A Scientific Examination of the Motor Disorder:

A scientific examination of the motor disorder: Parkinson's disease.

In this essay an attempt will be made to describe what Parkinson's disease is, understand its causes and who is affected by it. A cure or treatment will also be investigated.

The motor disorder was named after James Parkinson in 1817. Parkinson was the first to describe the symptoms of the disease. He described these as having a problem with starting and continuing movements due to over-rigidity of the skeletal muscles. Those affected would also have a constant tremor, especially in the limbs. There is an association between damage to the nigro-striatal pathway, which is the pathway connecting the substantia nigra to the striatum and the disease according to Parkinson. 'The substantia nigra has been described as the gearbox of the brain' Oxtoby and Williams (1995).

Parkinson's is the product, caused by the destruction of the nigra-striatal pathway consequently this is linked to neurotransmitter dopamine. This connection has been made as researchers in 1960. They were able to show that 'the neuron making up the nigro-striatal pathway, with their cell bodies clustering in the substania nigra and their axons travelling up to the striatum, all released the neurotransmitter dopamine at their synaptic junctions' Cardwell, Clark and Meldrum (1996). This means that if there is inactivity in the dopamine pathways, an onset of Parkinson's is likely.

Cells in the area of the brain where the substantia is located produce dopamine. It is normal for brain cells to die but with Parkinson's disease the cells die early in their life span. As brain cells do not grow again there is a noticeable decrease in their numbers hence the dopamine activity decreases also. This sounds feasible as the research shows that when anticholinergic drugs are used to increase dopamine activity in the pathways, tremors and stiffness associated with Parkinson's can be helped. However this may only be in the initial stages of the disease as once it starts to progress some of the dopamine neurons may not remain functional to such degeneration from cell death; therefore the drug can only increase limited activity.

It is difficult to diagnose Parkinson's as the onset of the illness is gradual so early symptoms go unnoticed. There are no functional or biochemical tests for the disease, only a clinical diagnosis can be made. The slowness of movements, rigidity and tremors may only show at a later stage in the disease. 'Only an autopsy can confirm the presence and typical distribution of characteristic neuropathological lesions in cases of suspected PD Gibb(1989) cited in Altman(1988). A clinical diagnosis is usually made for Parkinson's disease when a patient shows two or more symptoms, for example tremors, muscular rigidity, uncontrollable movements of the hand, fatigue and deterioration in clarity and amplification of speech. The patient must have had only primary idiopathic Parkinson's. This means the patient must not have had a previous head injury as the injury could be mimicking the disease. Another symptom of the disease is depression and it can occur along time before the onset of the illness. A biochemical form of depression is produced due to the alteration of chemicals in the brain. Depression would not taken seriously as a indicator of Parkinson's as it is a common illness in the general population.

It makes sense that the initial diagnosis is checked and confirmed as the patient might have in fact had an injury that they forgot about or did not think it was sever enough to tell the physician about. They may be receiving the wrong treatment when they do not have Parkinson's. It is important that the correct diagnosis be made, as research is needed on those with Parkinson's as this is the only way forward to find a cure. If the wrong diagnosis is made and research is carried out there is a waste of time and resources. Moreover many people do not get diagnosed for a few years as the symptoms replicate other disorders. For example a person might have had a stroke or have high blood pressure which causes hardening of the arteries hence stiffness and lack of co-ordination of movements. Some drugs can have side effects that resemble Parkinson's but once these have been stopped the symptoms disappear. Each patient showing symptoms of Parkinson's 'is a law unto himself.' Stern and Lee(1982) cited in Pinder (1990). This means that every patient is affected differently from the next. They may both have Parkinson's but do not have the same symptoms.

Most people experience the onset of Parkinson's between the age of 50-60 years. It can occur earlier although 'the percentage increases sharply with age.' Hildick Smith

(1980) cited in Pinder (1990). The disease appears to have no genetic influence as it occurs equally as much in monzygotic and dizygotic twins Ward (1983) and it affects can be seen in all countries.

There has been no specific cause found for Parkinson's disease. Oxtoby and Williams (1995) suggest it is likely to have a genetic component. A chemical or virus in the environment makes some people susceptible to the disease. However MPTP; Ballard et el; (1985) has described a Parkinson-like disorder caused by a toxin when it is metabolised. This could suggest there are elements responsible for the disease. Some people may just be more sensitive towards them than others.

There is no cure currently for Parkinson's disease but there are drug treatments available which help control the symptoms but these drugs do not slow its progression. However these drugs can help improve the quality of life dramatically for a suffer. The drugs Sinemet and Madopar are used which contain L-dopa. L-dopa changes into dopamine when it reaches the brain hence it makes up for the scarcity. The drugs are a form of replacement therapy and they need to be taken together to prevent unwanted side affects of the L-dopa. A controlled release of the drugs is needed to prevent fluctuating symptoms and gives stability.

It seems that although there is currently no cure for Parkinson's disease, advances over the years has helped people cope better with the disease and improve the quality of life. Continuous research is needed, firstly to try and find a cause for the disease. Only then advances could be made towards a cure.

Word Count 1041

BIBLIOGRAPHY

Altman, Harvey J; Altman, Barbara N. (1989). Alzheimer's and Parkinson's Diseases: Recent Advances in Research and Clinical Management. New York : Plenum Press.

Cardwell, Mike; Clark, Liz; Meldrum, Claire. (1996). Psychology for A Level. London: Collin Educational.

Oxtoby, Marie; Williams, Adrian. (1995). Parkinson's at your fingertips: The Comprehensive Parkinson's Reference Book for the Year 2000. London: Class Publishing.

Pinder, Ruth. (1990). The Management of Chronic Illness: Patient and Doctor Perspectives on Parkinson's Disease. London: Macmillan Press.