



## PARKINSONS DISEASE / PARKINSONISM

Parkinsonism is a clinical syndrome dominated by four cardinal signs: **Akinesia, Rigidity, Tremor and Postural Instability**. Many causes of Parkinsonism, (in frail older people vascular and drug-induced Parkinsonism are more common than idiopathic Parkinsons) and although the degree and nature of the cardinal signs may help point to the type, this is often difficult. Up to one in three older people in the community suffer from Parkinsonism and its presence is associated with a two-fold increase in death. Men are fractionally more affected than women (ratio 3:2).

### Anatomy and Pathology

Parkinsonism is an extra-pyramidal disorder. The basal ganglia are important in the preparation for movement and the subsequent control of both its amplitude and velocity. Sufferers of PD have dopamine depletion of the substantia nigra and characteristic eosinophilic cytoplasmic inclusions known as Lewy bodies.

### Primary Parkinsonism in older people

1. Familial PD (rare)
2. Idiopathic (sporadic) PD (most common form)
3. Vascular Parkinsonism
4. Normal pressure hydrocephalus
5. Multi-system atrophy (Parkinsons plus)
6. Progressive Supranuclear Palsy (PSP)
7. Dementia with Lewy bodies
8. Huntington's disease (Westphal Variant)

### Secondary causes

1. Drug induced Parkinsonism (most common) Neuroleptics, antiemetics, reserpine, methyl dopa, lithium
2. Infectious and post-infectious Post encephalitis lethargica, neurosyphilis
3. Repeated head trauma (dementia pugilistica)
4. Metabolic: (rare) hypoparathyroidism, pseudohypoparathyroidism
5. Toxins  
MPTP, manganese, copper, cyanide, CO

Upper body akinesia should be present to diagnose idiopathic Parkinsonism, rigidity is usually present and tremor in 70% of cases.

\* In essential tremor, there is no upper body akinesia, no "lead-pipe" rigidity and tremor is either maximal at ending a movement or distributed to the head (yes-yes/no-no) or vocally, neither of which are features of Parkinsonism.

\* Vascular parkinsonism usually occurs in older hypertensives. It is the lower body

which is chiefly involved and the upper body spared with normal voice, facial expression and free spontaneous gesturing with the arms. Tremor is absent, However, that a PD patient may also have cerebrovascular disease and the picture may be complex!

\*Dementia with Lewy bodies usually occurs in 50-90 year olds. It is marked by a progressive dementia syndrome with fluctuating cognition and alertness, recurrent, well formed visual hallucinations and parkinsonism.

### Parkinsons Disease

#### Genetics

-the younger the patient the more likely genetic factors are important.

-identification of 11 mutations that result in the phenotype of PD.

-mutations are called PARK followed by a number in order of their discovery.

.Disease usually presents and remains asymmetrical with a combination of :

(a) **Akinesia**: Especially of the upper body. This includes Bradykinesia (slowness of movement), Poverty of movement (facial amimia, impaired arm swinging), difficulty initiating movement and diminishing amplitude of repetitive alternating movements.

(b) **Rigidity**: "Lead-pipe" or "Cog-wheel", usually although not always present. This is to be differentiated from the 'clasp-knife' rigidity associated with spasticity of upper motor neuron lesions. It is fairly equal in flexor and extensors although slightly greater in flexors resulting in a flexed posture.

(c) **Tremor**: Is present in 70% of patients with PD, at presentation. It classically occurs at rest, with a frequency of 3-5 hz and described as a "pill-rolling" with pronation/supination of the forearm. Exacerbated by anxiety, disappears in sleep often intermittent. Lessens with movement (although not always). When present, suggestive of PD or drug-induced Parkinsonism.

(d) **Postural Instability**: Usually an late feature of PD. Often an early feature of other Parkinsonisms.

