

information

MPTP AND DRUG-INDUCED PARKINSON'S

Parkinson's is a progressive neurological condition, which is characterised by both motor (movement) and non-motor symptoms.

Parkinson's is characterised pathologically by the loss of dopamine producing neurons in the substantia nigra within the basal ganglia. Another major feature is the presence of Lewy bodies which are concentric inclusion bodies comprised of alpha-synuclein, a naturally occurring protein. They are considered the hallmarks of idiopathic Parkinson's.

Idiopathic Parkinson's accounts for the majority of diagnosed cases. However, the history of Parkinson's includes some toxic and drug related influences.

MPTP (1-methyl-4-phenyl-1,2,3,6-tetra hydroxyridine)

The neurotoxin MPTP is selectively toxic to the cells in the substantia nigra, resulting in signs and symptoms similar to Idiopathic Parkinson's.

Since 1947 a number of chemists who used MPTP for legitimate purposes developed Parkinsonism. Final recognition that MPTP induces Parkinsonism came in 1982 when a batch of an illicit narcotic (MPPP) became contaminated to form MPTP and a group of users demonstrated profoundly disabling Parkinsonism.

Studies of these cases, in addition to the autopsy results of an earlier student affected by MPTP, gave strong indication that MPTP caused permanent damage to the neurons of the substantia nigra which resulted in Parkinson's symptoms. This discovery led to a new era in Parkinson's research.

While MPTP-induced Parkinsonism shows all the clinical features of Parkinson's, it is not Idiopathic Parkinson's. MPTP-induced Parkinsonism is selective, whereas in idiopathic Parkinson's other areas of the brain are affected.

The MPTP model has been useful in the laboratory setting, developing pharmaceutical treatments and an animal model for Parkinson's. MPTP has been given to animals ranging from monkeys to goldfish – however, the most favoured model remains the mouse and non-human primates. Surprisingly, rats were found to be almost resistant to the toxic effects of MPTP after systemic administration. Only humans and non-human primates develop full blown typical Parkinsonism after MPTP exposure.

Drug Induced Parkinsonism


Drugs which may induce Parkinsonism include Serenace®, Stemetil®, Maxolon®, Neulactil® and Risperdal®. These medications will also worsen the symptoms of a person with a diagnosis of Parkinson's.

Drug induced Parkinsonism progresses more rapidly and the symptoms may subside when the drugs are withdrawn. However, long term use of these medications may result in permanent symptoms.

For further information contact
your state Parkinson's organisation:
Freecall 1800 644 189 www.parkinsons.org.au

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