Joint Session with ACOFP and Mayo Clinic

Parkinson's Disease: 5 Pearls

Jay Van Gerpen, MD
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Please check where applicable and sign below. Provide additional pages as necessary.
Name of CME Activity: 2015 AOA/ACOFP Osteopathic Medical Conference & Exposition (OMED)

Dates and Location of CME Activity: October 17 - October 21, 2015 Orange County Convention Center Orlando, Florida

Topic: Shaking Hands with the "Palsy" Monday, October 19, 2015 10:00-11:00am

Name of Speaker/Moderator: Jay Van Gerpen, DO

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A. Neither I nor any member of my immediate family has a financial relationship or interest with any proprietary entity producing health care goods or services.

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Please indicate the name(s) of the organization(s) with which you have a financial relationship or interest, and the specific clinical area(s) that correspond to the relationship(s). If more than four relationships, please list on separate piece of paper:

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<th>Organization With Which Relationship Exists</th>
<th>Clinical Area Involved</th>
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<td>1. Mayo Medical Ventures</td>
<td>1. Gait Enhancement</td>
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*If you checked "Speakers' Bureaus" in item B, please continue:

- Did you participate in company-provided speaker training related to your proposed topic?
  - Yes: ☐ No: ☐
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Signature: ___________________________________________ Date: 9/11/15

Jay Van Gerpen, DO

Please fax this form to ACOFP at 866-328-1835, or e-mail to joank@acofp.org as soon as possible. Deadline: Friday, September 11, 2015
Parkinson’s Disease: 5 Pearls

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Sections of Movement Disorders and Clinical Neurophysiology
Mayo Clinic
Jacksonville, Fl.

Take Home Messages

• Exercise is a neuroprotective and symptomatic treatment of Parkinson’s disease (PD)
• Falls in PD patients are predictable and preventable (at least to some extent)
• Orthostatic hypotension is common in PD patients and may be associated with falls
• Sleep disturbances are to be expected in PD patients and are very treatable
• PD patients and their families should be wary of neuroleptics, especially “hidden” ones
Parkinsonism

- Comprised of 4 Cardinal Features:
  1) **Bradykinesia**
  2) Tremor
  3) Muscle Rigidity
  4) **Postural Instability**

If a patient has at least 2/4 of these features, by definition, they have parkinsonism

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**Bradykinesia**

- “Slow Movement” (Gk.)
- Actually, a diminution in amplitude of voluntary movements or reduction in “automatic” movements
- **Gait Implications: reduction in stride (“shuffling”) to Freezing of Gait (FOG)= gait bradykinesia (GB)**
- A decrease in arm swing (an “automatic movement”) also may be present, but will not be discussed further in this presentation
Bradykinesia: Dual Properties

- Decrease in “automatic” movements
- Arm swing ambulating
- Facial expression: hypomimia
- Swallowing: sialorrhea

- Progressively diminishing amplitude of voluntary movements; asymmetry typical
- Micrographia
- Hypokinetic dysarthria (voice trails off)
- Tasks take longer (eating, getting dressed, etc.)
Normal Gait/Station

• Patient “walks with a sense of freedom” given that movements are “almost automatic”
• “Weight is alternately shifted from one extremity to the other, allowing the extremity freed of weight to be moved forward with certainty and ease”
• During ambulation, “the pelvis is held more or less at a right angle to the weight-bearing extremity”
• As one leg is advanced to make a step, its heel strikes the floor first, as the contralateral arm swings forward
• Posture of trunk is essentially erect
Don’t just sit there. Really.

"The chair is out to kill us," a Mayo doctor says. Several studies point to the health risks of too much sitting.

By Karen Ervin
May 23, 2013

"Prolonged sitting is not what nature intended for us," says Dr. Camelia Darby, clinical professor of medicine and director of women's health at the UCLA Comprehensive Health Program.

"The chair is out to kill us," says James Levine, an endocrinologist at the Mayo Graduate School of Medicine.

Most of us have years of sitting experience, consider ourselves quite good at it and would swear that nature intended us to do it as much as possible.

