Parkinson’s Disease and Dementia

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Case

- 68 year old female.
- “Off legs for a few months, O/E no neurological deficit”.
- Slowing down
- Needs help with dressing, getting out of bed
- Increased tone R>L
- Mild tremor mainly R
- Short steps, stooping, minimal arm swinging
- Expressionless face, voice OK

Dx: Parkinson’s disease
Diagnostic Criteria

- Bradykinesia

  + one of

- Resting tremor (less with action, more with emotion)
- Rigidity
- Disorders of posture, balance and gait
Progress

- Cabergoline (dopamine agonist) 1mg, then 2mg
- Ix all NAD
- Significant improvement.

3 years

- Slowing down again, increasing problems on left.
- Dose increased to 4mg.

2 years

- Slowing down, worsening tremor + rigidity.
- Next step?
Natural History

- **Unilateral** onset
- Steady progression to bilateral
- Death in 2-30+ years, mean 9 years (mortality x3)

L-DOPA

- Mortality ~ 1.3/1
Progress

- Add Madopar 125mg tds.
- Improvement, still tremor.

2 years

- Stiffening up .
- Worse in morning + between tablets.
- Options

- Higher dose Madopar
- Change to Madopar CR
- Add Entacapone
- Add Selegiline
Progress

- Early
  - onset of symptoms to motor fluctuations
- Middle
  - motor fluctuations to moderate disability
- Advanced
  - worsening disability
Progress

- Madopar 125 qds.
- Dispersable Madopar 62.5 added.
- Overall more stable, but less well.

1 year

- More disabled, less competent with ADL’s.
- Madopar increased in stages to 250 qds.
Progress

1 year

- Dyskinesia developing after Madopar dose.
- Worsening disability, especially tremor.
- Depressed.
- Mild confusion
- Dribbling.
- ????
- Madopar reduced to 125 qds, plus Madopar 62.5 tds between doses.
- Amitryptilline 10 mg, but vivid dreams so stopped.

- Dyskinesias less severe, disability “bearable”.
Problems

- Motor fluctuations (on-off, end of dose, etc)
- Musculoskeletal (pain, restlessness, dribbling)
- Nausea (l-dopa, dopamine agonists)
- Insomnia (poor posture, turning, nightmares)
- Depression (50%)
- Fatigue/weight loss (tremor)
Problems

- Facial – passivity, poverty of blinking, seborrhea
- Speech – monotonous, low volume, repetition
- Micrographia
- “Hypersalivation”, swallowing problems
- Dysautonomia – constipation, postural hypotension, frequency, urgency, nocturia, impotence
and

Dementia
Treatment Options

- Levodopa (Sinemet/Madopar)
- Agonists
- Entacapone
- Rasagiline/Selegiline
- Amantadine
- Anticholinergics
- Antidepressants
- Etc…
Problems

ALL PD DRUGS EXACERBATE HALLUCINATIONS AND PSYCHOSIS
DDx

- Vascular Parkinsonism – symmetrical, lower half, poor L-dopa response, dementia
- Drugs (neuroleptics) - **STOP**, takes weeks/months to resolve.
- Multi-system Atrophy - cerebellar signs, early autonomic features, dysarthria, pyramidal signs, inspiratory stridor.
- Progressive Supranuclear Palsy – eye palsy, dementia, axial rigidity, early falls, cognitive changes.
- Lewy Body Disease – Early dementia, rigidity most prominent, hallucinations.
DDx

- Wilson’s Disease – chorea, dystonia, Kayser-Fleischer rings, cirrhosis.
- Cerebral Hypoxia – precipitant (CO).
- Basal Ganglia Calcification – CT, dementia, seizures, chorea.
- Post-encephalitic
- Demyelination
- Tumour
- Etc…………
Investigations

- CT - CVD, SOL
- MRI - cerebellum
- PET scan - dopaminergic neurone loss
- SPECT scan – tagged dopamine (DATscan)

- ? Could detect pre-clinical PD?
PET scan
SPECT scan

CIT SPECT IN PARKINSON’S DISEASE

HEALTHY

EARLY

MODERATE

SEVERE
ABDOMINAL PAIN

Admitted by surgeons – constipated.

Observed, fluids, no improvement

Dx: Diverticular abscess.

