

Parkinsonism

By Ruth Werner, LMP, NCTMB

Author's note: There is a movement in the health sciences away from using the possessive form of a disease name. This makes some sense, since it's not really Parkinson's disease; it's the disease of those who live with it.

Sometimes this change takes the form of turning a descriptive term into a noun (e.g., from Parkinson's to parkinsonism) and sometimes the apostrophe simply disappears (e.g., Alzheimer disease). Since my column "What's on Your Table" always strives to stay on the cutting edge of both grammar and science, I will do my best to incorporate this new adjustment to the language.

Dear Readers:

The consensus is clear: Parkinson's disease, also called parkinsonism, is the issue on the table for today. Parkinsonism is a fairly common progressive degenerative central nervous system (CNS) disorder that leads to dysfunction at the motor centers in the basal ganglia. It affects about one in 1,000 people in the U.S., and the majority of people with parkinsonism are mature. It is unusual to see diagnoses in persons under 50 years of age - Michael J. Fox is a famous exception to this rule.

Etiology: What happens? Understanding the etiology of this disorder is a little like playing "The House that Jack Built" because the sequence of events is so specific and predictable.

- Voluntary muscle contraction is initiated in the cerebral cortex of the brain, and the impulse travels through the basal ganglia on its way to motor neurons leaving the spinal cord.
- The basal ganglia are pockets of gray matter embedded deep in the cerebrum. When the basal ganglia are healthy, they work with other areas of the brain to help provide voluntary motor control, and a smooth and graceful relationship between prime mover and antagonist muscle activity.

- The neurotransmitter dopamine is important to the function of the basal ganglia. It is important to note that while dopamine in the basal ganglia helps to provide smooth voluntary muscle action, dopamine in other parts of the brain creates many different responses, including the activation of pleasure centers, or the creation of psychotic symptoms.
- The dopamine that stimulates the basal ganglia is manufactured in nearby cells called the substantia nigra (this is Latin for "black stuff").

So the sequence goes like this: A voluntary impulse to stand on one foot begins in the cerebral cortex. It is sent through the basal ganglia where, because adequate dopamine is supplied by substantia nigra cells, this impulse travels to the prime movers and antagonists of the lower extremity and postural muscles in order to bend the knee (go ahead, try it).

Parkinsonism occurs when the cells in the substantia nigra unexpectedly and prematurely die. Consequently, dopamine is in short supply in the basal ganglia; it becomes difficult to initiate voluntary movement (this is called bradykinesia - the person often reports feeling "rooted to the floor"), and/or the balance between prime movers and antagonists is disrupted, leading to rigidity or tremor. Several other symptoms may develop as well; they will be discussed shortly.

Causes: Most of the time, it is unclear exactly why the substantia nigra cells die off. Genetics and environmental exposure (or the combination of both) are often thought to be contributing factors. Excessive exposure to carbon monoxide, heavy metals, pesticides or agricultural chemicals is sometimes suspected. Repeated head trauma causes a variation called pugilistic parkinsonism; this is the case with former boxer Muhammad Ali. Most cases of parkinsonism, however, are considered to be idiopathic (of unknown origin).

Signs and Symptoms: Parkinsonism presents very differently in different people, but most primary symptoms have to do with movement problems. A short list of primary and secondary symptoms includes the following:

- Aches, weakness, and fatigue. It is easy to miss this early sign, since most parkinsonism patients are mature or even elderly at the onset.
- Resting tremor. This is present in about 75 percent of all Parkinson's patients and is often one of the first noticeable symptoms. It may affect the hand, foot, head and neck.
- Bradykinesia. This is difficulty in initiating or sustaining movement.
- Rigidity. Gradually the muscles, particularly the flexor muscles, become permanently hypertonic. This

can give rise to a characteristically stooped posture. Rigidity can cause a particular "mask-like" appearance to the face as the facial muscles lose flexibility and ease of movement. It's important to point out that the rigidity that accompanies Parkinson's is not the same thing as spasticity, which implies a different kind of nerve damage. Rigidity indicates massage (with caution), while spasticity, which often accompanies numbness, must be more carefully approached.

- Poor postural reflexes. Disruption in the activity of basal ganglia cells results in uncoordinated movement and poor balance. Parkinson's patients are particularly susceptible to falling.
- Others. Parkinsonism patients may also experience changes in gait, speech and handwriting as the relationship between flexors and extensors becomes distorted, and flexors become hypertonic. Sleep disturbance becomes a major issue for many patients, along with depression and mental degeneration. (It is unclear, however, whether this is due to the disease or to the medications used to treat it.)

Treatment: Chemical imbalances in the CNS are often difficult to treat because the blood-brain barrier (a layer of cells that wrap around blood vessels in the brain) blocks the introduction of many substances into this precious environment. Some drugs must be administered in high amounts to overcome this obstacle.

Treatment for parkinsonism often begins with a dopamine precursor, or dopamine agonists. These substances essentially try to replace what the damaged substantia nigra cells should be producing; however, remember that dopamine in the basal ganglia helps create coordinated movement, but too much dopamine in the frontal lobe can cause hallucinations - a significant side-effect! Furthermore, most patients eventually develop tolerance to these drugs, and they lose their efficacy.

Other drugs work to change dopamine metabolism and other brain activity, but at this time no permanent solution or cure for parkinsonism exists. Other options include surgery to affect the globus pallidus or thalamus (this helps to control very extreme tremor), deep-brain stimulation, and eventually the possibility of stem cell implantation with the goal of re-growing the damaged substantia nigra cells.

Massage? Parkinson's patients experience progressive stiffness and rigidity of voluntary muscles. Rigidity is safe for massage, especially when sensation is present, but it is important to remember that this comes about because of a CNS dysfunction, and won't be completely resolved, even with the most brilliantly applied bodywork.

Several different modalities have been quantifiably researched in the context of parkinsonism, including Trager, Alexander Technique and Swedish massage with specific muscle exercises. All modalities report improvement in function, from the reduction of rigidity and improvement of sleep, to the reduction of tremor and increase of daily activity stamina.

It is important to work in cooperation with a client's primary physician, because massage may impact the need for antidepressants and other medication. Be aware, however, that clients with Parkinson's disease do not have the freedom of movement that most other people do, and they may have great difficulty in getting on and off tables safely. Some massage therapists address this by working with these clients on chairs or floor mats.

On a final note, I'd like to recognize two people for their contributions to my preparation of this article. One is a reader named David Ponsonby, who has done an enormous amount of research on this topic and generously shared his information - this article barely scratches the surface of what he has collected on this topic. David has allowed me to put interested readers in touch with him for more information.

The other person is a massage therapist named Jan Mueller who, years ago, published a fascinating and lovely article on working with clients who have Parkinson's disease in the *Massage Therapy Journal* [Winter 1996, (35): 1]. I made mention of her wonderful work at a class I taught in Kentucky one time, and it turned out by chance that she was one of the participants! Thanks, Jan, for your pioneering work.

And now, loyal readers, a familiar plea: What will it be for next time? At the moment I'm on a progressive degenerative CNS disorder roll, and could easily continue with amyotrophic lateral sclerosis (a.k.a., Lou Gehrig's disease). If you have experience with clients who live with this disease, I invite you to share your wisdom with the rest of our readership. If you have other ideas about what you'd like to read about, let me know that, too. Please let me know: *What's on your table?*

Many thanks and many blessings,

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