

“A Salt Shaker”

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79 year old ♀ - MJ

- Admitted to General Surgery –
 - Abdominal discomfort / Nausea / Vomiting
 - PHx
 - Dukes B colorectal cancer – Hemicolectomy (2002)
 - Idiopathic Parkinson's Disease (2004)
- Dx Small Bowel Obstruction - emergency small bowel resection
 - 2 separate small bowel malignant tumours
 - Ileostomy fashioned

Surgical Referral – 10 days post-op

- Slow / minimal improvement – physical / functional
 - Worsening mobility - ?Deconditioning / ?Parkinson's Disease
 - Previously living independently; mobilised with zimmer frame; independent of ADL's
- Referred to Geriatric Medicine – further Rehabilitation

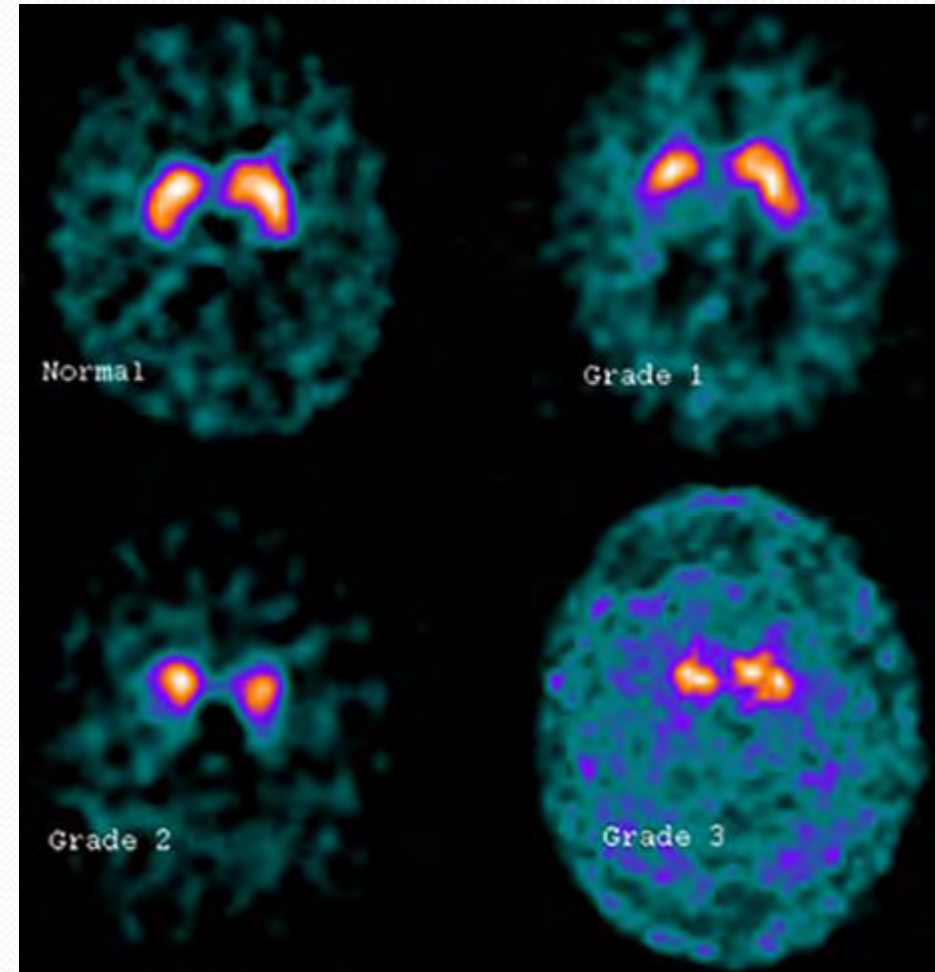
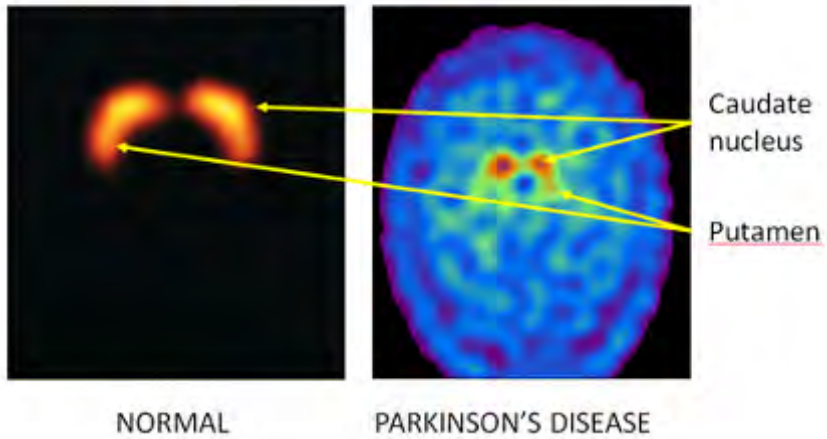
Parkinson's Disease - MJ

- Dx in 2004
 - Consultant Geriatrician - commenced Madopar
 - Poor clinical response
 - Consultant Neurologist – agreed with Dx of PD
 - ^{123}I FP CIT Loflupane DaT SCAN (SPECT)¹
 - lack of uptake in both putamen
 - Benign Tremulous Parkinson's Disease

References:

1) <http://www.fpcit.net/home.htm>

DaTScan which measures presynaptic dopamine transporters in the nerve terminals



References:

<http://www.fpcit.net/home.htm>

Progress ... upon transfer

- Outstanding medical problems upon transfer:

1. Ongoing weight loss

2. Excessive ileostomy output

3. Marked deterioration of Parkinsonian symptoms

- Bradykinesia
- Severe bilateral upper limb rest tremor
- Marked upper and lower limb rigidity

... largely bed bound requiring full nursing care.

