

PARKINSON'S DISEASE

By Patricia Aitchison RMT, SMTO

Parkinson's - The statistics

- 1 in 500 people in Britain have been diagnosed with Parkinson's (currently 120,000 people)
- 1 in 100 people over 65 have Parkinson's
 - 10,000 new sufferers are diagnosed each year.
 - For every 1 person diagnosed there are 20 undetected [1]
- Almost everyone would develop Parkinson's if they lived long enough [2]

Parkinson's disease also referred to, as **Primary Parkinsonism** or **Idiopathic Parkinson's Disease** is the most common form of Parkinsonism, which is a chronic, progressive neurological disorder for which at present there is no cure.

It was first described in a paper published in 1817 by the British physician James Parkinson (1755-1824) who named it "paralysis agitans" the "*shaking palsy*." but it has probably existed for many thousands of years. Its symptoms and potential therapies were mentioned in the Ayurveda, the system of medicine practiced in India as early as 5000 BC, and in the first Chinese medical text, Nei Jing, which appeared 2500 years ago.

It wasn't until the early 1960s, that researchers were able to identify the fundamental brain defect that is a hallmark of the disease. Parkinson's is caused by the degeneration of neurons (nerve cells) in a specific part of the brain known as the substantia nigra, which is situated in the basal ganglia. Normally, these neurons produce the chemical messenger Dopamine. Dopamine is responsible for transmitting signals between the substantia nigra and the next "relay station" of the brain, the *corpus striatum*, to produce smooth, purposeful muscle activity. If there is a shortage of Dopamine, the balance between the other neurotransmitters is lost and this produces a relative excess, notably of acetylcholine. The maintenance of smooth movement and balance relies on dopamine and acetylcholine being in balance. Once this delicate balance is lost, and this happens when 60%-80% of the dopamine neurones have died, the symptoms of Parkinson's become evident.

Studies have shown that Parkinson's patients have suffered a loss of at least 80% of dopamine-producing cells in the substantia nigra. [3]

Why this degeneration occurs is not yet known, however various theory exist including: -

- An excess of free radicals may contribute to nerve cell death thereby leading to Parkinson's disease.[4]
- Exposures to either an external or an internal toxin such as carbon monoxide poisoning, pesticides [5], which may selectively destroy dopamine producing, cells and cause Parkinson's disease.
- Genetic predisposition. Less than one per cent of all cases are thought to have a genetic component
- Unexplained acceleration in the normal age-related wearing away of dopamine-producing neurons in certain individuals.
- As a result of head injuries. Repetitive head injuries which cause the 'punch drunk' syndrome can damage the blood supply to the basal ganglia which causes damage, producing Parkinsonism
- Neurotoxic event that occurred at an early age - Recent research carried out in Iceland, which has a very high incidence of Parkinson's disease, has shown that children born during or after a whooping cough epidemic are particularly vulnerable to Parkinson's disease in later life [6]
- A combination of the above.

Who gets Parkinson's?

Parkinson's affects slightly more men than women and also seems to be more widespread in northern countries. Age is a factor in development of the disease and the average age of onset is 60. However, early onset Parkinson's does occur and it is estimated that 5-10% of patients are under the age of 40.

Early Symptoms of Parkinson's

The initial symptoms of Parkinson's disease are very subtle and begin gradually.

- Tiredness
- A little shaky or difficulty getting out of a chair.
- Speaking too softly
- Cramped or spidery handwriting
- Irritability or depression for no apparent reason.
- "Masked face" - lacking expression and animation
- Not moving an arm or leg normally - similar to having experienced a mild stroke.
- Stiff, unsteady, and unusually slow.

These symptoms may be experienced for some time before the more noticeable symptoms of shaking and tremors occur. For most patients, tremor is usually the symptom that causes them to seek medical help.

Symptoms of Parkinson's

"No two individuals are affected in the same way".

In some people the disease progresses quickly. However, many patients are only mildly affected and need no treatment for several years after the initial diagnosis is made. Whilst some people become severely disabled others experience only minor motor disruptions. Tremor can also affect some people worse than others.