Apart from the initial presentation, usually with complaints of tremor and 'slowness' of movement and occasionally a feeling of stiffness and muscular ache the patient may also complain of:

\* **GIT symptoms**: Heartburn, dysphagia, constipation, weight loss

\* **Urinary symptoms**: Frequency and urge secondary to detrusor instability



- \* Disturbed sleep: Inability to turn in the bed, vivid dreams and hallucinations
- \* Autonomic dysfunction: orthostatic hypotension, constipation, urinary urgency and frequency
- \* Depression: affects nearly half patients
- \* Insomnia
- \* Pain
- \* Dementia - 3 times commoner in PD: its early appearance suggests an alternative aetiology other than true PD.

### Clinical Signs

- Mask like facies ( facial amimia )
- Sialorrhoea
- 'Greasy complexion'
- 'Head' off the pillow
- Pill rolling tremor
- Festinant gait
- Reduced/Absent arm swinging
- Reduced/absent blinking 'serpentine stare'
- 'Simian' (flexed forward) posture
- Micrographia
- Monotonous 'low pitch' voice - hypophonia

### Treatment

An interdisciplinary approach, non-medical for all, medical for many, so ensure:

- Accurate assessment and diagnosis
- Treatment of underlying cause(s)
- Treatment of complications of disease(s) and therapy
- Information and Counselling (Parkinson's Disease Society)

### Physio/Occupational Therapy

Improve gait, mobility balance, bed mobility and prevent contractures. ? walking aid

Clothing: Avoiding buttons, zips, laces etc.

Cutlery: May need 'Built-up' handles

Chairs: High upright chair is easier to rise from

Domestic: Rails for stairs/toilet

Proper flooring - linoleum better than carpet

Driving: Usually possible in early stages of disease at least

### Speech & Language/ Nutrition

- Monitor for aspiration
- May need special consistency diet in latter stages
- Vocal exercises
- Dietary intake often compromised by poor oral control, dysphagia, nausea, heartburn, constipation
- Some foods may provoke dyskinesia or reduce L-Dopa absorption

### Nursing

Nursing the severe Parkinsonian patient requires considerable skill, attention to detail and compassion to prevent pressure sore,

ensure good bowel habit and help with feeding as well as maintaining the patients morale. Patients are often 'locked-in' by their inability to move, yet fully cognitive.

### Social Work

Vital in family counselling and helping the family to obtain suitable long term care if and when necessary. Liaising with employers.

### Medical

Remove phenothiazines, butyrophenones, (remember Stemetil, Maxolon)

Aim at restoring Dopaminergic/Cholinergic balance by either replacing or enhancing existing stores of Dopamine, (less commonly through the use of anti-cholinergics).

Treatment of motor symptoms:

(1) **Dopamine precursor**: Levodopa combined with peripheral decarboxylase inhibitor ( e.g. Sinemet = L-Dopa + Carbidopa ) and/or entacapone(Stalevo)

Problems:- Nausea, vomiting, confusion, Visual hallucinations

Chorea, Dystonias, on/off effect, postural hypotension, end of dose deteriorations, Discolours, sweat and urine

(2) **Monoamine Oxidase B Inhibitor** - Selegiline

?? Neuroprotective effect

- Useful in smoothing out response to L-Dopa

- Can cause Insomnia/Dyskinesia

(3) **Anticholinergics**: e.g. Benzhexol

Try to avoid in older people as:

- Worsens constipation, memory, confusion

- Can precipitate urinary retention/Glaucoma -

More effective in controlling tremor than other symptoms, helps in Sialorrhoea/urinary urge

(4a) **Ergot-derived Dopamine Agonists**:

Pergolide (D1/D2), Bromocriptine (D2)

- Again causes nausea, postural hypotension, ankle swelling; rarely but importantly pulmonary fibrosis.

(4b) **Non-ergot derived Dopamine Agonists**:

Pramipexole, Ropinirole, (also D3 activity), Apomorphine

(5) **COMT inhibitors**: Entacapone and Tolcapone

-augments the action of levodopa by blocking the enzymatic degradation of levodopa and dopamine.

-has been shown to relieve wearing-off effects and increasing 'on' time.

(6) **Miscellaneous**: Amantadine (possible NMDA-antagonist) Mild Antiparkinsonian Drug - Also causes ankle swelling, confusion

### Surgery

Can help in selected cases, but requires specialist assessment