PHOTOS: 17 ways to fight the inertia, step by step

But unfortunately, a good deal of data suggest that we're off our rocker to spend so much time on our rockers — as well as the vast variety of other seats where we're fond of parking our duffs.

Here's a sampling of what scientists have learned about the insidious nature of sitting.

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Does vigorous exercise have a neuroprotective effect in Parkinson disease?

J. Eric Ablin, Ph.D., M.D.

Address correspondence and reprint requests to Dr. J. E. Ablin, Department of Neurological Surgery, Mayo Clinic, 200 First St. SW, Rochester, MN 55905. Email: ablin@mayo.edu

ABSTRACT

Parkinson disease (PD) is progressive, with dementia and medication-refractory motor problems common reasons for late-stage nursing-home placement. Increasing evidence suggests that vigorous exercise/physical fitness may favorably influence this progression. Parkinsonian animal models reveal exercise-related protection against dopaminergic neurodegeneration, apparently mediated by brain neurotrophic factors and neuroplasticity (produced in vitro studies). Similarly, exercise consistently improves cognition in animals, also linked to enhanced neuroplasticity and increased neurotrophic factor expression. In these animal models, immobilization has the opposite effect. Brain-derived neurotrophic factor (BDNF) may mediate at least some of these exercise benefits. In humans, exercise increases serum BDNF, and this is known to cross the blood-brain barrier. PD risk in humans is significantly reduced by midlife exercise documented in large prospective studies. No studies have addressed whether exercise influences dementia risk in PD, but exercised patients with PD improve cognitive scores. Among seniors in general, exercise or physical fitness has not only been associated with better cognitive scores, but midlife exercise significantly reduces the later risk of both dementia and mild cognitive impairment. Finally, numerous studies in seniors with and without dementia have reported increased cerebro spinal fluid volumes associated with physical fitness or exercise. These findings have several implications for PD-dominance. 1) Exercise or activity and physical fitness should be highly encouraged. 2) PD physical therapy programs should include structured, graduated fitness instruction and guidance for deconditioned patients with PD. 3) Levodopa and other forms of dopamine replacement therapy should be utilized to achieve the maximum capability and motivation for patients to maintain fitness. "Neurology" 2011;77:2065-204
Physical Exercise, Aging, and Mild Cognitive Impairment

* A Population-Based Study

Yonas E. Geda, MD, MSC; Rosebud O. Roberts, MBChB, MS; David S. Knopman, MD; Teresa J. H. Christiansen, BSc; V. Shane Finkbeiner, MD; Robert J. Smith, PhD; Bradley F. Boeve, MD; Eric G. Tangalos, MD; Ronald C. Petersen, MD, PhD; Walter A. Rose, MD, MPH

**Background:** Physical exercise is associated with decreased risk of dementia and Alzheimer disease.

**Objective:** To investigate whether physical exercise is associated with decreased risk of mild cognitive impairment (MCI).

**Design:** Population-based case-control study.

**Setting:** The Mayo Clinic Study of Aging, an ongoing population-based cohort study in Olmsted County, Minnesota.

**Participants:** A total of 1,024 subjects without dementia who completed a Physical Exercise Questionnaire.

**Main Outcome Measures:** An expert consensus panel classified each subject as having normal cognition or MCI based on published criteria.

**Results:** We compared the frequency of physical exercise among 1,024 subjects with MCI with that among 1,126 subjects with normal cognition and adjusted the analyses for age, sex, years of education, medical comorbidity, and depression. The odds ratios for any frequency of moderate exercise were 0.61 (95% confidence interval, 0.43-0.88; P = .02) for midlife (age range, 50-65 years) and 0.68 (95% confidence interval, 0.49-0.93; P = .02) for late life. The findings were consistent among men and women. Light exercise and vigorous exercise were not significantly associated with decreased risk of MCI.

**Conclusion:** In this population-based case-control study, any frequency of moderate exercise performed in midlife or late life was associated with a reduced odds of having MCI.

