Parkinsonism

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SURREY
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Disclosures

- I **DO NOT** have an affiliation (financial or otherwise) with any for-profit or not-for-profit organizations

Learning Objectives

- To be able to differentiate Parkinson's DISEASE from Parkinson's plus syndromes and parkinsonism
- To be able to describe the implications of a Parkinson's plus condition diagnosis for the patient and family
- To be able to use a practical approach to treatment and care for patients with Parkinson's Plus Conditions

Differentiate Parkinson's DISEASE from Parkinson's plus syndromes

Parkinsonism

- clinical definition of a variety of different underlying pathologies that can cause Parkinson's-like symptoms such as
  - slowing of movement
  - tremor
  - rigidity or stiffness
  - balance problems

Approach to Parkinsonism

Parkinson's Disease

- Young onset
- Late onset (usually > 60 yrs)

Parkinson's plus syndromes

- MSA
- PSP
- CBS

Herido-degenerative

- AD
- DLB
- FTLD
- Huntington's ds
- SCA
- Wilson's ds

Secondary Causes

- NPH
- Drugs
- Vascular
- Inflammatory disorders
- CNS infections
- Brain tumor
- Paraneoplastic
- Toxins
- Metabolic

Idiopathic PD Diagnosis

- Clinical Criteria
  - Bradykinesia
  - At least one of the following:
    - Rigidity
    - 4–6 Hz rest tremor
    - Postural instability not caused by primary visual, vestibular, cerebellar or proprioceptive dysfunction
  - *Exclude other causes of parkinsonism

PD Tremor

- Most common cause of resting tremor
- Insidious onset
- Distal, asymmetric
- Flex/ext elbow, pro/sup forearm, pill rolling fingers
- May have postural or kinetic component if rest tremor is severe

PD tremor

If there's a rest tremor…look for:

- Associated features:
  - Rigidity
  - Bradykinesia
  - Postural instability
  - Gait
  - Red flags (Hx and Exam)

Parkinson's Plus Syndromes

- Overall, progression more rapid and survival shorter than PD

Multiple Systems Atrophy	Progressive Supranuclear Palsy	Corticobasal Syndrome
• alpha-synucleinopathy • MSA-P vs MSA-C • autonomic dysfunction	• tauopathy • early falls • axial issues • eye movement abnormalities	• tauopathy • cortical dysfunction

Multiple Systems Atrophy

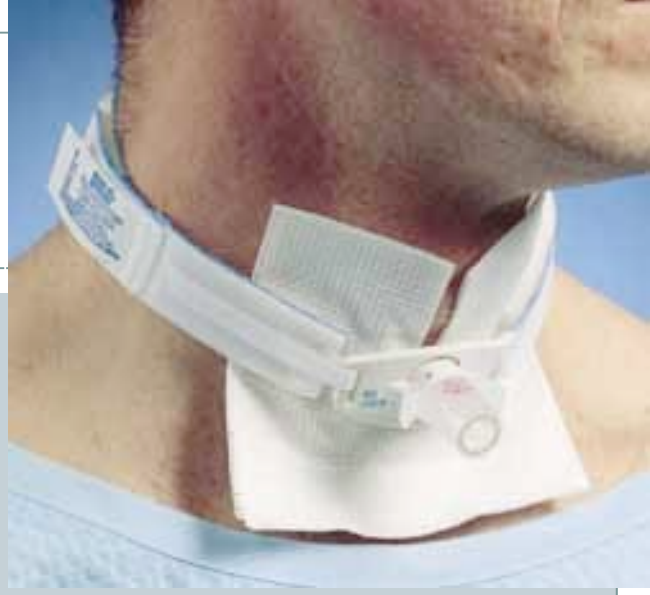
- onset usually in 6th decade
- 3/100 000 (PD = 1/100)
- variable combination of parkinsonism, cerebellar features and autonomic dysfunction
- often wheelchair bound in 5 yrs
- mean survival 8 yrs (shorter if early autonomic symptoms)

Probable MSA Criteria

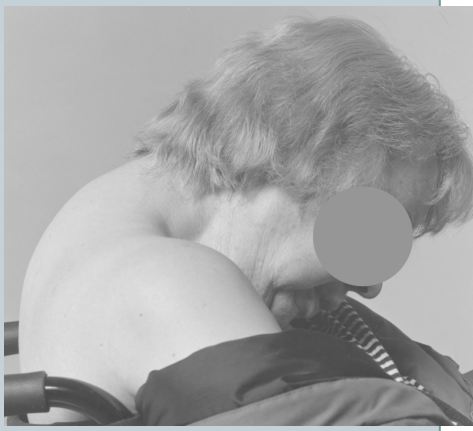
Sporadic, progressive adult-onset disease characterized by:

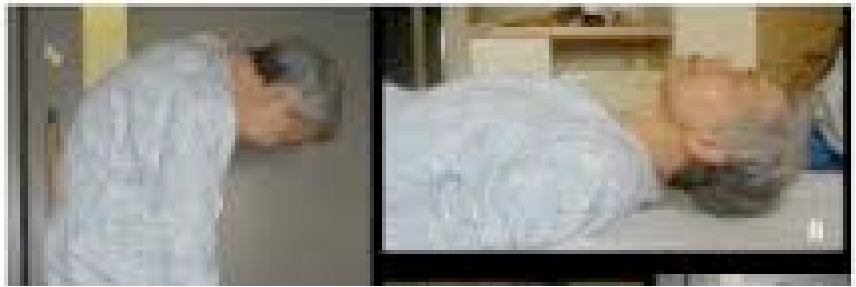
- Autonomic failure involving urinary incontinence plus erectile dysfunction in males, or an orthostatic decrease of blood pressure within 3 minutes of standing by at least 30 mm Hg systolic or 15 mm Hg diastolic AND
- Poorly levodopa-responsive parkinsonism OR
- A cerebellar syndrome

