- If any 2 of these features are present, we can confidently say that you have parkinsonism

# Diagnostic criteria - UK Parkinson's Disease Society Brain Bank and the National Institute of Neurological Disorders and Stroke

- Bradykinesia + 1 other sign:
  - Shaking
  - Stiffness
  - Postural instability
- Possible
  - At least 2 features
  - Sustained response to levodopa
- Probable
  - At least 3 features
  - Sustained response to levodopa
- Definite
  - Pathologic confirmation
- Supportive features:
  - Symptoms start on one side of the body
  - Tremor at rest
  - Slow progression
  - Response to levodopa for at least five years
  - Dyskinesia

# How sure are we that you truly have PD?

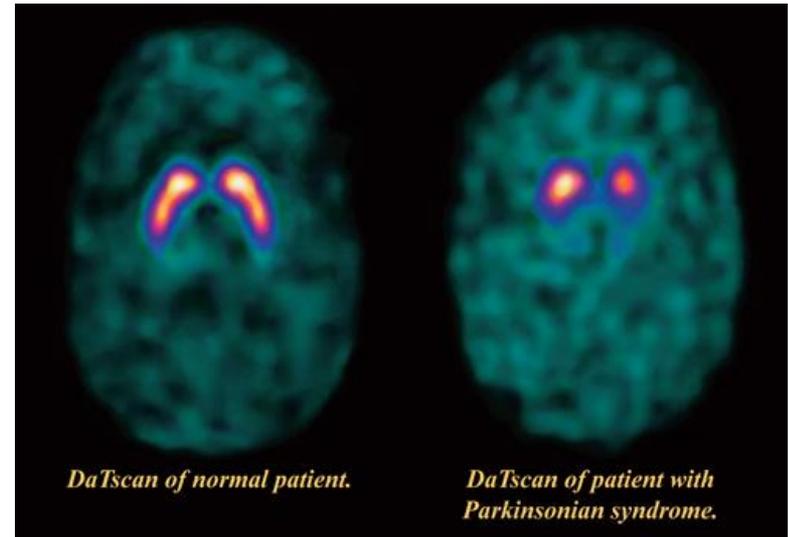
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- The rate of misdiagnosis can be relatively high, especially when the diagnosis is made by a non-specialist
- Using these criteria, specialist can make a diagnosis of PD with ~ 90% accuracy

# Are there any blood test or brain scans that can diagnose PD?

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- No
- Dopamine Transporter Scan (DaTscan)
  - Approved in 2011
  - Shows level of dopamine activity in the brain, which is lower among people with PD
- Confirms clinical suspicion of parkinsonism
- The difficult part is figuring out what is causing the parkinsonism



# What is the difference between parkinsonism and Parkinson's disease?

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- Parkinsonism
  - » At least 2 symptoms (tremor, rigidity, slowness, balance problems)
- The vast majority of patients (~85%) with parkinsonism have Parkinson's disease
- However, certain medications, vascular problems, and other neurodegenerative diseases can cause parkinsonism (Atypical parkinsonian disorders)



# When should an Atypical Parkinsonian Syndrome be suspected?

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- In patients with:
  - Rapid onset or progression
  - Poor response to medications (dopamine)
  - Early falls
  - Eye movement abnormalities
  - Early memory or behavioral changes (dementia)
  - Early autonomic dysfunction - postural hypotension, urinary and bowel incontinence



# What are the Atypical Parkinsonian Disorders ?

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- Previously known as Parkinson's plus syndromes
  - Progressive Supranuclear Palsy (PSP)
  - Corticobasal Degeneration (CBD)
  - Multiple System Atrophy (MSA)
  - Dementia with Lewy bodies (DLB)
  - Vascular Parkinsonism
- Differentiating between these disorders may be difficult as they share many clinical features of PD
- Early diagnosis is important because treatment and prognosis differ greatly from those with PD

# What are the Atypical Parkinsonian Disorders ?

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- **Progressive Supranuclear Palsy (PSP)**
- *Progressive* disease, causes weakness (*palsy*) by damaging certain parts of the brain above the nuclei that control eye movements (*supranuclear*)
- 1:100,000 people over the age of 60
- Symptoms include:
  - Loss of balance while walking
  - Unexplained falls
  - Personality and behavioral changes
  - Slurring of speech
  - Eye movement abnormalities
- Rapid progression (5-8 years), minimal response levodopa
- Supportive treatment: Speech and physical therapy; antidepressants