*Arch Neurol.* 2010;67(1):80-86

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**Adult Walking for Optimal Health**

- **10,000 Steps/Day** (2,000-2,500 Steps/Mile)
- One Step = 2.5 Feet
- 25,000 Feet/Day
- Average American Walks < 1,000 Feet/Day = < 400 Steps/Day!!!
Postural Instability

- Impairment of patient’s “righting” reflex
- This “reflex” is under conscious or subconscious control
- Enables a person to move their feet into the proper position when their center of mass has been displaced to maintain balance
Gait-Chaperoning

• Given that most patients with FOG and gait hypokinesia have severe postural instability, they need a “gait chaperone”
• Family members and caregivers of patients can be taught gait-chaperoning readily: the concept of postural instability, including auto-retropulsion should be emphasized as part of teaching
• FOG may also induce falling forwards
• The gait chaperone can serve as the patient’s “eyes” and to prevent falls while they ambulate using a visual cue
Orthostatic Hypotension (OH)

• Check patient’s standing BP after one minute each visit: SBP < 90 mmHg greatest predictor of symptomatic OH

• Many chronic PD patients have hx/o HTN and are on anti-hypertensives; with PD progression, these usually can be tapered off

• If OH remains problem, in spite of adequate fluid and salt intake, consider midodrine 2.5-5 mg bid, or fludrocortisone 0.1 mg bid

Normal Sleep
States of Being

• Wakefulness

• NREM Sleep

• REM Sleep
REM Sleep Behavior Disorder

• Loss of normal atonia during REM Sleep, leading to dream-enactment

• Typical of the synucleinopathies (PD, MSA, DLB): Boeve, et al. Movement Disorders 2001;622-630

• May antedate onset of motor, cognitive, autonomic symptoms and signs by decades

REM Sleep Behavior Disorder (RBD)

Clinical Features

• Simple or complex limb movements and/or vocalizations during rapid eye movement (REM) sleep

• Behaviors typically mirror the content of the dream when a patient is awakened and questioned

• Dream content often involves animals and/or people with chasing or attacking theme

• Behaviors can be violent; patient and bedpartner injuries can occur
REM Sleep Behavior Disorder Management

- Nonpharmacologic:
  - Move sharp objects away from bed, place mattress or air cushion next to bed

- Pharmacologic:
  - **clonazepam** (0.25mg-1.5mg qHS; rarely exacerbates cognitive impairment)
  - melatonin (one approach - 3 mg qhs, increase in 3 mg increments q 3 days, max 12 mg qhs)

Boeve et al., Brain 2007

Insomnia

- ? Iatrogenic (e.g., nighttime dose of cholinesterase inhibitor in AD patient)
- ? Secondary to underlying mood disorder
- In PD patients: among myriad possible etiologies, consider “off” phenomenon (use of long-acting levodopa at bedtime and prn immediate release levodopa for early AM insomnia can be potentially helpful)
- Poor sleep hygiene (little daytime light exposure; physical inactivity; nocturnal noise, etc.)
Obstructive Sleep Apnea
Clinical Features

- loud and disruptive snoring
- witnessed snorts, gasps, and apnea
- snort arousals
- daytime hypersomnolence
- cognitive impairment
- depression
- reduced quality of life

Obstructive Sleep Apnea
Relevance to Neurologic Disease

- Association between OSA and dementia exists, conflicting data on whether OSA is causally related to dementia
- Marked increase in ICP during apneic events, OSA is causally related to vascular dementia
- Some patients have been diagnosed with delirium, dementia (not otherwise specified), and a degenerative dementing illness who are found to have untreated OSA, and delirium or dementia disappears with CPAP therapy

**OSA can be considered one of the reversible causes of cognitive impairment/delirium/dementia**
Drug-Induced Parkinsonism

**Medicines Parkinson’s Patients Should Never Take**

Medicines for nausea, vomiting and other GI problems:
Reglan (metoclopramide), Phenergan (promethazine), Compazine (prochlorperazine)

Medicines for psychiatric problems:
Thorazine (chlorpromazine), Prolixin (fluphenazine), Haldol (haloperidol), Loxitane (loxapine), Serentil (mesoridazine), Moban (molindone), Trilafon (perphenazine), Triavl (amitriptyline + perphenazine), Risperdal (risperidone), Mellaril (thioridazine), Navane (thiothixene), Stelazine (trifluoperazine), Asendin (amoxapine)

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