MSA



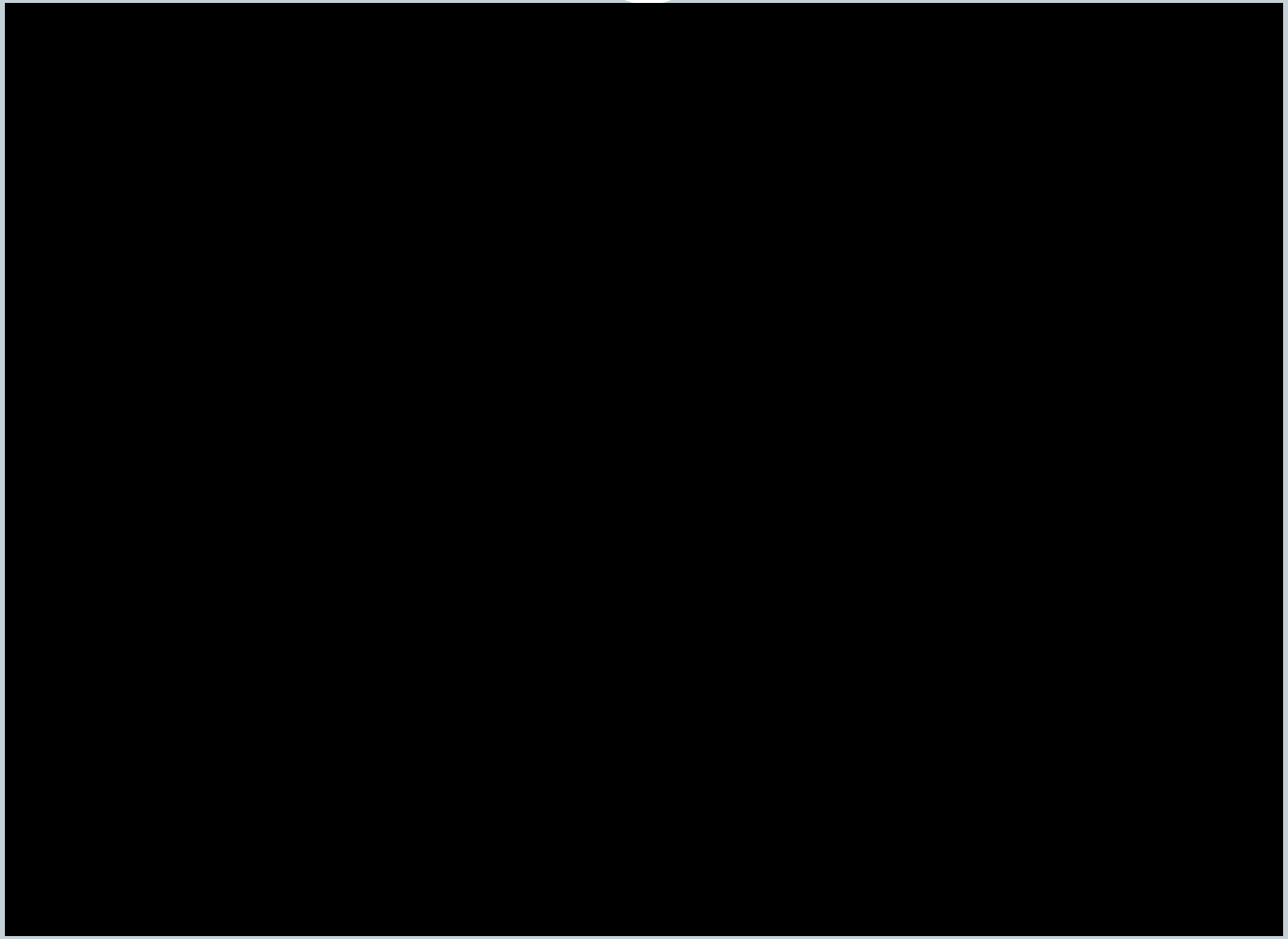
- Autonomic dysfunction
- Parkinsonism (not usually rest tremor)
- Cerebellar dysfunction
- Dysarthria, dysphonia
- Respiratory
  - inspiratory stridor - urgent referrals
- Other
  - Rem sleep disorder
  - Corticospinal tract signs
  - Myoclonus
  - Dystonia
- **Cognitive impairment is uncommon**
- **No family history**





