Medical Overview
Late Stage PD and Parkinson Plus Syndromes

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APRIL 30, 2017
ROSEBURG, OR
Review
Mesolimbocortical pathway: ventral tegmental area (VTA) to nucleus accumbens, cortex (including the insula), and hippocampus

Mesostriatal pathway: substantia nigra to striatum (caudate and putamen)
Progression of Parkinson’s Disease

- Honeymoon Period: 3 years
- Motor Complication Period: 8 years
- Resistant Symptoms: 15 years
- Cognitive Decline: 20 years

Onset → Death
Late Stage PD
Hoehn & Yahr Staging

- **Stage 0** – No signs of the disease
- **Stage 1** – Unilateral Disease
- **Stage 1.5** – Unilateral plus axial
- **Stage 2** – Bilateral disease
- **Stage 2.5** – Bilateral disease, Mild difficulty walking
- **Stage 3** – Bilateral disease, moderate difficulty walking and balance problems
- **Stage 4** – Bilateral disease, severe difficulty walking, severe balance problems.
- **Stage 5** – Bilateral disease, unable to walk
Late Stage PD

- Mobility
- Falls
- Incontinence
- Pain
- Swallowing
- Communication
- Tremors
Treatment

• Increasing l-dopa
• Removing other PD meds
  – DA agonists
  – MAO-B inhibitors
• Adding
  – L-dopa enhancers (COM-Ti)
  – Amantadine
• DBS, Duopa
## Aware in Care Fact Sheet

### Typical Parkinson’s Medications

<table>
<thead>
<tr>
<th>L-DOPA</th>
<th>Dopamine Agonist</th>
<th>MAO-B Inhibitors</th>
<th>Anti-Cholinergics</th>
<th>COM-T Inhibitors</th>
<th>Other</th>
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<tbody>
<tr>
<td>carbidopa/levodopa (Sinemet® or Sinemet CR®)</td>
<td>ropinirole (Requip®)</td>
<td>rasagiline (Azilect®)</td>
<td>trihexyphenidyl (formerly Artane®)</td>
<td>entacapone (Comtan®)</td>
<td>amantadine (Symadine®, Symmetrel®)</td>
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<tr>
<td>carbidopa/levodopa oral disintegrating (Parcopa®)</td>
<td>pramipexole (Mirapex®)</td>
<td>selegiline (l-deprenyl, Eldepryl®)</td>
<td>tolcapone (Tasmar®)</td>
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<tr>
<td>carbidopa/levodopa/entacapone (Stalevo®)</td>
<td>rotigotine (Neupro®)</td>
<td>zydis selegiline HCL Oral disintegrating (Zelapar®)</td>
<td>benztropine (Cogentin®)</td>
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<tr>
<td>carbidopa/levodopa extended-release capsules (Rytary)</td>
<td>apomorphine (Apokyn®)</td>
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<td>ethopropazine (Parsitan®)</td>
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<tr>
<td>carbidopa/levodopa enteral solution (Duopa)</td>
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*has L-DOPA in formulation*
Dosing with Disease Progression

- Early PD
- Dyskinesia Threshold
- Response Threshold
- Long duration motor response
- Low incidence of dyskinesia
Late Stage Complications

- Motor fluctuations
- Dyskinesia
- Dystonia
- Hallucinations – delusions
- Freezing
Treatment of Late Stage PD

- Neuro
- PT
- SLP
- Cognitive Rehab
- OT
- Social Work
- PCP

TEAM: Together Everyone Achieves More
Progressive Supranuclear Palsy

- Tauopathy affecting substantia nigra (balance, tremor, falls)
- Vertical palsy
- Richardson’s syndrome:
  - Symmetric slowness and stiffness
- About 30% have PSP-parkinsonism:
  - Asymmetric onset

Epidemiology of PSP

• Likely a combination of genetic and environmental causes
• Very rare clearly inherited cases
• Known toxin exposure is consumption of the annona muricata plant

Figure 2. Severity of PSP tau pathology varies according to distribution Brown=mild severity. Purple=moderate severity. Red=severe. Green=very severe. PSP=progressive supranuclear palsy. PSP-P=PSP-parkinsonism. PAGF=pure akinesia with gait freezing.

