Parkinson's Disease

Parkinson's disease - a progressive disorder of the nervous system that affects movement.

The most common perception of Parkinson's is the patient having “tremors”.

Hands shaking, inability to hold something small, or unable to feed themselves without making a mess.

These symptoms come on slowly, over years, often starting as a barely noticeable tremor in one hand or the other.

However, one of the lesser known symptoms is “freezing” or slowing down of movement.

Family may notice that the patients face shows little or no expression or that the arms may not swing when they walk.

Speech can become soft and mumbling as control of the muscles used in speaking are affected.
A form of tremor called “pill rolling” where the patient will rub the thumb and forefinger back and forth is common.

However it is not a prerequisite for having the disease. It’s just the most talked about symptom.

Other symptoms can be
- Rigid muscles.
- Impaired posture – giving the patient a stooped appearance.
- Balance problems.
- Speech problems.

- Loss of automatic movements
- Dementia
- Slowed movements (bradykinesia). This can make the simplest movements difficult and time consuming.

The causes are not clear, but there is evidence of links between genetics and environmental issues.

Researchers have found specific genetic mutations that likely play a role in Parkinson's disease.

Scientists suspect that many more changes in genes — whether inherited or caused by an environmental exposure — may be responsible for Parkinson's disease.

Scientists also think exposure to toxins or maybe even a virus may trigger Parkinson’s disease.
There are changes found in the brains of Parkinson’s patients. However these changes are not proven to be a cause of the disease.

They are:

- A lack of dopamine – Many symptoms of Parkinson's disease result from the lack dopamine, a chemical messenger in the brain.

- Dopamine has many functions in the brain, including important roles in behavior and cognition, voluntary movement, motivation, punishment and reward.

This occurs when the specific brain cells that produce dopamine die or become impaired.

Why and exactly how this happens isn't known.

- Low norepinephrine levels - Norepinephrine plays a role in regulating the autonomic nervous system, which controls automatic functions, such as blood pressure regulation.

Patients with Parkinson's have damage to the nerve endings that make norepinephrine. It’s another important chemical messenger.

Lewy Bodies – The presence of Lewy bodies in the brain.

These are protein clumps found in the brains of many Parkinson’s patients.
Risk Factors

Age – Parkinson’s Disease is normally seen in middle age people or later in life.

Genetics – Having a near relative (mother, father, sister, brother) who has Parkinson’s increases your risk of having the disease but no more than 4% to 6%.

Sex – men are more at risk than women.

Toxins – exposure to certain toxins, especially some herbicides and pesticides puts you at a slightly increased risk of Parkinson’s.

Agent Orange has been linked to Parkinson’s.

Other problems

Depression – the difficulties in living with Parkinson’s make depression common. The disease makes mobility and interaction with the world very difficult on a constant basis.

Sleep disturbance – Parkinson’s patients often have difficulty sleeping. They have problems falling asleep and waking up frequently.
Sometimes they experience “sleep attacks” where they suddenly get sleepy during the day.

In later stages of the disease, eating and swallowing may be difficult because the muscles used are affected.

Parkinson’s can cause urinary incontinence or urinary retention.

Sometimes the medications used to treat Parkinson’s can interfere with urinary function.

The medications for Parkinson’s can also cause constipation.

As most of the people with this disease are older and have problems with this already, so the medications compound this.

Since the muscles of the body are affected by Parkinson’s, those controlling the vascular system are also messed with.

This can cause a drop in blood pressure, especially when standing up (orthostatic hypotension). The medic should be prepared for this.

Diagnosis

There is no definitive test to be able to diagnose Parkinson’s
Diagnosis is based, like many other diseases, on the presence of symptoms. This makes diagnosis hard, especially in the earlier stages of the disease.

Parkinsonism is the term for the set of symptoms that Parkinson’s typically presents with. It is also caused by other neurological disorders like toxins, head trauma, or some medications producing parkinsonism.

Therefore the diagnosis is made by looking at medical history (family Hx, toxins, sex, etc.) coupled with a neurological exam. A diagnosis of Parkinson’s may be made:

If the patient has two of the three cardinal symptoms of Parkinson’s

- Tremors
- Muscle rigidity
- Slowing of motion

Coupled with…
Onset of symptoms on only one side of the body

And…

Tremors more pronounced such as when the patient's hands are at rest in their lap.

And…

A marked improvement in symptoms with the drug Levodopa.

Treatments

Treatments can involve multiple drugs, physical therapy, mental wellness support, and surgery

Drugs typically used to treat Parkinson's:

The most effective drug is Levodopa, always combined with another drug, usually Carbidopa. This combination is called Sinemet.

Levodopa is converted quickly into dopamine within the body. Carbidopa prevents Levodopa from being converted to dopamine outside the brain, allowing it to work where it is needed.
This also prevents nausea typically associated with the use of Levodopa.

As the patient uses this combination for a long time its efficacy can wax and wane, causing the need to adjust the dosage.

Another side affect of Levodopa/Carbidopa is dyskinesia.

This is tremors and writhing movements of the body and limbs but is also seen in the face and mouth in the form of 'tongue rolling'. It may also involve involuntary lip smacking, repetitive pouting of the lips and tongue protrusions.

Late onset dyskinesia is called ‘tardive dyskinesia’.

Dopamine agonists can be used to not replace, but mimic the effects of dopamine. These can be used to “smooth out” the waxing and waning effects of Sinemet.

Examples are Pramipexole (Mirapex) and ropinirole (Requip).

MAO B inhibitors can be used to help reduce the breakdown of naturally occurring dopamine as well as that produced with the Sinemet and that increases the amount of dopamine available.

Examples of this are Selegiline (Eldepryl) and Rasagiline (Azilect).

- Anticholinergics have been used for many years to help control the tremors associated with Parkinson's disease.
  - A number of anticholinergic drugs, such as benztrapine (Cogentin) and trihexyphenidyl, are available.
  - However, their modest benefits are often offset by side effects such as impaired memory, confusion, constipation, dry mouth and eyes, and impaired urination.
- Glutamate (NMDA) blocking drugs may be prescribed such as amantadine (Symmetrel) to provide short-term relief of mild, early-stage Parkinson's disease.
- It also may be added to carbidopa-levodopa therapy for people in the later stages of Parkinson's disease, especially if they have problems with involuntary movements (dyskinesia) induced by carbidopa-levodopa.
- Side effects include a purple mottling of the skin and, sometimes, hallucinations.
Physical therapy does not stop the symptoms but does help keep the muscles mobile and toned.

Surgery – deep brain stimulation can be used in late stage patients to help control the tremors.

It works well and is relatively safe, but does have some potential and obvious problems (infection, blood clots, etc.).

Deep brain stimulation involves implanting an electrode deep within your brain. The amount of stimulation delivered by the electrode is controlled by a pacemaker-like device placed under the skin in your chest. A wire that travels under your skin connects the device to the electrode.

The best medicine for the medic is to understand the medications and their possible side effects, and to understand that this disease process is a long suffering one for the patient.

When you are called to the home of a patient with Parkinson’s your best treatment is patience and understanding.

Most of the problems you will be called for are side effects such as

- Falls
- Lowered B/P
- Mental confusion
- Dyskinesia (a frightening thing when the family sees it for the first time).
- Transports
Just remember:

Patience and understanding

Questions?