MSA

MSA myoclonus



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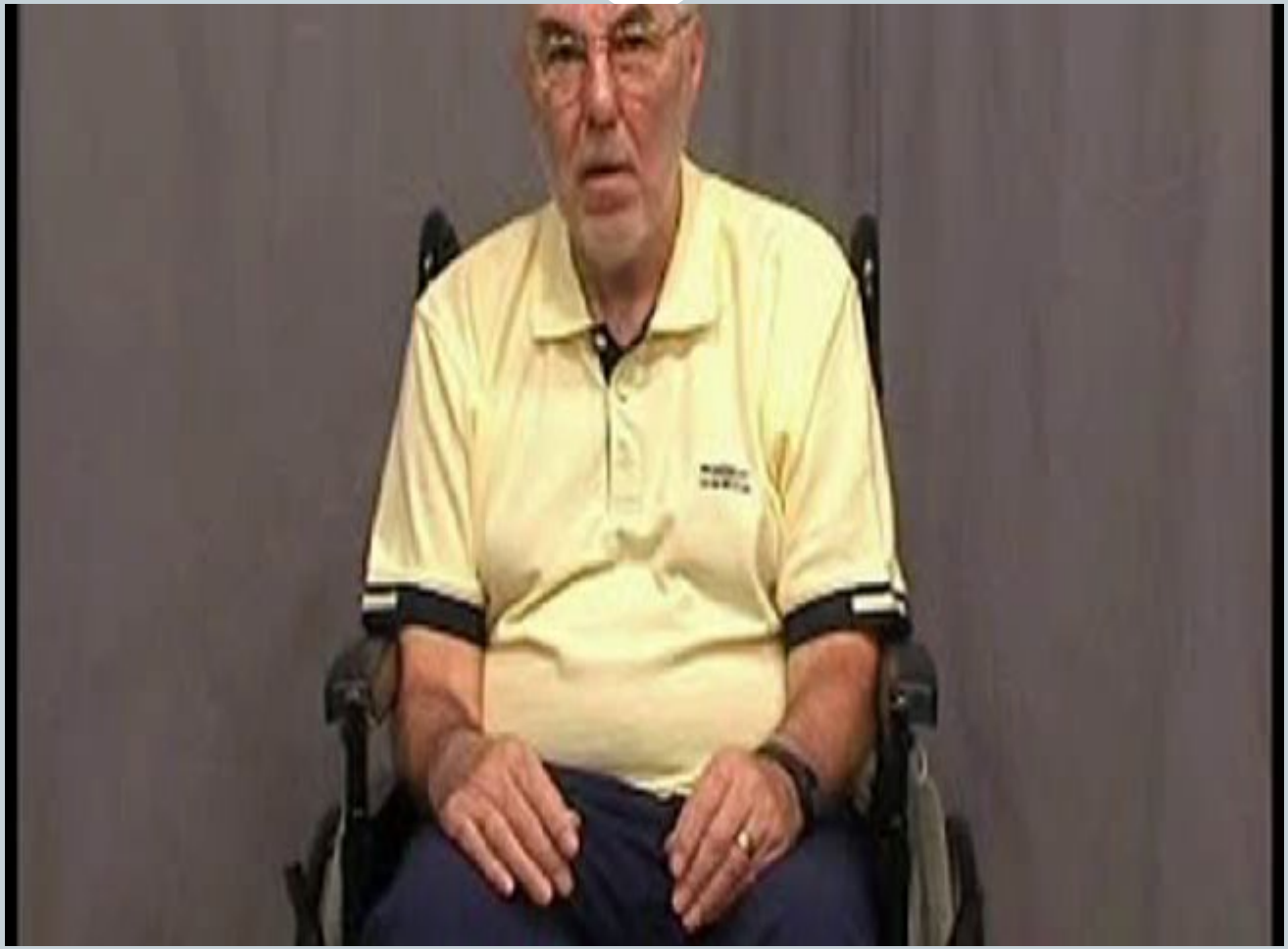


Red flags -> think of MSA

- **early/severe autonomic dysfxn
- cerebellar signs
- pyramidal signs
- poor l-dopa response
- rapid progression
- symmetric parkinsonism at onset
- no/little rest tremor
- jerky, myoclonic postural/action tremor
- antecollis, Pisa syndrome, camptocormia
- postural stability decreased early on (but falls at ds onset more suggestive of PSP)
- dysarthria – high-pitched, quivering, soft, breathy
- dysphagia w/in 5 yrs
- orofacial dystonia, esp. peri-oral
- involuntary gasping/deep sighing when awake
- new or increased snoring
- stridor
- contractures of hands/feet
- cold hands/feet
- pathologic laughter or crying

Progressive Supranuclear Palsy

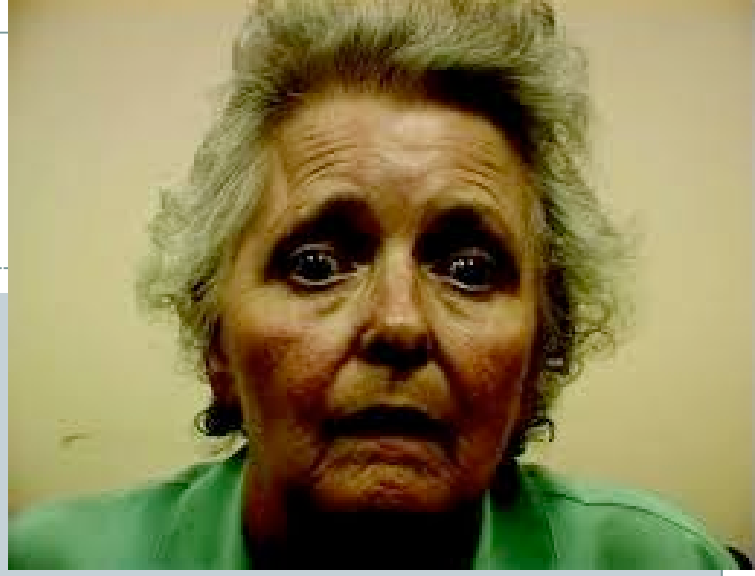
Progressive Supranuclear Palsy

- onset usually early 60's
- mean survival 6-9 yrs
- 40-50% have early mild response to l-dopa
- tauopathy (like corticobasal degeneration)