David R Williams, Andrew J Lees
http://dx.doi.org/10.1016/S1474-4422(09)70042-0
Progressive Supranuclear Palsy

“An old man whose eyes—two spots of fire—had no more motion that [sic] if they had been connected with the back of his skull by screws driven through it, and riveted and bolted outside, among his grey hair.”
PSP vs. Parkinson’s disease

• **Similarities:**
  • Stiffness
  • Slowness
  • Both can have tremor
  • Both can have balance problems

• **Differences**
  • Pathology
  • Response to medications (levodopa)
  • PSP usually progresses more quickly
  • PSP patients usually have more and earlier falls
PSP Symptoms - Behavioral

• Cognitive impairment
  – Slowed thinking & response time, diminished verbal fluency, difficult with set shifting, working memory, concept formation, planning, and execution

• Apathy
  – Loss of interest, motivation, decreased spontaneity, and lack of enthusiasm

• Disinhibition
PSP Symptoms – Speech/Swallowing

• Dysphagia
• Dysarthria
• These tend to occur much earlier than in Parkinson’s disease
PSP Symptoms – Visual Symptoms

- Often complain of blurred vision
  - Related to slow eye movements, trouble with convergence, dry eyes
- Photophobia
  - Probably related to decrease blink rate
- May have trouble with involuntary or impaired eyelid closure
- Tend to have very decreased blink rate
- Often have eye brows raised – furrowed brow
Supranuclear gaze palsy
Supranuclear gaze palsy

Look down
(no PSP)
Supranuclear gaze palsy

Look down
(PSP)
Supranuclear gaze palsy

Head tilted back
(PSP)
PSP – Progression and Prognosis

• Average age of onset is in early 60s

• Life expectancy is 5-7 years following diagnosis
Treatment of PSP

– Neuro
– PT
– SLP
– Cognitive Rehab
– OT
– Social Work
– Neuro-ophthalmology
PSP Resources – www.CUREpsp.org

Welcome to CurePSP

Progressive supranuclear palsy (PSP), corticobasal degeneration (CBD), and multiple system atrophy (MSA), are little-known but disabling brain diseases, often misdiagnosed as Parkinson’s disease, amyotrophic lateral sclerosis (ALS), or Alzheimer’s disease.

The goals of CurePSP are to assist patients and their families, increase public awareness, educate healthcare professionals, and support research toward better diagnosis, effective treatments, and eventual cures.

Donate Your Vehicle

Donate your car, boat, or other property and support CurePSP!
Click here to learn more!

Online Fundraising Tools

There are a few easy ways to help raise money for CurePSP without even having to leave your computer!

GoodSearch is a search engine toolbar that automatically raises money for CurePSP when you search for something on the internet.

STORIES

“So few people have even heard of PSP. And now I want to do everything I can to prevent others from undue suffering.”

Patricia Richardson, Actress & National Spokesperson for PSP

READ MORE STORIES

IN THE NEWS

Upcoming Webinar - PSP: Back to Basics

Tuesday, November 22, 2011, 3pm - 4pm EST. Registration is free!

2011 CurePSP Annual International Research Symposium

November 17, 2011, 8:30am - 5:00pm, Crystal City Marriott at Reagan National Airport, Arlington, Virginia

PSP, CBD, MSA, ALS/PDC Approved for Social Security Compassionate Allowance

CurePSP’s diseases are now included in Social Security’s Compassionate Allowance.
Multiple System Atrophy (MSA)

• Epidemology
  – Probably about 2-5 people per 100,000
  – Generally starts in the 50’s or later
  – Does not appear to be genetic in most cases

• Symptoms include:
  – Parkinsonism (stiffness, slowness)
  – Autonomic problems (sexual dysfunction, orthostatic hypotension, urinary problems, constipation)
  – Cerebellar symptoms (poor balance while walking)
  – Symmetrical symptoms
MSA – Symptoms

• If Parkinsonism (stiffness, slowness) predominates it is referred to as

  ➢ MSA-P

  ➢ Symmetrical
  ➢ Little response to Carbo/levo
  ➢ Stiff, slow, “viscous” movements
  ➢ Loss of arm swing
MSA – Symptoms

• If cerebellar symptoms
• MSA-C
  – Ataxia (problems with gait, unsteady, keep legs far apart)
  – Trouble with arms and legs also known as ataxia
  – Abnormal speech (similar to how someone sounds when drunk)
  – Abnormal eye movements
MSA - Sleep problems

• Can have abnormal breathing in sleep
• Most concerning is respiratory stridor
  – This is a high pitched almost squeaking sound
  – The vocal cords do not open as much as they should
MSA – Red Flags

• Parkinsonism that does not respond to levodopa
• Ataxia
• Early balance problems (falls by 3 years, wheelchair by 5)
• Axial or Orofacial dyskinesias/dystonia
• Jerky tremor
MSA – Red Flags

• Dysarthria (quivering voice, severe hypophonia, high pitched dysarthria)
• Severe dysautonomia
• Abnormal respirations (stridor, new snoring)
• REM Sleep behavior disorder
• Raynaud’s phenomenon
• Emotional incontinence
MSA vs. Parkinson’s Disease

• Similarities – A LOT!!!:
  – Stiffness
  – Slowness
  – Both can have tremor
  – Both can have balance problems