The 4 classic and most common symptoms are: -

- **Tremor.** Around 70 % of people diagnosed have a tremor. Tremoring usually begins in the hands and in the early stages of the disease the tremors usually only affect one side or part of the body. The characteristic Parkinson tremor is a rhythmic back-and-forth motion of the thumb and forefinger- sometimes called "pill rolling." Tremors are worse when the person is under stress or at rest and will usually decrease or disappear when the affected part of the body is being used.
- **Stiffness (rigidity).** Stiffness in the muscles is a common early sign. The muscles remain constantly tensed and contracted so that the person aches or feels stiff or weak. Passive movements of limbs will result in ratchet-like or short, jerky movements known as "cogwheel" rigidity.
- **Slowness of movement (bradykinesia).** The slowing down and loss of spontaneous and automatic movement, is particularly frustrating because it is unpredictable. One moment the patient can move easily, the next moment he or she may need help. This may well be the most disabling and distressing symptom of the disease because the patient cannot rapidly perform routine movements,
- **Postural instability.** Impaired balance and coordination, causes patients to develop a forward stoop with the head bowed and shoulders drooped or backward lean. When bumped from the front or when starting to walk, patients with a backward lean have a tendency to step backwards, which is known as *retropulsion*. As the disease progresses, walking may be affected and patients may fall easily. Patients may halt in mid-stride and "freeze" in place, possibly even toppling over. Patients may also walk with a series of quick, small steps as if hurrying forward to keep balance. This is known as *festination*.

"Parkinsonism is the term used to describe the symptoms of Parkinson's. If Parkinsonism is due to the depletion of dopamine then it is idiopathic Parkinson's. If the symptoms are drug induced or caused by degeneration of other parts of the basal ganglia or by multi-infarct strokes etc, then the term Parkinsonism is used"

Other symptoms, which can accompany Parkinson's disease.

- **Depression.**
- **Emotional changes.** Lack of motivation, insecurity, memory loss.
- **Difficulty in swallowing and chewing** affects a minority of people.
- **Speech changes.** 50% of people have speech problems including: - speaking softly, slurring, monotone.
- **Urinary problems or constipation.** Incontinence, problems urinating and bowel problems can occur due to the improper functioning of the autonomic nervous system, which is responsible for regulating smooth muscle activity.
- **Skin problems.** It is common for the skin on the face and the scalp to become very oily. In some people the skin can become very dry. Excessive sweating is another symptom. These problems are also the result of an improperly functioning autonomic nervous system.
- **Sleep problems.** Including restlessness, nightmares, insomnia, and daytime drowsiness.
- **Loss of smell**
- **Pain** particularly occurring at night in conjunction with leg or arm cramps
- **Postural hypo tension,** dizziness when getting up.

Diagnosing Parkinson's

At present there is no test available to accurately diagnose Parkinson's especially in the early stages. A neurologist can evaluate symptoms and their severity and if Parkinson's is suspected anti-Parkinson's drugs may be prescribed to see if the patient responds. Tests, such as brain scans, can help doctors decide if a patient has true Parkinson's disease or some other disorder that resembles it. Microscopic brain structures called Lewy bodies, which can be seen only during an autopsy, are regarded as a hallmark of classical Parkinson's

How is the Disease Treated?

At present, there is no cure for Parkinson's disease. Treating Parkinson's disease with surgery was once common practice. But after the discovery and development of the drug levodopa (supplied under the trade names of Sinemet and Madopar) in the 1960's, surgery is now restricted to only a few sufferers who have severe tremor and have failed to respond satisfactorily to Levodopa or other drugs that affect dopamine levels in the brain. For most people a combination of drugs will be prescribed to alleviate the particular symptoms being experienced. However, it can take time and perseverance to find the right dosage for the patient and the symptoms may not be completely alleviated.

"Speech and language therapy, occupational therapy, physiotherapy and complimentary therapies including massage all have an important part to play in helping people with Parkinson's reach their full potential"[7]

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Massage and Parkinson's

"The benefits of massage therapy have long been recognized by many patients with Parkinson's Disease. In addition to alleviating some degree of joint and muscle stiffness, patients may also experience significant stress reduction" [8]

Receiving massage on a regular basis can be helpful for muscle rigidity and stiffness. Increasing stiffness and tremors lead to muscle exhaustion, which over time can result in permanent musculoskeletal changes. Massage when combined with passive and resisted moves can improve the circulation and nutrition of the joints by stimulating the production of synovial fluid, thus challenging the rigidity and stiffness of Parkinson's. Reducing muscle tension, increasing joint range of motion and flexibility will encourage more normal movement for the Parkinson sufferer. Manipulation therapies and advanced remedial techniques will also help improve musculoskeletal imbalances.

"Therapies which are used for relaxation have been found to be particularly helpful as stress intensifies the symptoms of Parkinson's." [9]

Massage activates the parasympathetic division of the autonomic nervous system can play a critical role in reducing levels of anxiety and calming the nervous system. Recipients of regular massage can experience sleeping improvement, more regular bowel movements, larger handwriting, and an increased effectiveness in medications. [10]

Stress aggravates Parkinson's disease and relaxation therapy has been found useful in the treatment of the disease. A well thought-out program of rest, exercise, and physiotherapy can also help reduce the symptoms of Parkinson's disease. [11]

The Parkinson's Disease Society recently set up an "Adjunct Therapies" working group looking at complementary therapies and Parkinson's in particular, aromatherapy, the Alexander Technique, etc. A survey of members who have tried complementary therapies reported that over 150 of the 800 respondents had tried aromatherapy massage. Of these: -

41% of aromatherapy clients found aromatherapy of extreme or considerable benefit in treating the symptoms of Parkinson's. [12]

15% found it of no benefit. Those who found aromatherapy massage beneficial said that it brought relaxation and stress relief and some people reported that it helped with the alleviation of pain. It was found to be particularly popular with individuals who were more severely affected by Parkinson's and were unable to exercise. The movements of massage provide an "artificial exercise" for these patients.