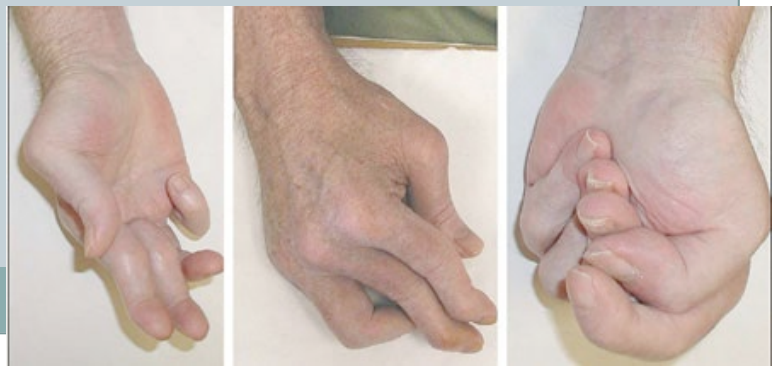
Probable PSP Criteria

- gradually progressive
- onset > 40 yrs
- vertical supranuclear palsy and prominent postural instability with tendency to fall in first year of disease onset
- no evidence of other disease that could explain symptoms….whole bunch of exclusion criteria

PSP



- eye abnormalities
- postural instability with falls within 1 yr of onset
- symmetric axial bradykinesia and rigidity
- axial > limb rigidity
- < 10% rest tremor
- eyelid retraction and 'stare'
- eyelid opening apraxia
- retrocollis
- dystonic posturing of hands and feet
- striatal hand deformities
- dysarthria
- dysphagia
- dementia
- NOT usually have REM sleep disorder

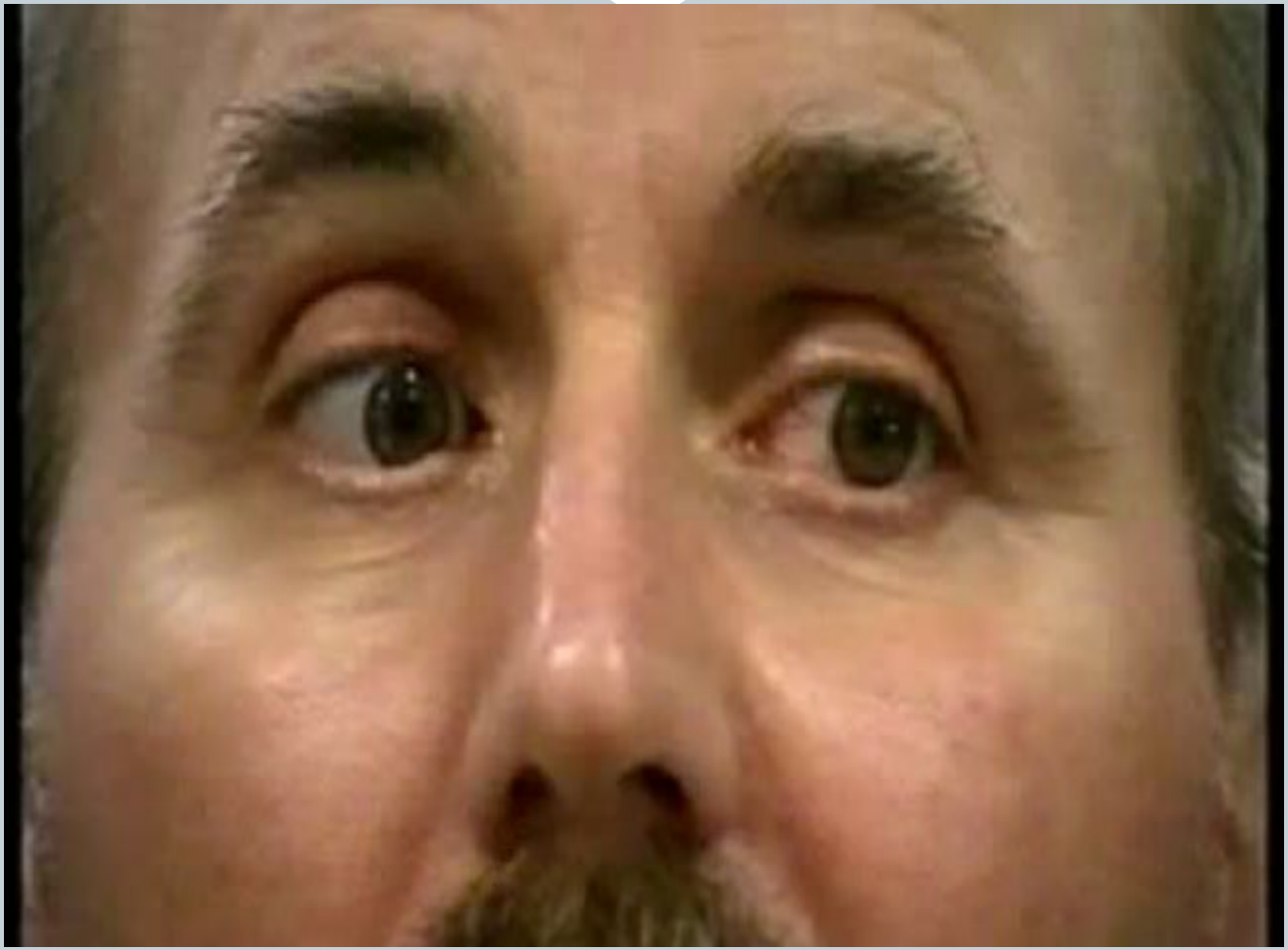


PSP

- Eye abnormalities
  - vertical gaze abnormalities (reduced OKN, hypometric, palsies)
  - supranuclear eye mvmt abnormalities may not appear for 4-5 yrs
  - slow downward saccades with impaired downward OKN
  - square wave jerks, saccadic intrusions
  - paresis of upgaze
  - apraxia of eyelid opening

