A Primer on Parkinson's

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Did you know...

10% to 20% of those with Parkinson's disease will experience dementia in later stages of the disease.

Point #1

Parkinson's disease is estimated to affect 1% of the population over age 65. A small percentage of cases may begin in the early forties or younger.

F.Y.I.

70% of those with Parkinson's disease will experience tremor symptoms as the initial manifestation.

Point #2

The cardinal features of idiopathic Parkinson's disease are as follows:

- Bradykinesia: Slow movements, reduced blinking and facial expression, reduced arm swing and slow walking.
- Rigidity: Increased tone manifested by stiffness (cogwheeling) in the limbs that is elicited as the examiner passively moves them.
- Tremor: A resting tremor at a rate of 3 Hz to 5 Hz.

Any other symptoms?

- Small writing (micrographia)
- Excessive sweating
- Bowel and bladder dysfunction
- Depression

Point #3

Atypical varieties of Parkinsonism also exist. They include:

- Progressive supranuclear palsy (Parkinsonism associated with impairment of vertical gaze) and
- multiple system atrophy (features include ataxia and/or autonomic dysfunction, such as postural hypotension).

Parkinsonism fact:

Atypical varieties of the disease have a more aggressive course and are less responsive to treatment.

Parkinson's disease

In Point Form

Diagnosis tip

When Parkinson's begins in the young (before age 45), tests for Wilson's disease–a disorder of copper metabolism–should be performed.

Point #4

The diagnosis of Parkinson's disease is based on clinical criteria. The symptoms usually begin unilaterally and progress asymmetrically. The atypical varieties of the disease can usually be ruled out on clinical grounds, although it may be several years before the atypical features become evident.

Parkinson's pathology

1. Symptoms emerge when approximately 80% of the dopamine-containing cells in the substantia nigra have been lost. These are cells that project to the striatum.
2. There is a characteristic pathologic appearance in the remaining dopamine-containing cells in the substantia nigra, called a Lewy body (eosinophilic cytoplasmic inclusion).

Parkinson's pathophysiology

Extrinsic factors

- Aging
- Drug use (intravenous drug abusers exposed to "designer heroine" and narcotics)
- Exposure to well water in rural communities in Western Canada
- Herbicide rotenone

Intrinsic factors

- Metabolism of dopamine produces hydrogen peroxide, which can produce free radicals, such as the hydroxyl radical. Free radicals are toxic to cell membranes.
- A very small percentage of patients with Parkinson's have a genetic form.

Point #5

Neuroprotective treatment involves selegiline. This likely has both a neuroprotective and a small symptomatic effect. It delays the need for other symptomatic therapy by approximately one year, however, the degree to which this has a neuroprotective effect is controversial.

Prescription tidbits

The standard dose of selegiline is 5 mg, once or twice a day, taken at breakfast and lunch. It is usually well-tolerated, but causes initial insomnia and can potentiate similar side-effects as levedopa (*i.e.,* gastrointestinal upset, postural hypotension, *etc.*).

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Fact box: Levodopa side-effects

Levedopa (L-dopa) side-effects include gastrointestinal upset, postural hypotension and dyskinesias (excessive involuntary movements).

Point #6

Symptomatic therapy for Parkinson's disease includes:

- anticholinergic drugs (most useful in a young person when tremor is a predominant feature);
- amantadine (useful for all symptoms of mild Parkinson's disease);
- levodopa (L-dopa) with dopa decarboxylase inhibitor (used in moderate to advanced disease);
- catechol-O-methyltransferase inhibitor (helpful for wearing-off phenomenon) and
- dopamine agonsists (often used in combination with L-dopa).

Other treatment methods

- General exercise, physiotherapy and speech therapy
- Lowering/shifting dietary protein intake (for advanced disease)
- Surgical procedures, such as pallidotomy or deep-brain stimulation.

Point #7

As the disease progresses, common problems include:

- wearing-off phenomena, in which the effect of L-dopa does not last until the next dose is due and
- peak-dose dyskinesias in which involuntary movements occur when medication effect is at its peak.

Treating the problems

These fluctuatuons associated with the progression of Parkinson's commonly coexist and treatment strategies often include smaller, more frequent doses of L-dopa and the introduction of dopamine agonsists.

Point #8

Parkinson's disease is a gradually progressive disease, eventually resulting in severe impairment of social and occupational functioning. In the later stages, the ability to participate in the activities of daily life are significantly affected.

Life expectancy

Life expectancy is somewhat shortened; however, since Parkinson's is usually a disease in older people, most patients die of other causes.

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