Clinical Summary

UK PARKINSON'S Excellence Network

Diagnosis of Parkinson's: use of presynaptic dopaminergic imaging

This is a brief clinical summary. It is supported by a series of Critically Appraised Topics (CATs), which are available on the UK Parkinson's Excellence Network online resource centre.

Introduction

The diagnosis of Parkinson's is primarily clinical. However, where there is uncertainty, presynaptic dopaminergic imaging may help establish the correct diagnosis. The main technique is FP-CIT SPECT, also known as DaTSCAN. This identifies the dopamine transporter.

An abnormal scan is usually found in any process that reduces the density of the dopamine transporters, for example:

- neurodegenerative disorders (such as idiopathic Parkinson's, multiple system atrophy, progressive supranuclear palsy, dementia with Lewy bodies and corticobasal degeneration)
- neurogenetic disorders (some spinocerebellar ataxias such as SCA-2 and SCA-3, and Wilson's disease)
- cerebrovascular disease (if local basal ganglia disruption, or damage to the pathways leading to the basal ganglia)

A normal scan is seen when the process does not affect the dopamine transporters, such as:

- essential tremor, dystonic tremor or other dystonia (not all dystonia has tremor)
- drug-induced parkinsonism and/or tremor
- functional parkinsonism and/or tremor

Main clinical applications of DaTSCAN

When the clinical picture is incomplete, or there are pointers to a possible alternative diagnosis, or dual pathology may be present, perform a DaTSCAN when clinical uncertainty exists about the presence of dopamine deficiency as the cause of parkinsonism or tremor.

These are the typical clinical presentations and differential diagnoses in which DaTSCAN might be helpful:

- In asymmetric postural tremor: Parkinson's versus essential or dystonic tremor.
- In unusual asymmetric tremor with functional features: Parkinson's versus psychogenic parkinsonism.
- In dementia: Dementia with Lewy bodies versus Alzheimer's or vascular dementia.
- Parkinson's versus parkinsonism secondary to drugs.

Interpretation of DaTSCAN

- In Parkinson's, putamen loss precedes caudate loss, with asymmetry matching the clinical pattern.
- Other neurodegenerative parkinsonism tends to have more symmetrical deficits, but this distinction is not reliable in the individual case.
- Cerebrovascular disease generally causes more 'punched-out' or 'moth-eaten' deficits, compared with the smooth graded losses in other disorders.

- A false-negative scan result can occur early in the development of Parkinson's.
- Reviewing the scan with a radiology or nuclear medicine colleague may be helpful, if there is a definite mismatch between the clinical and imaging findings.
- If clinical suspicion of Parkinson's persists after a negative or borderline initial scan, it is best to delay a repeat scan for about 12 to18 months, to allow assessment of change over time.
- Prognosis, and antiparkinsonian therapy response, are not reliably predicted from the scan.

Preparing patients for DaTSCAN

- Adjustment of existing medication is usually not required.
- Stop amphetamine-based drugs (eg appetite suppressants).
- Evidence for interaction with MAOBI's (eg selegiline, rasagiline) and SSRI's (eg fluoxetine, citalopram) is limited, so these can be maintained.
- Thyroid blocking is given in selected cases, according to local protocols. This process is handled in the nuclear medicine department.

The UK Parkinson's Excellence Network is the driving force for improving Parkinson's care, connecting and equipping professionals to provide the services people affected by the condition want to see.

The tools, education and data it provides are crucial for better services and professional development.

The network links key professionals and people affected by Parkinson's, bringing new opportunities to learn from each other and work together for change.

Visit **parkinsons.org.uk/excellencenetwork**