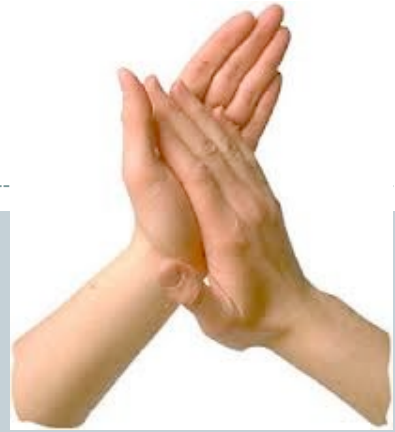
  - CBD - difficulties initiating horizontal and vertical saccades, typical of an oculomotor apraxia (whereas PSP has slowed vertical saccades)

Gaze palsy in PSP



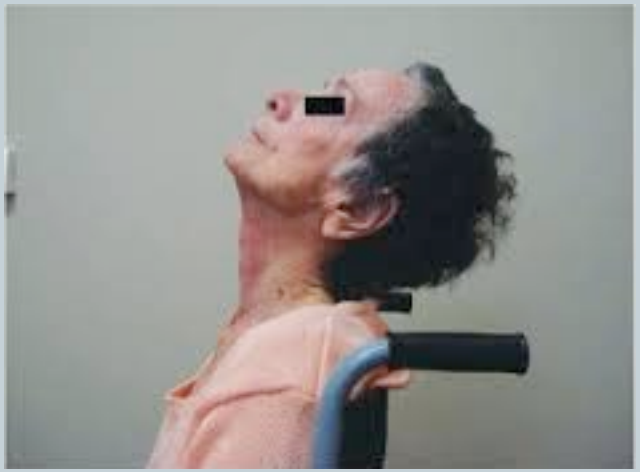
Eyelid opening apraxia

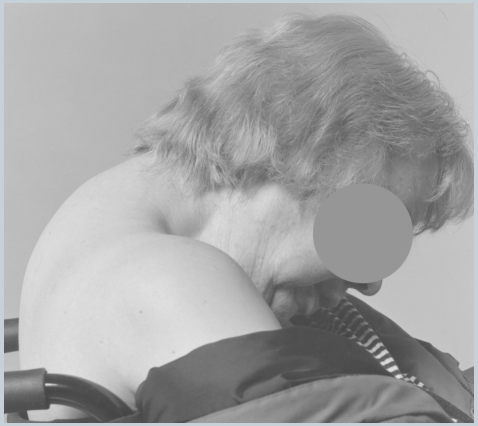
PSP – other signs



- applause sign
- sloppy tie sign
- rocket sign
- falling back in chair ‘en bloc’
- pseudobulbar laughing or crying
- stuttering speech, palilalia

PSP vs MSA





Corticobasal Syndrome

Corticobasal Syndrome

- onset after 45 yrs
- tau-opathy (like PSP)
- pathology can vary (60% caused by corticobasal degeneration)

Probable Corticobasal Syndrome

- asymmetric presentation of 2 of
  - limb rigidity or akinesia
  - limb dystonia
  - limb myoclonus
- 2 of
  - orobuccal or limb apraxia
  - cortical sensory deficit
  - alien limb phenomena

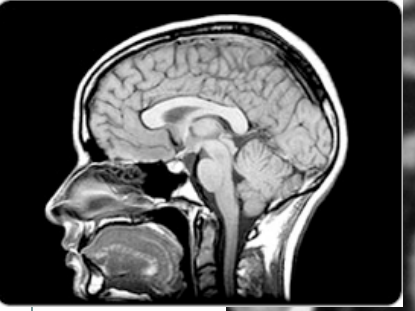
Corticobasal Syndrome

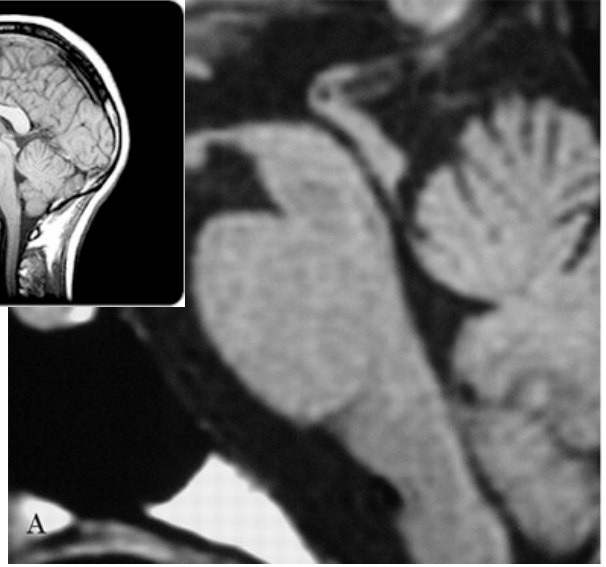
- asymmetric bradykinesia, rigidity
- cortical sensory loss
- alien limb
- dystonia
- myoclonus
- apraxia (can have enough bradykinesia and dystonia so apraxia not evident)
- visual neglect
- frontal dementia, aphasia (can be cognitively intact at onset while still significant motor signs)
- oculomotor apraxia (difficulty initiating saccades)