Management of Parkinson Disease

- Gradual increase of Madopar (co-beneldopa)
 - Combination of levodopa and benserazide (dopa-decarboxylase inhibitor)
 - Levodopa – 800mg / 24hours
- Addition of Ropinirole (dopamine agonist)
 - Ropinirole – 9mg / 24hours

... poor clinical response.

Any thoughts?

Significant Hypocalcaemia – 1.53mmol/L (2.2 – 2.6mmol/L)

Severe Hypomagnesaemia < 0.05mmol/L

Hypomagnesaemia

1. Decreased GI absorption secondary to short bowel syndrome
2. Mg involved in large number of cellular metabolic reactions
 - neurological symptoms e.g.
 - marked upper and lower limb rigidity may have exacerbated Parkinsonian symptoms

Short Bowel Syndrome

- Extensive loss leading to malabsorptive state
 - Mg absorption in ileum / colon
- Maintain hydration / nutrition / correcting electrolyte imbalances
 - control of excessive stomal output
- ?Absorption of PD medications
 - Levodopa absorbed in proximal small bowel
 - No visible tablet remnant in stoma bag
 - Bioavailability of levodopa independent of Mg levels

Progress ...

- Within 4 weeks ...
 - Fluctuating mobility corresponded with Mg levels largely controlled with anti-motility agents
 - Pt transformed from being bed bound / requiring full nursing care to mobilising with aid living in sheltered accommodation
 - Bradykinesia / rigidity gradually resolved
 - Subsequent clinic reviews led to gradual withdrawal of PD meds with little worsening of symptoms

UK PDS Brain Bank Criteria

Step 1. Diagnosis of a parkinsonian syndrome

Bradykinesia and at least one of the following:-	Muscular rigidity
	Rest tremor (4–6 Hz)
	Postural instability unrelated to primary visual, cerebellar, vestibular or proprioceptive dysfunction

Step 2. Exclusion criteria for Parkinson's disease

History of:-	Repeated strokes with stepwise progression
	Repeated head injury
	Antipsychotic or dopamine-depleting drugs
	Definite encephalitis and/or oculo-crisis on no drug treatment
	More than one affected relative
	Sustained remission
	Negative response to large doses of levodopa (if malabsorption excluded)
	Strictly unilateral features after 3 years
	Other neurological features: supranuclear gaze palsy, cerebellar signs, early severe autonomic involvement, Babinski sign, early severe dementia with disturbances of language, memory or praxis
	Exposure to known neurotoxin
Presence of cerebral tumour or communicating hydrocephalus on neuroimaging	

Step 3. Supportive criteria for Parkinson's disease

Three or more required for diagnosis of definite Parkinson's disease:-	Unilateral onset
	Rest tremor present
	Progressive disorder
	Persistent asymmetry affecting the side of onset most
	Excellent response to levodopa
	Severe levodopa-induced chorea
	Levodopa response for over 5 years
Clinical course of over 10 years	

Drug class	Examples	Initial Dose	Usual Dose	Side Effects
L-dopa (combined with carbidopa or benserazide)	Regular (immediate-release) Sinemet® or Prolopa® 100/25mg	1/2 tablet t.i.d.	1–2 tablets t.i.d.	Peripheral dopaminergic side effects (anorexia, nausea, vomiting, OH); confusion, hallucinations, MRC with long-term therapy (see text)
Non-ergot dopamine agonists	Pramipexole (Mirapex®) Ropinirole (ReQuip®) (Rotigotine skin patch has recently been released in the U.S., but is not available in Canada)	0.125 mg t.i.d. 0.25 mg t.i.d.	0.5–1.5 mg t.i.d. 3–8 mg t.i.d.	Higher incidence compared to L-dopa of: Peripheral dopaminergic side effects; confusion, hallucinations; EDS/SAs; ICDs; peripheral edema. Lower incidence of MRC compared to L-dopa
Selective MAO-B inhibitors	Selegiline Rasagiline (Azilect®)	5 mg/d 0.5 mg/d	5 mg b.i.d. 0.5–2 mg/d	Generally well-tolerated. Theoretic risk of serotonin syndrome when combined with SSRI, but extremely rare in practice
NMDA antagonist	Amantadine (Symmetrel®)	100 mg/d	100 mg 2–4x/d	Generally well-tolerated; possible side effects include confusion, hallucinations, livedo reticularis, peripheral edema. Avoid or ↓ dose in renal impairment (as mostly excreted unchanged in urine)
Anticholinergic agents	Trihexyphenidyl/ benzhexol (Artane®)	1 mg t.i.d.	2 mg t.i.d.	Confusion, hallucinations, dry mouth, blurred vision, angle-closure glaucoma, urinary retention, constipation

Slow titration, starting with low doses, is recommended to minimize adverse effects. Persistent peripheral dopaminergic side effects may be treated with domperidone (10–20 mg t.i.d.).