



Parkinson's Disease Facts

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It is estimated that 60,000 new cases of Parkinson's disease are diagnosed each year, adding to the estimated one to 1.5 million Americans who currently have the disease. There were nearly 17,000 Parkinson's disease-related deaths in 2002. While the condition usually develops after the age of 55, the disease may affect people in their 30s and 40s. Parkinson's disease is a progressive disorder that is caused by degeneration of nerve cells in the part of the brain called the substantia nigra, which controls movement. These nerve cells die or become impaired, losing the ability to produce an important chemical called dopamine.

Causes

The cause of Parkinson's disease essentially remains unknown. However, theories involving oxidative damage, environmental toxins, genetic factors, and accelerated aging have been discussed as potential causes for the disease. In 2005, researchers discovered a single mutation in a Parkinson's disease gene (first identified in 1997), which is believed responsible for 5 percent of inherited cases.

Common Symptoms

- Tremor, or the involuntary and rhythmic movements of the hands, arms, legs and jaw
- Muscle rigidity, or stiffness of the limbs – most common in the arms, shoulders or neck
- Gradual loss of spontaneous movement, which often leads to decreased mental skill or reaction time, voice changes, decreased facial expression, etc.
- Gradual loss of automatic movement, which may lead to decreased blinking, decreased frequency of swallowing, and drooling
- A stooped, flexed posture with bending at the elbows, knees and hips
- Unsteady walk or balance
- Depression or dementia

Diagnosis

- There is no x-ray or blood test that can confirm the disease. However, non-invasive diagnostic imaging, such as positron emission tomography (PET) can support the physician's diagnosis. Conventional methods for diagnosis include:
- The presence of two of the three primary symptoms

- The absence of other neurological signs upon examination
- No history of other possible causes of Parkinsonism, such as the use of tranquilizer drugs, head trauma or stroke
- Responsiveness to Parkinson's medications, such as Levodopa

Treatment

Most Parkinson's patients are treated with medications to relieve the symptoms of the disease. Some common medications are:

- Dopamine precursors, such as Levodopa, are substances that are converted into dopamine by an enzyme in the brain
- Dopamine agonists activate dopamine receptors directly
- Anticholinergics act to decrease the activity of the neurotransmitter acetylcholine

Surgery

Neurosurgeons can relieve the involuntary movements of conditions like Parkinson's by operating on the deep brain structures involved in motion control. **Deep Brain Stimulation** of the subthalamic nucleus or globus pallidus can be effective in treating all of the primary motor features of Parkinson's and sometimes allows for significant decreases in medication doses.

Thalamotomy can help stop tremor by placing a small lesion in a specific nucleus of the thalamus.

The benefits of surgery should always be weighed carefully against its risks, taking into consideration the patient's symptoms and overall health.

For more detailed information, visit www.NeurosurgeryToday.org.