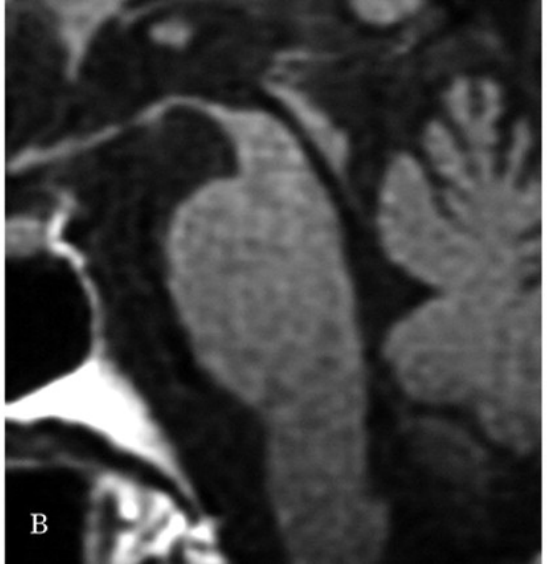
Corticobasal Syndrome

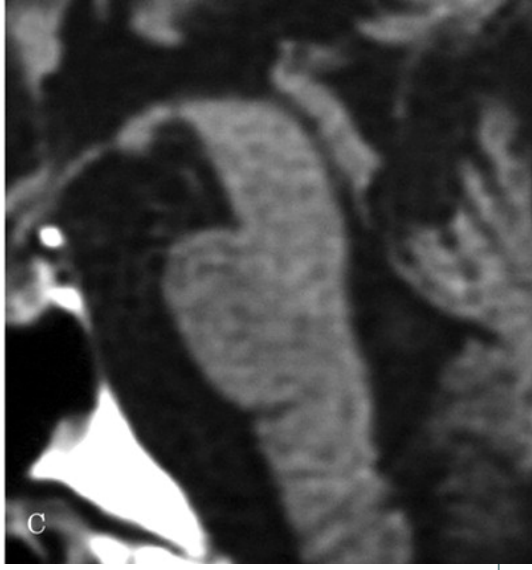
PSP and CBD share many features

- rapid disease progression
- poor levodopa response
- eye movement abnormalities
- cognitive impairment
- pyramidal signs
- dystonia









PD

PSP

MSA

Oba H et al. Neurology 2005;64:2050-2055

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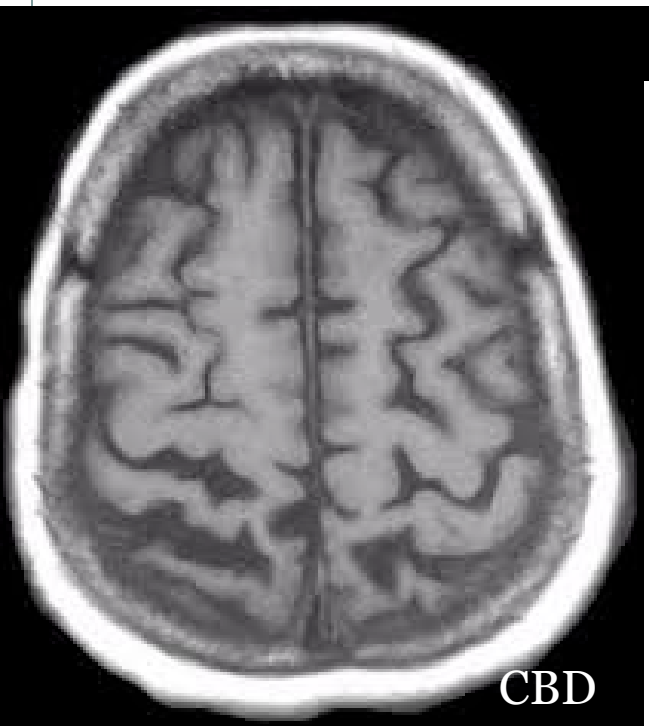
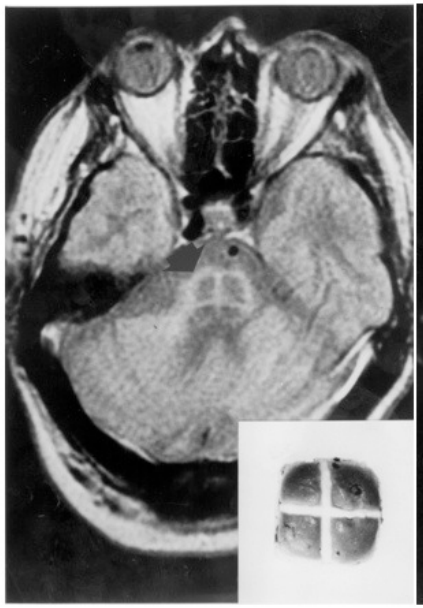
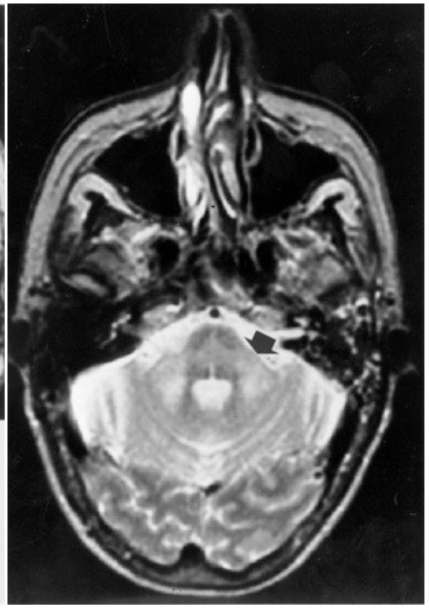
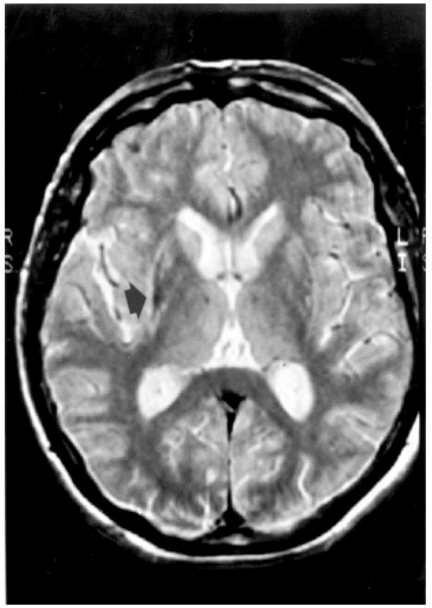