NBM, Surgery.
Post-Op

- Stiff ++++
- Unable to mobilise
- Poor swallow.
- Difficulty with tablets.
- ???
- N/G tube, soluble Madopar.
- Swallow improved, managed own tablets.

BUT

- Confused, hallucinating.
Elderly Ward

- Soluble Madopar only for 2 weeks, then Madopar 125 tds
- Confusion less severe, but unable to mobilise
- Pramipexole + domperidone added
- Confusion worse with incremental doses, seeing cats + mice.
- Quetiapine 25mg nocte, agonist stopped
- Madopar 125mg qds
- Less hallucinations, mobile with frame after 3 weeks
- Still confused
- MMSE 17/30
Rehab

6 weeks:

- Drowsy
- Risk of falls
- Incomplete functional recovery.
- Admitted to Nursing home.

4 months

- Pneumonia, died.
Dementia

- 15-20% of PD cases
- Multifactorial
- Cognitive impairment: 80% at 10 years
- “Frontal dysexecutive syndrome”: 30% at 2 years
- 30% experience neuropsychiatric symptoms
- Progress parallel with motor progression
- May be exacerbated by PD treatment
- Treatment may worsen PD
Dementia

- High risk:
  - Age > 70
  - Depression
  - Psychosis with l-dopa
  - Presents with facial masking

- Respond less well to PD Rx
- Increased risk psychosis + delerium
- Faster disease progression
Frontal dysexecutive syndrome

- Strategy
- Organisation
- Abstraction
- Planning

- Problem-solving, planning, decision-making, coping with change
- NOT dementia
Possibilities

- Parkinson’s disease + dementia
- Lewy Body Dementia
- Alzheimer’s disease
- Vascular dementia
- Mixed
- Parkinson’s plus syndrome
PD Dementia vs Alzheimer’s

- Fluctuant mental state
- Hallucinations
- Excessive sleep
- Delusions
- Better short-term memory
- Depression

- Steady progression
- Wandering
- Disinhibition
- Irritability
- Euphoria
- Agitation
- Apathy
- Delusions

NB: delusions only problem linked to MMSE
Lewy Body Dementia

- Lewy bodies in brain cortex (PD = brain stem)
- Onset of dementia within 12 months of PD symptoms (otherwise “PD + dementia”)
- Rigidity + shuffling gait
- Early falls
- Less tremor
- Hallucinations
- Spectrum – PD vs LBD
Hallucinations

- Often start as vivid dreams
- Not always unpleasant
- Insight lost as dementia develops
- Delusions vs hallucinations:
  - Delusion = false belief about external reality, including hallucinations
  - Hallucinations exacerbate paranoia/psychosis
Exacerbating factors

- Drugs
  - Anticholinergics
  - Amantadine
  - Selegiline
  - Agonists
  - L-dopa
  - Opiates
  - Tricyclic antidepressants

- Other illness

- Surgery
Vascular dementia

- Step-wise progression
- Abnormal CT
- Focal neurological deficit
- May only require one CVA (up to 25% at 1 year)
- Mood & behavioural changes
- Depression
- Poor speech
- Perseveration
Risk factors

- Hypertension
- Smoking
- Diabetes
- High cholesterol
- Other vascular disease

- Need to treat!
Management

- High clinical index of suspicion
- Avoid/treat precipitants (eg. Infections)
- Reduce PD treatment if possible/acceptable
  - Aim for l-dopa monotherapy
- All bloods, ECG, CT etc, ?DATscan
- Discuss Dx + prognosis with patient + family
Evaluation

- OT (safety, ADL’s, memory, cueing)
- Legal aspects (capacity, power of attorney, etc)
- Neuropsychologist
  - If atypical
  - Rapid decline
  - Vascular vs non-vascular
  - Dementia vs mild cognitive impairment + dysexecutive
Baseline measures

- Behaviour
- Mood
- Motor
- Quality of Life
- Cognition – but how?
  - MMSE not much good
  - “SCOPA-Cog”???
- And monitor
Drug treatment

- Ideally some awareness of diagnosis
- Need to comply
- Don’t treat on family request!!!
- Realistic expectations
- Rivastigmine / other anticholinesterase inhibitor
- Quetiapine
- Clozapine (named patients, neurology only, requires close monitoring)
Conclusions

- Up to 40% of PD patients develop
  - Hallucinations
  - Confusion
  - Paranoid delusions
- Individualised therapy crucial
- Multidisciplinary approach
- Better treatments needed