Secondary movement disorders

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Accra

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Differential Diagnoses

- Drug induced parkinsonism
- Cerebrovascular parkinsonism
- Lewy body dementia
- Alzheimers disease
- Multi system atrophy
- Progressive supranuclear palsy
- Benign essential tremor
- Other weird and wonderful conditions
Brain Bank Criteria

- Developed by PD society brain bank study
- Retrospectively
- Sensitivity 96%
- Specificity 82%
- Tool now used in epidemiological studies in PD
Step 1 - Diagnosis of Parkinsonism

- BRADYKINESIA and one of:
  - Muscular rigidity
  - 4-6Hz rest tremor
  - Postural instability
Exclusion criteria for PD - 1

- History of repeated strokes with stepwise progression of parkinsonian features
- History of repeated head injury
- History of definite encephalitis
- Oculogyric crises
- Neuroleptic treatment at onset of symptoms
- More than one affected relative
Exclusion criteria for PD - 2

- Sustained remission
- Strictly unilateral features after 3 years
- Supranuclear gaze palsy
- Cerebellar signs
- Early severe autonomic involvement
- Early severe dementia
Exclusion criteria for PD - 3

- Babinski sign
- Cerebral Tumour
- Normal Pressure Hydrocephalus
- Negative response to levodopa (exclude malabsorption)
- 1m4p1236thp exposure
Supportive prospective positive criteria for PD

- 3 Present for clinical diagnosis for idiopathic PD
  - Unilateral onset
  - Rest Tremor Present
  - Progressive disorder
  - Persistent asymmetry
  - Excellent levodopa response
  - Levodopa induced chorea
  - Levodopa response for 5 years
  - Clinical course of 10 years
Probable most important diagnostic criteria

- Asymmetrical onset
- Progressive condition
- Responsive to levodopa
Vascular Parkinsonism
Typical case

- Lower body Parkinsonism
- History of previous strokes
- Often don’t respond well to treatment
Background

- Vascular Parkinsonism (VP) accounts for 3 – 12% of cases of Parkinsonism (Thanvi et al 2005)
- Diagnosis and classification uncertain / variable – based on clinical and radiological features
- Limited research on VP
Epidemiology

- Incidence and prevalence of VP increases with age
- Patients with VP are older than those with IPD and men are at increased risk
- Vascular risk factors more common in VP than in IPD – self-fulfilling
Pathology

Three different pathological patterns:

- Commonest – multiple lacunar infarctions with gait disorder, frequently cognitive impairment, often pseudobulbar palsy
- Sub-cortical arteriosclerotic encephalopathy (Binswanger’s disease) with white-matter lesions (WML), presenting with dementia and progressive gait disorder
- Lacunar infarction of basal ganglia with clinical presentation indistinguishable from IPD
Clinical presentation (1)

- Lower-body Parkinsonism with abrupt onset and stepwise progression, and without the classical resting tremor
- Tend to have upright posture and wide base compared to stooped and narrow in IPD
- Additional features may include psuedobulbar palsy, pyramidal signs and speech disturbance
- Acute onset only seen in about 25% of cases (Winikates et al 1999)
Clinical presentation (2)

- Increased tone usually mixed – combination of spasticity and rigidity without cogwheeling
- Often demonstrate retropulsion (Zijlmans et al. 1996)
- May have emotional lability, cognitive impairment and incontinence
- Progressive supranuclear palsy (PSP) like presentations have been described (Dubinsky et al. 1987)
Vascular rating scale (Winikates et al 1999)

- At least 2 of the 4 cardinal features of Parkinsonism
- 2 or more points on their vascular rating scale - 2 points for pathologically or angiographically proven diffuse vascular disease and
- 1 each for
  - onset of Parkinsonism within 1 month of clinical stroke
  - history of 2 or more strokes
  - history of 2 or more risk factors for stroke
  - neuro-imaging evidence of vascular disease in 2 or more vascular territories
Clinical diagnostic criteria (Zijlmans et al 2004a)

- Cerebrovascular disease (CVD) as evidenced by relevant brain imaging findings or the presence of focal signs or symptoms consistent with stroke

- In association with acute or delayed progressive onset of Parkinsonism (within 1 year) after stroke

- Brain imaging abnormalities include evidence of infarcts in or near areas that affect the basal ganglia motor output or extensive sub-cortical WML
Background

- Similar vascular lesions on brain imaging may be associated with VP in some individuals but not in others.
- DaT is abnormal in IPD, MSA and PSP but usually normal in VP.
- Maybe "punched out" appearance on DaT scan secondary to focal infarction in the basal ganglia in VP (Marshall et al 2003).
Treatment

- Remaining pool of striatal dopaminergic nerve terminals in damaged pathway remains adequate to convert exogenous L-dopa into dopamine (Leduc et al 1997)

- Response to dopaminergic treatment in VP predicted by presence of nigro-striatal pathology due to either vascular disease or neuronal loss (Zijlmans et al 2004)

- In this study good response not predicted by disease onset (acute or insidious), localisation (unilateral or bilateral, upper or lower limbs) or any of the cardinal clinical features
Differentiation of VP from IPD

- Are the following features likely to be different?
  - Gait on comprehensive gait assessment
  - Non-motor symptoms in general – eg depression and anxiety
  - Autonomic function – eg test with cardiac MIBG
  - Pattern of cognitive impairment if present - eg more executive dysfunction in PD
Drug induced Parkinsonism

- Occurs in susceptible individuals
- Reversible with discontinuation of drugs but may take up to 4 months for full benefit
- May be an indication that individuals will later develop Parkinson’s disease
- DaT scan normal
Culprit drugs

- Dopamine-depleting drugs
- Neuroleptics, eg Chlorpromazine
- Anti-emetics, eg Metoclopramide, Prochlorperazine
- Anti-epileptics, eg Sodium valproate
- Other drugs, eg Anti-inflammatories, Calcium antagonists
Clinical presentation

- May mimic PD
- Often asymmetrical
- Careful history of current, and previous, drugs
- Consider non-proprietary medication, eg from traditional healers
Toxins

- MpTP – originally contaminant in heroine (IV drug abusers in California)
- Maganiese – IV drug abusers in former Soviet block countries
- Pesticides – particularly older ones now band in the west but potentially still used widely in Africa, with few precautions
- Agent orange – used in the Vietnam war
- Carbon monoxide
Tropical conditions

- HIV positive – consider CNS infection, e.g. toxoplasma, CMV. Also lymphoma.
- Syphilis
- Cerebral abscess
- Cerebral cysticercosis
- Tuberculoma
- Echinococcus cysts
Thank you