TAKE HOME
Parkinson Plus Syndromes vs PD

- Poor response to levodopa
- Falls at presentation and early in the disease course
- Symmetry at onset
- Rapid progression (to bilateral disease/imbalance within 3 years)
- Lack of tremor
- Early dysautonomia

Be able to describe the implications of a Parkinson's plus condition diagnosis for the patient and family

- Progression: faster
- Survival: shorter
- Treatment: levodopa less or not effective

Practical approach to treatment and care for patients with Parkinson's Plus Conditions

Approach to Medical Treatment of Parkinsonism

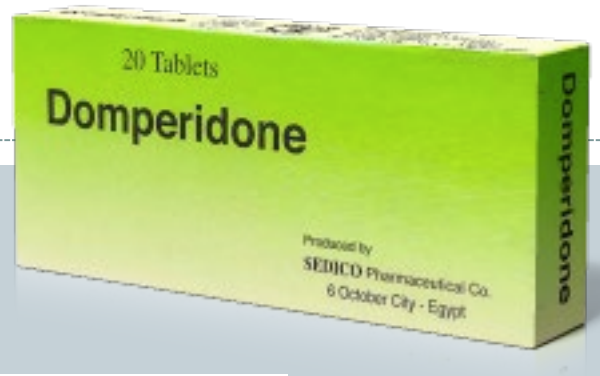
- SYMPTOMATIC
- Trial levodopa if bradykinetic/rigid– up to 1000 mg/day if tolerated
  - may need caution if orthostatic hypotension or cognitive issues/hallucinations
- doesn't work for balance or ataxia

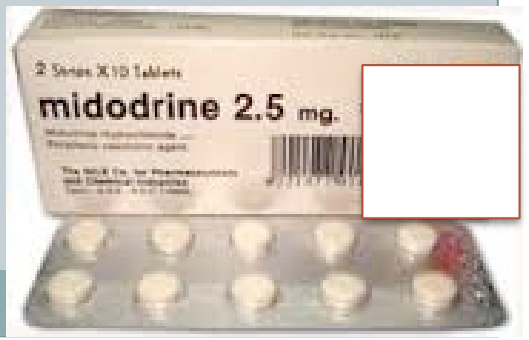
Approach to Medical Treatment of Parkinsonism

- Cognition
  - cholinesterase inhibitors (watch for OH)
  - quetiapine (only if really necessary, no evidence for it)
  - clozapine (not commonly used)
  - DLB – neuroleptic sensitivity
- Sleep
  - REM sleep behaviours
    - melatonin > clonazepam
- Mood
  - SSRIs

- Dysautonomia
  - excessive sweating
  - urinary issues – mirabegron, solifenacin
  - erectile dysfunction – sildenafil etc.
  - postural hypotension…

Postural hypotension





Approach to Care for Parkinson's Plus Conditions

- PATIENCE (cognition can be better than it seems)
- Swallowing
  - vigilance
  - PEG discussion
- Speech
  - SLP
  - assistive devices
  - amplifiers
- Falls risk reduction
  - polypharmacy
  - behavioural strategies
- Avoid complications
  - contractures – stretching, careful use of muscle relaxants, botulinum toxin
  - pain (from dystonia and other causes)

Other causes of parkinsonism in LTC

Alzheimer's disease

- most common – hypomimia
- bradykinesia > postural instability >abnormal gait > rigidity
- resting tremor less common
- presence of parkinsonism increases proportionally with progression of AD and cognitive & functional decline
- presence of parkinsonism - poor prognostic factor with faster cognitive and functional decline

Dementia with Lewy Bodies

- 2nd most common dementia (after AD)
- onset 74 yrs
- M>F
- dementia within first year of parkinsonism
- fluctuating cognition
- visual hallucinations
- parkinsonism -70%

- RBD
- hypersomnolence
- sensitive to low dose antipsychotics

Drug-induced Parkinsonism

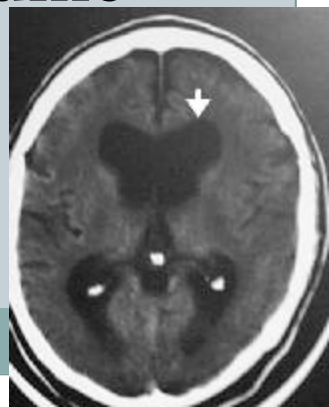
- can be indistinguishable from Parkinson's disease
- tends to be symmetric but can have asymmetry of signs
- dose-related s/e effect
- F>M
- increases with advancing age
- onset within 3 mo in 90% but can occur at any time (even years later)
- "reversible" when offending agent reduced or discontinued but reversal can take many months – up to 18 months
- tx
  - taper/stop offending drug, switch to lower D2 affinity
  - anticholinergics
  - amantadine
  - dopaminergic therapy – controversy- unmasking?