• Differences
  – Pathology
  – Response to medications (levodopa)
  – MSA usually progresses more quickly
  – MSA patients usually have more and earlier autonomic problems
MSA – Progression and Prognosis

• Falls – generally within 3 years
• Often in wheel chair by 5 years
• Median survival less than 9 years
• Most common cause of death is pneumonia
Treatment of MSA

- Neuro
- PT
- SLP
- Cognitive Rehab
- OT
- Social Work
- Urology
Lewy Body Dementia

• Friederich H. Lewy, 1900s
• Abnormal proteins are diffused throughout other areas of the brain
• Acetylcholine is depleted, causing disruption of perception, thinking and behavior.
• Second most common neurodegenerative dementia, affecting 1.4 million
Braak Stages

Braak stages 1 and 2
Autonomic and olfactory disturbances

Braak stages 3 and 4
Sleep and motor disturbances

Braak stages 5 and 6
Emotional and cognitive disturbances

Via olfactory bulb
Via vagus nerve
Premotor symptoms
Motor symptoms

Brainstem Lewy body
Cortical Lewy body
# PD Dementia vs. LBD

<table>
<thead>
<tr>
<th></th>
<th>PD Dementia</th>
<th>LBD</th>
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<tbody>
<tr>
<td>1\textsuperscript{st} Symptom</td>
<td>Movement disorder</td>
<td>Cognitive Disorder or neuropsych symptoms</td>
</tr>
<tr>
<td>2\textsuperscript{nd} Symptoms</td>
<td>Cognitive disorder with neuropsych symptoms</td>
<td>Movement disorder</td>
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</table>
Lewy Body Dementia

Central feature
- Progressive dementia - attention and executive function

Core features
- **Fluctuating** cognition with pronounced variations in attention and alertness
- Recurrent complex visual hallucinations
- Parkinsonism

Suggestive features
- REM sleep behavior disorder

Supportive features
- Repeated falls and syncope
- Autonomic dysfunction
- Visuospatial abnormalities

A clinical diagnosis of LBD can be **probable** or **possible** based on different symptom combinations.
Lewy Body Hallucinations
Lewy Body Treatment

• Start with acetylcholinesterase inhibitor (donepezil, rivastigmine)
• Consider carbo/levo if Parkinsonism symptoms bothersome
• Behavioral interventions: “Listen with respect, comfort and redirect.”
• If hallucinations frightening, consider and discuss antipsychotics (quetiapine)
Treatment LBD

– Neuro
– PCP
– PT
– SLP
– Cognitive Rehab
– OT
– Social Work

Together everyone achieves more
Management Strategies

Late stage Parkinsons
Progressive Supranuclear Palsy
Lewy Body Dementias
Multiple system Atrophy
Late Stage and Parkinson’s +

- Mobility
- Falls
- Incontinence
- Pain
- Swallowing
- Communication
- Freezing
- Dystonia
- Tremors

- Visual changes
- Cognitive changes
- Hallucinations
- Respiratory concerns
- Family strain
- Sleep issues
- Medication management
- Financial worries
What is Palliative Care?

* A team approach to alleviating pain and suffering

- Symptom management.
- Focus on quality of life, function, decision-making.
- Integrates the psychological and spiritual needs of individuals and their families.
- Support to family caregivers.
- Treats dying as a normal process, neither hastens nor postpones death.
Palliative Care

Parkinson’s Disease: Model of Care

Diagram showing the progression of Parkinson’s Disease from early to advanced stages, highlighting the transition points for treatment and palliative care.

Treatment of PD (Prolongation of Life)

Moderate P.D.

Advanced P.D.

Palliative Care (Relief of Suffering)

Diagnosis of Parkinson’s Disease

Hoehn & Yahr Score

Schwab & England ADL Score

OHSU Parkinson Center

Bunting-Perry, L. Journal of Neuroscience Nursing (2006)
Discussing Advanced Care Goals

• Listen to the patient and family about their understanding of the prognosis.

• Ask questions about their goals of care.

• Link goals with care needs.

• Ask about advanced directives.
Symptom Management

- Comfort is the goal (cognitive, psychiatric, physical)
- Minimize falls without compromising cognition.
- Reduce risk of aspiration but maintain nutrition.
- Provide caregiver support and management.
Need honest and open conversation about goals of care

Work with social worker to identify goals, witness conversation
Care for Caregivers

• Assess for strain on an ongoing basis.
• Encourage to seek medical help for their problems and strategies for self care.
• Help with decision making.
• Education and skills building
• Support groups
• Refer to MSW or psychologist.
• Referrals to appropriate long term care services and living situations (e.g., adult day services, hospice, etc.)
Take Home Messages

• Challenging and enriching work
• Need team for families and each other
• Use resources to support your work