# What are the Atypical Parkinsonian Disorders ?

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- **Corticobasal Degeneration (CBD)**
- Progressive neurological disorder that results in loss of cells in the cerebral cortex and basal ganglia
- Symptoms:
  - Slowness, stiffness that starts on one side
  - Dystonia - Twisting/pulling of one limb
  - Myoclonus - Muscle jerking/twitching
  - Apraxia - Difficulty performing familiar movements with one limb despite being physically capable
- Rapid progression : 6-8 years; minimal response levodopa
- Supportive treatment: botulinum toxin (Botox) for dystonia, antidepressants, speech and physical therapy may be helpful

# What are the Atypical Parkinsonian Disorders ?

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- **Multiple System Atrophy (MSA)**
- Progressive neurological disease that affects mobility as well as the autonomic nervous system
- Symptoms include:
  - Slowness, stiffness on both sides of body
  - Poor balance
  - Difficulty with coordination, clumsiness
  - Autonomic dysfunction
    - » Blood pressure problems (orthostatic hypotension)
    - » Fainting spells
    - » Bladder control problems
- Rapid progression : 5-8 years; minimal response levodopa
- Supportive treatment: speech and physical therapy; Lightheadedness may improve with certain medications (fludrocortisone, midodrine)

# What are the Atypical Parkinsonian Disorders ?

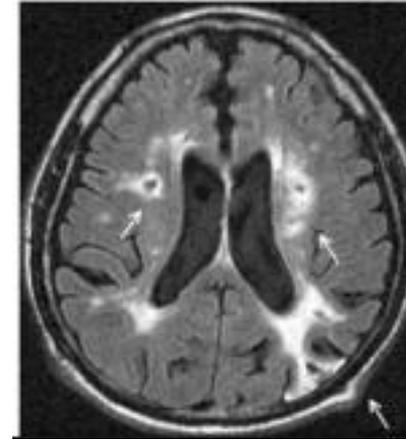
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- **Dementia with Lewy bodies (DLB)**
- Second most common form of dementia after Alzheimer's disease
- Symptoms:
  - Dementia + parkinsonism
  - Progressive intellectual and functional deterioration
  - Early hallucinations, confusion that fluctuates, problems with attention, problem solving, planning, the ability to produce and recognize figures)
- There are no known therapies to stop or slow the progression of DLB
- Certain medications (donepezil, rivastigmine patch) may be beneficial

# What are the Atypical Parkinsonian Disorders ?

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- **Vascular Parkinsonism**
- Parkinsonism caused by multiple small strokes
- MRI is indicated
  - Cannot make a definitive diagnosis but may support clinical suspicion
- Symptoms:
  - Stiffness and slowness primarily affects legs
  - Walking difficulty
  - “Lower half or lower body parkinsonism”
- No specific treatment
  - 10-30% may respond to levodopa
  - Reduce risk factors:
    - » High blood pressure, diabetes, heart disease, cholesterol problems, smoking etc



# What are the conditions that mimic PD?

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- Medication
- Essential Tremor
- Normal Pressure Hydrocephalus

# What are the conditions that mimic PD?

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- **Medications**
  - Any drug that blocks the action of dopamine is likely to cause parkinsonism
  - Drugs used to treat psychiatric disorders – neuroleptics (haldol, thorazine etc)
  - Anticonvulsants - valproic acid
  - Mood stabilizers - Lithium
  - Drugs to control nausea – Metoclopramide (Reglan), prochlorperazine (compazine)
- If parkinsonism is caused by one of these medications , symptoms should gradually disappear once the drug is stopped
- If symptoms persist, we may have “unmasked” underlying neurodegenerative PD

# What are the conditions that mimic PD?

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- **Essential Tremor (ET)**
  - Most common form of tremor
  - Different from the PD tremor
    - » Affects both hands, occurs primarily with action (when performing a task like writing or eating)
    - » Often involves head/neck and even voice
    - » Does NOT affect legs
  - Progressive disorder but tremor remains the only problem
  - Treatment: various medications (propranolol, primidone)

# What are the conditions that mimic PD?

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- **Normal Pressure Hydrocephalus (NPH)**
  - Cerebrospinal fluid inside the brain does not drain properly
  - Results in a trio of problems:
    - » Difficulty walking, slowed thinking, and loss of bladder control
  - Diagnosed by history, physical exam, MRI of brain, lumbar puncture (spinal tap)
  - The treatment involves surgery where a shunt is placed to help drain the excess fluid

# To sum it up....

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- PD is a clinical diagnosis
- There are many medications and other conditions that can mimic PD
- There are no blood tests or brain scans that can diagnose PD
- DATscan may be helpful in certain cases:
  - Parkinsonism from mimickers like ET, NPH, vascular or drug induced parkinsonism, or AD
- Specialists can make the correct diagnosis with ~90% accuracy
- Early diagnosis is important as there are many treatments available that can improve your quality of life

# Learn more about it....