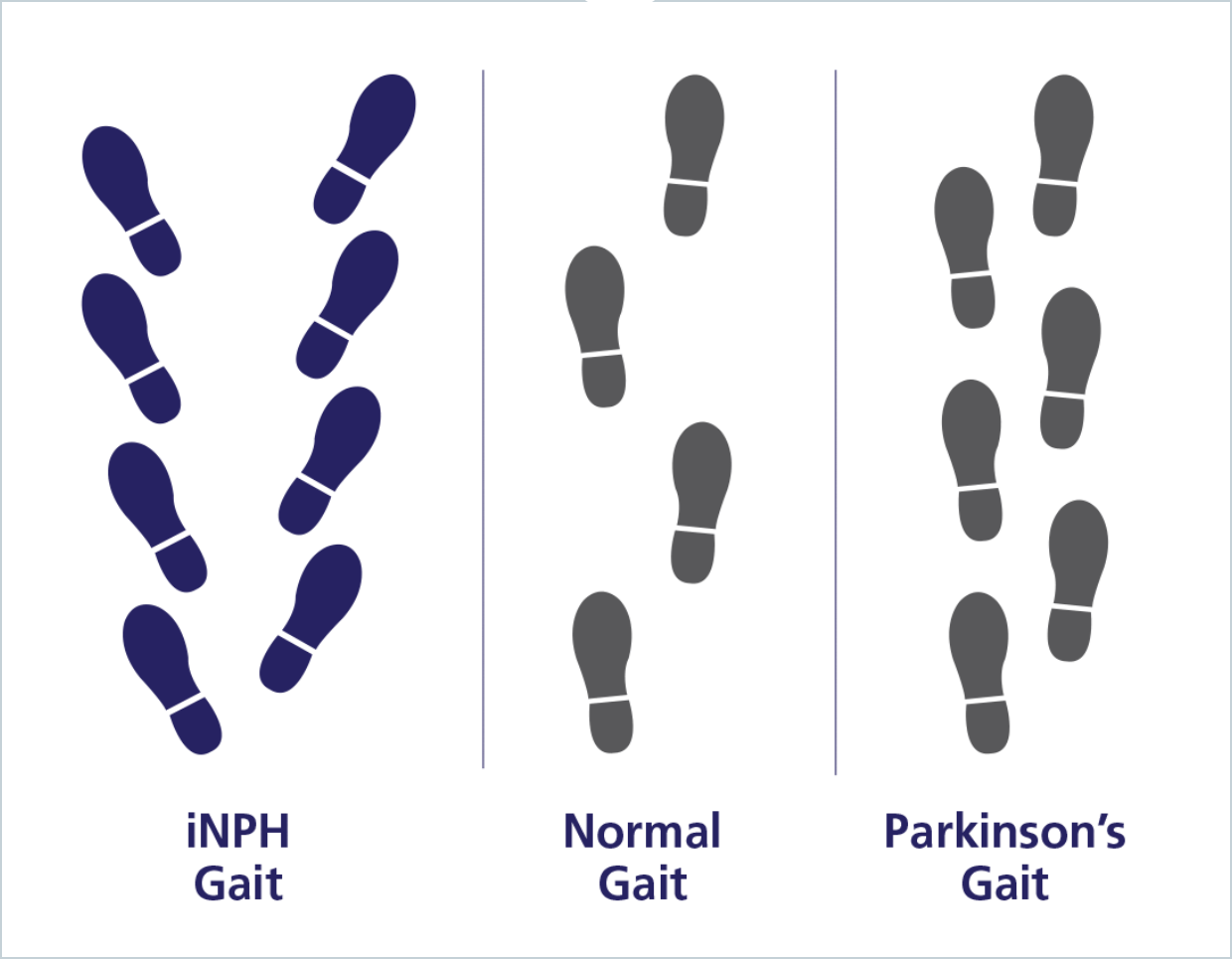
Vascular parkinsonism

- “lower half parkinsonism”
- major problems with gait initiation, hesitation, freezing, especially with turning
- better once get going
- walking is interrupted by shifting focus
- can reduce freezing with cues
- arms normal speed
- can have asymmetric reduced arm swing
- can try l-dopa, 40% may respond to a degree
- Tx vascular risk factors

Normal Pressure Hydrocephalus

- Triad:
  - gait disturbance – small step, magnetic, wide-based, apraxic
  - urinary incontinence (frontal lobe)
  - dementing process
- CT/MRI: ventricular enlargement <u>disproportionate</u> to cortical atrophy and small-vessel ischemic changes
- Confirmed by beneficial response to large-volume cerebrospinal fluid drainage (30-50 ml)




iNPH
Gait
Normal
Gait
Parkinson's
Gait

Thank You

- QUESTIONS??????