"Massage gives me back my legs... it's the only thing that really works". [13]

Working with a Parkinson's patient requires patience, sensitivity, understanding and inventiveness, for example:-

- they may need help with dressing/undressing
- warmed towels and extra pillows below the knees and ankles are often needed to allow the tight leg muscles to relax
- gentle rocking movements over the hamstrings for example help to alleviate entrenched muscle spasms
- I have also found resisted isometric stretches to be particularly useful once the muscles have warmed up and softened. However it is worth pointing out that patience is required when using the contact/relax techniques and I would also avoid using the terminology "relax" as an inability to do so on demand can be very frustrating for a Parkinson's patient
- problems with speech means that you have to listen very carefully to avoid asking them to continually repeat themselves and adding to their frustration

Living with a chronic and progressively debilitating condition can lead to feelings of, depression, frustration, anger, fear and social isolation and having someone to talk to is just as important as the massage itself. Building trust between you and your client and making the time to listen to them can and does help you client living with Parkinson's.

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Diet

Eating a well-balanced, nutritious diet can be beneficial for anybody. Some studies suggest that antioxidants can slow down the progression of existing Parkinson's disease. A 1991 pilot study carried out by Dr. Stanley Fahn of Columbia University found that the progression of Parkinson's was delayed by giving patients large doses of antioxidants in the form of vitamins C and E supplements [14]. However other studies dispute the findings and suggest that there does not seem to be any specific vitamin, mineral, or other nutrient that has any therapeutic value for preventing or curing Parkinson's disease [15]. It is generally accepted that a high protein diet may limit levodopa's effectiveness. [16]

Exercise

"I reached the conclusion that it was all to do with muscles.... If they were weak and stiff they could be exercised to overcome the problems...I am fitter, stronger and happier than for many years. Once again I control my life. [17]

Because movements are affected in Parkinson's disease, exercising may help people improve their mobility. Exercises which are aimed at improving the muscle tone and strength and joint mobility will not stop the disease progression, but they may improve posture, balance, mobility and body strength so that the person is less disabled. Exercises can also improve the emotional well being of Parkinsonians patients by giving them a feeling of accomplishment. Keeping active and mobile by walking, cycling, dancing, bowls, gardening, swimming etc. is also recommended.

"Many Parkinsonians have stiff and painful muscles..... exercise can help enormously but massage can also help".[18]

Current medical research includes: -

Pallidotomy - surgical procedure that aims to lessen tremor, rigidity, and bradykinesia, by interrupting the neural pathways.

Nerve cell transplants (neural grafting) – 1994 saw the start of a controlled clinic trial whereby foetal brain tissue from the substantia nigra was implanted into Parkinson patients. This treatment aims to replace the lost or damaged dopamine-producing neurons with healthy, foetal

neurons.

Implantable pumps that give a continuous supply of levodopa to help patients who have problems with fluctuating levels of response.

Implanting capsules containing dopamine-producing cells into the brain that lets the drug pass through at a timed rate.

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Glossary

Acetylcholine	a chemical substance released from nerve endings to activate muscle and secretory glands
Basal ganglia	the large grey masses beneath the cerebral cortex, concerned with the programming of normal movements
Bradykinesia	slowness of voluntary body movements
Cog wheel	a term used to describe the type of intermittent resistance to movement found in Parkinson's.
Dopamine	a chemical messenger produced by cells in the substantia nigra. Its function is to pass messages from the brain to other parts of the body, particularly to those involved in the co-ordination of movement
Idiopathic	a word used before the name of an illness or medical condition, which means that its cause is not known
Lewy body	an abnormal microscopic structure seen in the brains of people with Parkinson's.
Neurotransmitter	a chemical messenger used to convey nervous messages to parts of the body
Rigidity	the name given to the special type of stiffness which is one of the main symptoms of Parkinson's. The muscles tend to pull against each other instead of working smoothly together. This is due to a failure of reciprocal relaxation of the antagonist muscles.
Substantia Nigra	a part of the brain which co-ordinates movement and contains cells which makes dopamine.
Tremor	involuntary shaking, trembling or quivering movements of the muscles which can affect any part of the body, although most commonly the hands and arms. It is caused by the muscles alternatively contracting and relaxing at a rapid rate and lessens with voluntary movement.

[References available on page 28]

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